

Simplified

e-Book



FUNDAMENTAL OF COMPUTER, WINDOW, DOS, MS OFFICE, INTERNET, HTML, DHTML C & C++ LANGUAGE

SARVA EDUCATIONSM (An I.T Skill Advancement Training Programme, Initiated by **SITED[®]-India**)

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Unit-I Fundamental of Computer, Window & DOS

Lesson: 1

Computer Concept

A computer is an electronic device that manipulates information, or "data." It has the ability to store, retrieve, and process data. You can use a computer to type documents, send email, and browse the internet. You can also use it to handle spreadsheets, accounting, database management, presentations, games, and more. **In Other Words** "A computer is a fast electronic device that processes the input data according to the instructions given by the programmer/user and provides the desired information as output."

Definition of Computer In a layman language, a computer is a fast calculating device that can perform arithmetic operations. Although the computer was originally invented mainly for doing high speed and accurate calculations, it is not just a calculating device. It gets the data through an input device, processes it as per the instructions given and gives information as output. We can define a computer follows.

Terms	Meaning
Data	A set of basic facts and entities which itself has no meaning.
Information	Data which has some meaning or value.
Instruction	A statement given to computer to perform a task.
Input	Data and Instructions given to computer.
Process	Manipulation of data.

History of Computer

- The first counting device was the abacus, originally from Asia. It worked on a place-value notion meaning that the place of a bead or rock on the apparatus determined how much it was worth.
- **1600s** : John Napier discovers *logarithms*. Robert Bissaker invents the slide rule which will remain in popular use.
- **1642** : Blaise Pascal, a French mathematician and philosopher, invents the first mechanical digital calculator using gears, called the **Pascaline**. Although this machine could perform addition and subtraction on whole numbers, it was too expensive and only Pascal himself could repair it.
- **1804** : Joseph Marie Jacquard used punch cards to automate a weaving loom.
- **1812** : Charles P. Babbage, the "**father of the computer**", discovered that many long calculations involved many similar, repeated operations. Therefore, he designed a machine, the difference engine which would be steam-powered, fully automatic and commanded by a fixed instruction program. In 1833, Babbage quit working on this machine to concentrate on the analytical engine.
- **1840s** : Augusta Ada. "**The first programmer**" suggested that a binary system should be used for storage rather than a decimal system.
- **1850s** : George Boole developed **Boolean logic** which would later be used in the design of computer circuitry.
- **1890** : Dr. Herman Hollerith introduced **the first electromechanical, punched-card data-processing machine** which was used to compile information for the 1890 U.S. census. Hollerith's tabulator became so successful that he started his own business to market it. His company would eventually become **International Business Machines (IBM)**.
- **1906** : The **vacuum tube** is invented by American physicist Lee De Forest.
- **1939** : Dr. John V. Atanasoff and his assistant Clifford Berry build the **first electronic digital computer**. Their machine, the Atanasoff-Berry-Computer (ABC) provided the foundation for the advances in electronic digital computers.
- **1941** : Konrad Zuse (recently deceased in January of 1996), from Germany, introduced **the first programmable computer** designed to solve complex engineering equations. This machine, called the Z3, was also the first to work on the binary system instead of the decimal system.
- **1943** : British mathematician Alan Turing developed a hypothetical device, **the Turing machine** which would be designed to perform logical operation and could read and write. It would presage programmable computers. He also used vacuum technology to build British Colossus, a machine used to counteract the German code scrambling device, Enigma.
- **1944** : Howard Aiken, in collaboration with engineers from IBM, constructed a large automatic digital sequence-controlled computer called the **Harvard Mark I**. This computer could handle all four arithmetic operations, and had special built-in programs for logarithms and trigonometric functions.
- **1945** : Dr. John von Neumann presented **a paper outlining the stored-program concept**.

Generations of Computer

The history of computer development is often referred to in terms of five distinct eras, or "generations" of computing devices. Each generation of computer is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful and more efficient and reliable devices.

The First Generation: 1946 to 1955

The first computers used **vacuum tubes** for circuitry, magnetic drums and magnetic cores for memory, and were often enormous, taking up entire rooms. They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on teletype printers. The **UNIVAC** is the most famous first generation computer. Manufactured by Sperry-Rand Corporation, the first UNIVAC was delivered to the U.S. Census Bureau in 1951 - becoming the first computer that was not used for military or scientific purposes.



The Second Generation: 1956 to 1963

Transistors replaced vacuum tubes and used in the second generation of computers. The transistor was invented in 1947 but did not see widespread use in computers until the late 50s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Though the transistor still generated a great deal of heat that subjected the computer to damage, it was a vast improvement over the vacuum tube. Second-generation computers still relied on punched cards for input and printouts for output.

Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN.

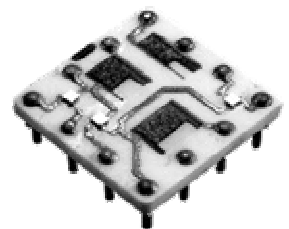
It was during this era that IBM became the world-wide leader in computer manufacturing. IBM also developed the first hard disk in this period - a massive device that was comprised of 50 platters, each with a 2-foot diameter. The entire hard disk could store a whopping 5MB.



The Third Generation: 1964 to 1970

The third generation is characterized by the development of the integrated circuit - a complete electrical circuit whose components (transistors, capacitors, etc.) are fabricated onto a small "chip" made of silicon ... otherwise known as an integrated circuit chip, or IC chip. IC chips drastically increased the speed and efficiency of computers.

Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Although still large by today's standards, third-generation computers were smaller and cheaper than their predecessors, and were now being mass-produced (primarily by IBM) for commercial use around the world.



The Fourth Generation: 1971 to 1991

The fourth generation is distinguished primarily as the generation in which the personal computer first appeared. This was made possible by the development of the microprocessor by Intel Corp. A microprocessor is a single IC chip that contains an entire computer processor - essentially, an entire first-generation computer that can fit in the palm of your hand.

The second breakthrough was a series of improvements in IC design and manufacturing methods which allowed engineers to create IC chips with tens of thousands of transistors, a process now known as large scale integration (LSI). This allowed more complex systems to be produced using smaller circuit boards, and at a reduced cost. Solid-state electronics began to make their way into everyday life. home appliances, radios, TVs, games, and more.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.



The Fifth Generation: 1992 to present

In the computing world, there is no real consensus on the timeline (or even the existence of) a fifth generation of computers. It can be argued that while microprocessors have become more powerful, and integrated circuits have become smaller, the underlying technology has not really changed since the fourth generation.

If we wish to recognize a "fifth generation" at all, then perhaps it reflects a shift in computer use, rather than computer technology. The emergence of the Internet, and particular, the World Wide Web has forever changed the way computers are used in society. Artificial intelligence - a field of study that predates the first generation - is now a reality, with devices that are capable of learning, self-organization, and natural language input.

If a "true" fifth generation (based on technology only) emerges, it will probably be based upon quantum computation, molecular / nanotechnology, or some other innovation that will enhance (or replace) the integrated circuit, and once again radically change the face of computers

Classification of Computer

The classification of computers is based on the following four criteria:

1. **According to Purpose**
2. **According to Technology Used**
3. **According to Size and Storage Capacity**

1. According to Purpose Computers are of following two types:

I. **General Purpose Computers**

Computers that follow instructions for general requirements such as sale analysis, financial accounting, invoicing, inventory, and Management information etc. are called general computers. Almost all computers used in offices for commercial, educational and the applications are general-purpose computers.

II. **Special Purpose Computers**

Computers that are designed from scratch to perform special tasks like scientific applications and research, whether forecasting, space applications, medical diagnostics, etc. are called special purpose computers.

2. According To Technology Used Computers are of the following three types:

I **Analog Computer**

Analog computers are special purpose computer that represent and store data in continuously varying physical quantities such as current, voltage or frequency. These computers are programmed for measuring physical quantities like pressure, temperature, speed etc. and to perform computations on these measurements. Analog computers are mainly used for scientific and engineering applications. Some of the examples of analog computers are :- **(a) Thermometer:** It is a simple analog computer used to measure temperature. In thermometer, the mercury moves up or down as the temperature varies. **(b) Speedometer:** Car's speedometer is another example of analog computer where the position of the needle on dial represents the speed of the car.

II. **Digital Computer**

Digital computers are mainly general-purpose computers that represent and store data in discrete quantities or numbers. In these computers, all processing is done in terms of numeric representation (Binary Digits) of data and information. Although the user enters data in decimal or character form, it is converted into binary digits (**0's and 1's**). Almost all the computers used nowadays are digital computers.

III. **Hybrid Computers**

Hybrid computers in corporate the technology of both analog and digital computers. These computers store and process analog signals, which have been converted, into discrete numbers using analog-to-digital converters. They can also convert the digital numbers into analog signals or physical properties using digital-to-analog converters. Hybrid computers are mainly used in artificial intelligence (robotics) and computer aided manufacturing (e.g. process control).

3. According to Size and Storage Capacity Computers are of the following four types:

I. **Micro Computer:**

Micro Computers are the smallest category of computer consisting of a microprocessor and associated storage and input/ output elements. They are designed to be used by one person at a time, meaning they are single user oriented ones.

II. **Mini Computers:**

Mini computers are relatively fast but small and expensive Computers with some what limited input/output capabilities. Mini systems are designed to simultaneously handle the processing needs of multiple user. Mini Computer provides the facility of more stored capacity and communication link between users.

III. Mainframe Computers :

Mainframe computers are large computer systems that have the capability to support many powerful peripheral devices

IV. Super computers :

Computer system characterized by their very large size and very high processing speed. Generally used for complex scientific applications.

Other Different Types of Computers

When most people hear the word "computer" they think of a personal computer such as a desktop or laptop computer. However, computers come in many shapes and sizes, and they perform many different functions in our daily lives. When you withdraw cash from an ATM, scan groceries at the store, or use a calculator, you're using a type of computer.



Desktop Computers: Many people use desktop computers at work, home, school, or the library. They can be small, medium, or large in style, and usually sit on a desk. Once you add a monitor, mouse, and a keyboard, you have what is typically known as a desktop computer. Most desktop computers are easy to upgrade and expand, or add new parts. Another benefit of desktop computers is the cost. If you compare a desktop and a laptop with the same features, you will most likely find that the desktop computer is priced lower. Some desktop computers have a built-in monitor to save space. These are often called all-in-one desktop computers.

Laptop Computers: You may be familiar with is a laptop computer or laptops as they are often referred to. Laptops are battery or AC-powered personal computers that are more portable than desktop computers, allowing you to use them almost anywhere. Since a laptop is smaller than a desktop, it's more difficult to access the internal components. That means you may not be able to upgrade them as much as a desktop. However, it's usually possible to add more RAM or a bigger hard drive. A laptop computer is sometimes called a notebook computer because of its size.



Servers: A server is a computer that "serves up" information to other computers on a network. Many businesses have file servers that employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger. Servers also play an important role in making the internet work: they are where web pages are stored. When you use your browser to click a link, a web server delivers the page you requested.

Tablet Computers: These use a touch-sensitive screen for typing and navigation. Since they don't require a keyboard or mouse, tablet computers are even more portable than laptops. The *iPad* is an example of a tablet computer.



Game Consoles: A game console is a specialized kind of computer that is used for playing video games. Although they are not as fully-featured as a desktop computer, many newer consoles, such as the Nintendo Wii, allow you to do non-gaming tasks like browsing the internet.

PC: This type of computer began with the original **IBM PC** that was introduced in 1981. Other companies began to create similar computers, which were called **IBM PC Compatible** (often shortened to **PC**). Today, this is the most common type of personal computer, and it typically includes the **Microsoft Windows** operating system.

Mac: The **Macintosh** computer was introduced in 1984, and it was the first widely sold personal computer with a Graphical User Interface, or **GUI** (pronounced gooey). All Macs are made by one company, **Apple Inc.**, and they almost always use the **Mac OS X** operating system.

Characteristic of Computer

Fast: A computer is so fast that it can perform the given task (arithmetical or logical) in few seconds as compared to man who can spend many months for doing the same task. A computer can process millions of instructions per second.

Accurate: While doing calculations, a computer is more accurate than a man. Man can make mistakes in calculations but a computer does not, if it is provided with accurate instructions.

High Memory: A computer has much more memory of storage capacity than human beings. It can store millions of data and instructions, which can be retrieved and recalled even after number of years. This is not possible in cast of human brain.

Diligence: A computer does not suffer from the human traits of tiredness and boredom. Man will be tired and bored while doing millions of calculations but computer, being a machine, does this jobs very efficiently and without any tiredness and boredom.

No Intelligence: A computer is a machine and obviously has no intelligence of its own. Each and every instruction must be given to the computer for doing a task.

Lesson: 2

CPU (Input/Output Unit)

We know that the computer is machine that processes the input data according to a given set of instructions and gives the output. Before a computer does processing, it must be given data and instructions.

After processing, the output must be displayed or printed by the computer. The unit used for getting the data and instructions into the computer and displaying or printing output is known as an Input/Output (I/O unit). The Input Unit is used to enter data and instructions into a computer. There are many peripheral devices which are used as Input/Output unit for the computer. The most common form of input device is known as a terminal. A terminal has an electronic typewriter like device, called keyboard along with a display screen, called Visual Display Unit (VDU) or monitor. Keyboard is the main input device while the monitor can be considered both as input as well as an output device. There are some other common input devices like mouse, punched card, tape, joystick, scanner, modem etc. Monitor, Printer and Plotter are the main peripheral devices used as output units for the computer.



Central Processing Unit (CPU)

CPU is the main component or "**brain**" of a computer, which performs all the processing of input data, its function is to fetch, examine and then execute the instructions stored in the main memory of a computer. In microcomputers, the CPU is built on a single chip or **Integrated Circuit (IC)** and is called as a Microprocessor.

The CPU consists of the following distinct parts:

1. **Arithmetic Logic Unit (ALU)**
2. **Control Unit (CU)**
3. **Registers**
4. **Buses**
5. **Clock**

1. Arithmetic Logic Unit (ALU)

The arithmetic logic unit of CPU is responsible for all arithmetic operations like addition, subtraction, multiplication and division as well as logical operations such as less than, equal to and greater than. Actually, all calculations and comparisons are performed in the arithmetic logic unit.

2. Control Unit (CU)

The control unit is responsible for controlling the transfer of data and instructions among other units of a computer. It is considered as the "Central Nervous System" of computer, as it manages and coordinates all the units of the computer. It obtains the instructions from the memory, interprets them and directs the operation of the computer. It also performs the physical data transfer between memory and the peripheral device.

3. Registers

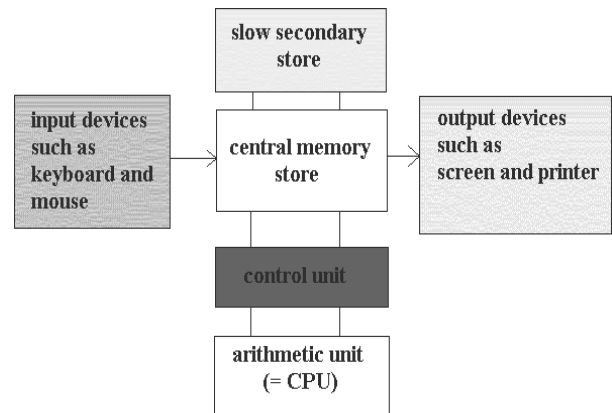
Registers are small high speed circuits (memory locations) which are used to store data, instructions and memory addresses (memory location numbers), when ALU performs arithmetic and logical operations. Registers can store one word of data (1 word = 2 bytes & 1 byte = 8 bits) until it is overwritten by another word. Depending on the processor's capability, the number and type of registers vary from one CPU to another. Registers can be divided into six categories viz. General Purpose Registers, Pointer Registers, Segment Registers, Index Registers, Flag Register and Instruction Pointer Register, depending upon their functions.

4. Buses

Data is stored as a unit of eight bits (BIT stands for Binary Digit i.e. 0 or 1) in a Register. Each bit is transferred from one register to another by means of a separate wire. This group of eight wires, which is used as a common way to transfer data between registers, is known as a bus. In general terms, bus is a connection between two components to transmit signal between them. Bus can be of three major types viz. Data Bus, Control Bus and Address Bus. The data bus is used to move data, address bus to move address or memory location and control bus to send control signals between various components of computer.

5. Clock

Clock is another important component of CU, which measures and allocates a fixed time slot for processing each and every micro-operation (smallest functional operation). In simple terms, CPU is allocated one or more clock cycles to complete a micro-operation. CPU executes the instructions in synchronization with the clock pulse. The clock-speed of CPU is measured in terms of Mega Hertz (MHz) or Millions of Cycles per second. The clock speed of CPU varies from one model to another in the range



4.77 MHz (in 8088 processor) to 266 MHz (in Pentium II). CPU speed is also specified in terms of Millions of Instructions Per Second (MIPS) or Million of Float-ing-Point Operations Per Second (MFLOPS)

About Front of CPU



1. Optical Disc Drive: Often called a CD-ROM or DVD-ROM drive, these let your computer read CDs and DVDs. Most optical disc drives can also write (or "burn") data to CD-R and DVD-R discs. More recent drives can read Blu-ray Discs and write to BD-R (Blu-ray Disc recordable) discs, and these drives are often called BD-ROM, BD-RE, or Blu-ray drives.

2. Power Button: The power button is used to power the computer on and off. Additionally, you can use the power button on some computers to place the computer in different energy-saving modes such as hibernate, sleep, and standby. It is a good idea to read your manual to learn how these features work on your computer.

3. Audio In/Audio Out: Many computers include audio ports on the front of the computer case that allow you to easily connect speakers, microphones and headsets, without fumbling with the back of the computer.

4. USB (Universal Serial Bus) Port: Most desktop computers have several USB ports. These can be used to connect almost any type of device, including mice, keyboards, printers, digital cameras and more. They will often appear on the front and back of the computer. A typical Blu-ray disc can hold 25 gigabytes of data, and some can hold 50 gigabytes or more. This is much more than CDs or DVDs, making BD-R discs ideal for storage.

Back of CPU

On the back of the computer case are connection ports that are made to fit specific devices. The arrangement of these vary from computer to computer, and many companies have their own special connectors for the specific devices. Some of the ports may be color coded to match a color on the device, which will help you determine which port is used with a particular device.



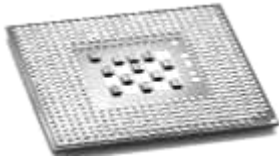
- 1. Power Socket:** This is where you'll connect the **power cord** to the computer.
- 2. Audio In/Audio Out:** Almost every computer has two or more **audio ports** where you can connect various devices, including speakers, microphones, headsets, and more.
- 3. Ethernet Port:** This port looks a lot like the **modem** or telephone port but it is a little bit **wider**. You can use this port for **networking** and also connecting to the internet.
- 4. USB Ports:** On most desktop computers, most of the USB ports are on the back of the computer case. Generally, you'll want to connect your mouse and keyboard to these ports, and keep the front USB ports free so that they can be used for digital cameras or other devices.
- 5. Monitor Port:** This is where you'll connect your **monitor cable**. In this example, the computer has both a **Display Port** and a **VGA port**. Other computers may have other types of monitor ports, such as **DVI (Digital Visual Interface)** or **HDMI (High-Definition Multimedia Interface)**.
- 6. Expansion Slots:** These empty slots are where **expansion cards** are added to computers. For example, if your computer did not come with a video card, you could purchase one and install it here.

The following ports are less common today:

- 7. Serial Port:** This is an older port that was frequently used to connect **peripherals** such as digital cameras, but today it has been replaced by USB and other types of ports.
- 8. PS/2:** These ports are sometimes used for connecting the **mouse** and **keyboard**. Typically, the mouse port is **green**, and the keyboard port is **purple**.
- 9. Parallel Port (or Printer Port):** This is an older port that is less common on new computers. Like the **serial port**, it has now been replaced by USB.

Inside of CPU

CPU/Processor



The Central Processing Unit (CPU), also called a processor, is located inside the computer case on the motherboard. It is sometimes called the brain of the computer, and its job is to carry out commands. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU.

The CPU is generally a 2-inch ceramic square with a silicon chip located inside. The chip is usually about the size of a thumbnail. The CPU fits into the motherboard's CPU socket, which is covered by the heat sink, an object that absorbs heat from the CPU.

A processor's speed is measured in megahertz (MHz), or millions of instructions per second, and gigahertz (GHz), or billions of instructions per second. A faster processor can execute instructions more quickly. However, the actual speed of the computer depends on the speed of many different components - not just the processor. There are many processor manufacturers for personal computers, but the most well-known ones are Intel and AMD.

Motherboard

The motherboard is the computer's main circuit board. It's a thin plate that holds the CPU, memory, connectors for the hard drive and optical drives, expansion cards to control the video and audio, as well as connections to your computer's ports (such as the USB ports). The motherboard connects directly or indirectly to every part of the computer.



Power Supply Unit



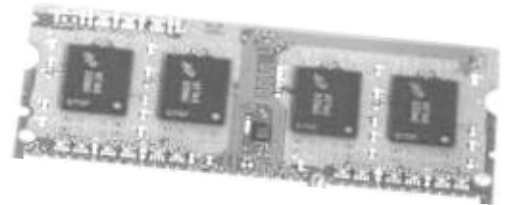
The power supply unit in a computer converts the power from the wall outlet to the type of power needed by the computer. It sends power through the cables to the motherboard and other components.

If you decide to open the computer case and take a look, make sure to unplug the computer first. Before touching the inside of the computer, you should touch a grounded metal object (or a metal part of the computer casing) to discharge any static buildup. Static electricity can be transmitted through the computer circuits and ruin them.

RAM (Random Access Memory)

RAM is your system's short-term memory. Whenever your computer performs calculations, it temporarily stores the data in the RAM until it is needed.

This short-term memory disappears when the computer is turned off. If you're working on a document, spreadsheet, or other type of file, you'll need to save it to avoid losing it. When you save a file, the data is written to the hard drive, which acts as long-term storage. RAM is measured in megabytes (MB) or gigabytes (GB). The more RAM you have, the more things your computer can do at the same time. If you don't have enough RAM, you may notice that your computer is sluggish when you have several programs open. Because of this, many people add extra RAM to their computers to improve performance. A bit is the smallest unit of data in computer processing. A byte is a group of eight bits. A megabyte contains about one million bytes, and a gigabyte is about one billion bytes.



Hard Drive



The hard drive is the data center of the computer. This is where the software is installed, and it's also where your documents and other files are stored. The hard drive is long-term storage, which means the data is still saved even if you turn the computer off or unplug it.

When you run a program or open a file, the computer copies some of the data from the hard drive onto the RAM so that it can access the data more easily. When you save a file, the data is copied back to the hard drive. The faster the hard drive is, the faster your computer can start up and load programs.

Most hard drives are hard disk drives, which store data on a magnetic platter. Some computers now use solid-state drives (also called flash hard drives). These are faster and more durable than hard disk drives, but they are also more expensive. A USB flash drive is basically a small, removable flash hard drive that plugs into a USB port. These are a convenient way to bring your

files with you and open them on a different computer.

If you're using Windows, you can view information about your computer's RAM and processor speed without opening up your computer. Just go to the Control Panel (in the Start menu) and click System and Security. In Mac OS X, you can view this information by clicking the Apple icon and selecting About This Mac.

Expansion Cards

Most computers have expansion slots on the motherboard that allow you to add various types of expansion cards. These are sometimes called PCI (Peripheral Component Interconnect) cards. You may never have to add any PCI cards, as most motherboards have built-in video, sound, network, and other capabilities. However, if you want to boost the performance of your computer or update the capabilities of an older computer, you can always add one or more cards.

Below are some of the most common types of expansion Cards:-

Video card-

The video card is responsible for what you see on the monitor. Most computers have a GPU (Graphics Processing Unit) built into the motherboard, instead of having a separate video card. If you like playing graphics-intense games on the computer, you can add a faster video card to one of the expansion slots to get better performance.



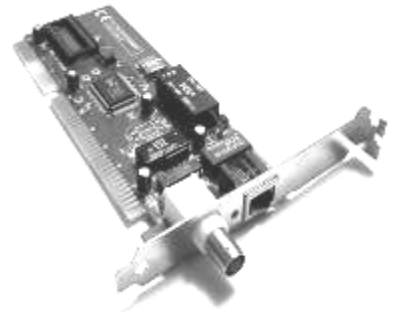
Sound Card-



The sound card, also called an audio card, is responsible for what you hear in the speakers or headphones. Most motherboards have integrated sound, but you can upgrade to a dedicated sound card for higher quality sound.

Network Card-

The network card allows your computer to communicate over a network and access the internet. It can either connect with an Ethernet cable or through a wireless connection (often called Wi-Fi). Many motherboards have built-in network connections, and a network card can also be added to an expansion slot.



Bluetooth Card-



Bluetooth is a technology for wireless communication over short distances. It's often used in computers to communicate with wireless keyboards, mice, and printers. It's often built into the motherboard or included in a wireless network card. For computers that don't have Bluetooth, a USB adapter (called a **dongle**) can be purchased.

Lesson: 3

Bit, Byte & Number System

Computers only understand the binary number system based on the unit 2 denary. Programming often uses the hexadecimal system base on a unit of 16 denary. For example HTML uses hexadecimal numbering in the color attribute, e.g. color="FF00FF". Another less common system is octal based on 8 denary.

You should know how to convert between the different systems. The ASCII table at the foot of this page is useful for a quick conversions up to 127 denary. The windows calculator (in scientific mode) can be used for conversions. College and University students may find that calculators are not allowed in the exam, OU course T223 is an example of this, there fore manual conversion calculations must be made. This should be practiced to speed up the process, the calculator only used to check your manual conversion.

Bit

A binary digit is called a bit. Usually expressed as 0 and 1 the two numbers of the binary numbering system. A bit is the smallest unit of information a computer can use. A 16 bit computer would process a series of 16 bits, such as 0100111101011000 in one go, repeating the process thousands or millions of times per second.

Reading a series of bits is very difficult and to make this process easier they are often displayed in groups of 4 bits 0100 1111 0101 1000. This grouping is quite interesting in that a group of 4 bits can be replaced by a single hexadecimal digit Two groups of 4 bits, i.e. 8 bits (a byte) can be replaced by 2 hexadecimal digits, and 4 hexadecimal digits are required to replace all 16 bits.

Binary	0100	1111	0101	1000
Hexadecimal	4	F	5	8

Byte

A group of **8 bits** are in a **byte**. With 8 bits (binary digits), there exist **256** possible denary combinations. If you remember that **1 byte** can store one alphabetical letter, single digit, or a single character/symbol, such as **#**. Large numbers of bytes can be expressed by kilobyte and megabyte.

Kilobyte

The value of a kilobyte is **1024**. Worked out as 2^{10} . Normally Kilo refers to **1000** but in computing kilobyte is **1024**.

Megabyte

Likewise, **1024Kb** is referred to as a "**Megabyte**". Normally a Mega refers to a **million**. In computing **1 Mega byte is 1,048,576 bytes**. Worked out as 1024×1024 .

1 byte of memory can normally hold one of the following:

A single alphabetical letter (upper or lower case),

A single number 0-9

A symbol (_ + £ # > etc.

A further 127 alternative characters. These could be the letters used in foreign languages, lines to produce boxes etc.

In every day life we usually use the denary number system which has a base of 10. But we also use other number systems, think of time (base 60, and base 10 within it), imperial distance yards and feet (base 3), there are many others, dates probably being the hardest number system to do calculations with.

Number Systems

The every day number system we use is the denary system, sometimes called the decimal system. In programming three number systems are commonly used, binary, hexadecimal and to a lesser extent octal. In the denary, binary, octal, hexadecimal systems, the value of any digit in a number depends on its position within that number. I.e. which column it is in.

How do numbering systems work?

To understand this we will examine the Denary system in more detail. Because you are so used to the denary system and because it is very easy to multiply by 10, 100, or a 1000 etc you calculate the number in your head. Let's use the number 256 as an example. The calculation that is automatically done is the following

The most important calculation to do is to work out the positional values for that system. The positional value is based on the powers of the number systems base value.

Power of the base	10^4	10^3	10^2	10^1	10^0
Calculation	$10 \times 10 \times 10 \times 10$	$10 \times 10 \times 10$	10×10	The value of the base number	Any number to the power 0 is always 1
= Position value	10,000	1000	100	10	1

Write down the Positional values for the number system you are using so for Denary we would write:

Position value	10,000	1000	100	10	1
----------------	--------	------	-----	----	---

Underneath the correct positional value write in your number:

Position value	10,000	1000	100	10	1
Enter Number			2	5	6

The calculation that is done:

Position value	10,000	1000	100	10	1
Enter Number			2	5	6
Required Calculation			100×2	10×5	1×6
This equals			200	50	6

Add the 3 results $200 + 50 + 6 = 256$.

You can convert a number in any number system to a denary number using this calculation. Ensure you use the positional values for the number system you are using.

Denary Numbering (base 10) sometimes called Decimal system

The decimal system name should not be used because of confusion that this could be thought as introducing the decimal point and money systems. Uses numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, that's 10 numbers. Hence base 10. Radix is another name for base 10. Adding 1 to 9 we must introduce an additional column to the left i.e. 10

Power of the base	10^4	10^3	10^2	10^1	10^0
Position value	10,000	1000	100	10	1

A byte of memory can store a number in the range 0 to 255 Denary.

Binary Numbering (base 2)

A series of eight bits strung together makes a byte, much as 12 makes a dozen. With 8 bits, or 8 binary digits, there exist $2^8=256$ possible combinations

Uses numbers 0, 1, that's 2 numbers. Hence base 2. Binary numbering is the number system that is used by computers.

Note: The positional value doubles as you go to the next positional on the left.

Power of the base	2^4	2^3	2^2	2^1	2^0
Positional value	16	8	4	2	1

A **binary digit** is called a **bit**. There are two possible states in a bit, usually expressed as 0 and 1, the two numbers used in the binary number system. But the bit could represent **on / off** of an electrical circuit, **yes / no, true / false, -1 / 0, -1 / +1, zero / non zero**, or similar 2 state binary wording.

A **byte of memory** can store a number in the range **00000000 to 11111111 binary**.
Numbers are often displayed in groups of 4, as follows, to make them easier to read **0000 0000 to 1111 1111 binary**.

How to Convert Binary to Denary?

Convert 1011 binary to denary:

Positional value	16	8	4	2	1
Enter Number		1	0	1	1
Required Calculation		8x1	4x0	2x1	1x1
This equals		8	0	2	1

Add the 3 results $8 + 0 + 2 + 1 = 11$.

Therefore **1011**(One Zero One One) **binary = 11** (Eleven) **Denary**

Hexadecimal Numbering (base 16)

Uses numbers **0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F**, that's 16 numbers. Hence base **16**.

A=10 Dec, B=11 DEC, C=12 DEC, D=13 DEC, E=14 DEC, F=15 DEC. By using the letters A-F a single digit only requires a single position (column).

Power of the base	16^4	16^3	16^2	16^1	16^0
Positional value	65536	4,096	256	16	1

A **byte of memory** can store a number in the range **00 to FF Hex**.

Hexadecimal numbers are often displayed in groups of 2, to make them easier to read. E.g.
10 AF 3C 9F

A single hexadecimal number requires 4 units of binary numbers. This makes it reasonably easy to convert between these two numbering systems. E.g.

1 = 0001
9 = 0101
A = 1010

Octal (base 8)

Uses numbers **0, 1, 2, 3, 4, 5, 6, 7**, that's 8 numbers. Hence base **8**.

A **byte of memory** can store a number in the range **0 to 377 Oct**.

Power of the base	8^4	8^3	8^2	8^1	8^0
Positional value	4096	512	64	8	1

Binary Systems

The Binary system is used by digital devices such as computers.

Consists of two possible states such as **On - Off, Yes - No, True - False, Zero - Non Zero** and possibly more confusing in programming - **1 and 0**.

These **states** are usually represented by either the **number 0** or **1** of the binary number system.

Lesson: 4

Computer Hardware: Input & Output Devices

Input and Output Devices

The **input device** can accept data in some suitable form and translate it into sequence of electrical pulses for inputting into the central processor. Similarly **output devices** accept data from CPU in sequence of electrical pulses and represent it in suitable form for human beings. So the input and output unit of a computer system establish the communication between the system and its users.

1. Key-board

The keyboard is the most important **input device** of the computer. The computer and its other peripherals are mostly used with the help of a keyboard only. All commands are given through the keyboard. The keyboard of a computer is similar in many ways to keyboard of typewriter *except* that a computer's keyboard has many more keys, more capable and can do several more functions. Keyboards are mainly of three types (on the basis of number of keys). 84,87,101,106 keys keyboard.

The standard IBM-PC keyboard can be divided into three general areas:

- **Typewriter area:** Having the standard set of alphabet letters and number keys.
- **Function keys:** F1 through F10 or F12 which have different functions depending on the software.
- **Numeric Keypad:** Having cursor control and number keys some keys on this pad has dual roles.
- **Cursor Control Key:** by this button we can leave. Right, upper and down side. By using M line or one character to second character easily. Other four control key (HOME, END, PGDN, PGUP). HOME key is use to transfer cursor on top. END key is use to transfer the control on the end of page. PGUp key is use to transfer the control on top of the page. PGDN is use to transfer the control on the next page.
- **NUMERIC KEY:** In right side of keyboard numeric key pad. These Key pad like a calculator but some key use a double function for example (.) key use as Del. (1) key is use as END, (9) key use as PGDN, (7) key is use as HOME. When the on of num Lock the key pad work as calculator and off position the pad perform special function.
- **CAPSLOCK:** Generally, any character type in small letter. On the Position of CapsLock on, the Character type in Capital letters. On the off the character type in small letter.
- **Shift key:** In every key board print two characters on the key. One is upper side and second is lower side. By press the shift key, we type the upper letter of key. On the position of Caps Lock all the character will type in small letter.
- **Ctrl & Alt:** For perform special function use these key with the combination of other key. use of These key are depend on different software. For example the **CTRL key** use with **C** for terminate any command in DOS. By pressing CTRL, ALT and DEL key we can restart of computer.
- **ENTER KEY:** At the ending time of instruction, we use these key. In other side we use these key for changing the line at the typing time.
- **PAUSE KEY:** By using these key, we can break the scrolling of computer Screen.
- **TAB KEY:** By using of these key we can skip the cursor on decided point, by default setting these point on half inch position. We can change these as per our requirement. For Paragraph, Column, Text and Table Setting time use these Tab Key.
- **ESCAP KEY:** By using these key we prevent to execute rest of command.
- **PRINT SCREEN:** By using these key we can print the information of the screen.
- **DELETE KEY:** By these key we erase the character. By using these key, the character erased on cursor position.
- **Back Space Key:** By these key we can erase the character. But the last character will be erased not inside character.

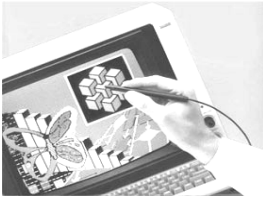


2. Mouse

The Invention of Mouse in 1977 by the **PRAGLUSH C ENJELVART** on **stefoun Laboratory**. Mouse is an **input device** shown in Fig. that is used with your personal computer. It rolls on a small ball and has two or three buttons on the top. When you rolls the mouse across a flat surface the screen censor mouse in the direction of mouse movement. The cursor moves very fast with mouse giving you more freedom to work in any direction. In mouse there are two metal wheels whose axes are at right angles. Each wheel of the mouse is connected to encoder which emits electrical pulses for every incremental rotation of wheel. When the mouse is rolled, its movement is sensed by the two wheels in two perpendicular directions. The visual feedback is given by the censor on the monitor screen.



3. Light Pen



A light pen is a pointing device. It is used to select a displayed menu option on the CRT. It is a photosensitive pen like device. It is capable of sensing a position on the CRT screen when its tip touches the screen. When its top is moved over the screen surface, its photocell sensing element detects the light coming from the screen and the corresponding signals are sent to the processor. The menu us a set of programmed choices offered to the user. The user indicates his choice by touching light pen against a desired description of the menu. The signals sent by the light pen to the processor identify the menu option.

4. Joystick

The joystick is mostly used in children's games. It is an input device with me-chanica push button. It is used to control the cursor and for issuing commands. It consists of a long handle with four switches arranged in four directions. (East, West, North, South) The switch is activated in that directions and the cursor which moves on the screen in the directions in which the Handle moved.



1. Track Ball



Trackball is another type of input device, which is used in lap-top computers. It is fixed on the board, cursor on the screen is moved in a direction according to the Trackball is moved. Trackball is a circular ball.

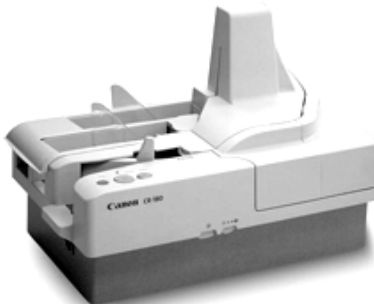
2. Scanner

The keyboard can input only text through keys provided in it. If we want to input a picture the keyboard cannot do that. Scanner is an optical device that can input any graphical matter and display it back. The common optical scanner devices are Magnetic Ink Character Reader (MICR), Optical Mark Reader (OMR) and Optical Character Reader (OCR) as discussed below:-



• **Magnetic Ink Character Reader (MICR)**

This is widely used by banks to process volumes of Cheque and drafts. Cheque is put inside the MICR. As they enter the, reading unit the Cheque pass through the magnetic field which causes the read head to recognize the character of the Cheque.



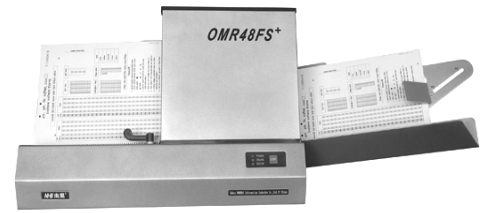
MICR



This is a sample of the required MICR encoded line including the USA bank's ABA routing number.

- **Optical Mark Reader (OMR)**

An optical mark reader (OMR) is able to rapidly read specially designed candidate answer sheets, such as the double sided sheet in use at Curtin. Optical mark readers look for the presence or absence of shaded areas on the form, in specified fields filled in by students to indicate their choice of answer. Other information such as student name / ID number can also be captured this way. Note that although they are often called scanners, such readers don't usually produce an image of the form. Instead, they produce an output file containing data obtained from reading the form fields.



- **Optical Character Reader (OCR)**



This techniques units the direct reading of any printed character. Suppose you have a set of hand written characters on a piece of paper. You put it inside the scanner of the computer. This pattern is compared with a site of patterns store inside the computer. Whichever pattern is matched is called a character read. Patterns that cannot be identified are rejected. OCRs are expensive though better the MICR.

- **Optical Bar Code Readers (OBCR)**



This method uses a number of bars (lines) of varying thickness and spacing between them to indicate the desired information. Bar codes are used on most manufactured retail products. Optical bar reader can read such bars and convert them into electrical pulses to be processed by a computer. The most commonly used bar code is Universal Product Code (UPC). The UPC code uses series vertical bars of varying widths. These bars are detected as ten digits. The first five digits identify the supplier or manufacturer of the item. The second five digits identify the product.



BAR CODE

7. Visual Display Unit (VDU)

It is nothing but a high resolution TV without sound section and tuner. It is used to display text entered through keyboard. Each character is displayed by the matrix 5, 7 dots. A display unit normally has 80 characters per horizontal lines and 24 such lines on the screen. The VDU consists of a Cathode Ray Tube (CRT) which produces a brain of electrons that makes the picture on the screen.

The monitor or VDU available in various forms:

- Monochrome monitor
- RGB monitor (Red, Green and Blue)
- Color Monitor



Monochrome Monitor



RGB Monitor



Color Monitor

8. Printer

Here is the information about different types of printers you should be aware of. The main categories are: - laser printers, ink-jets, dot-matrix, multifunctional, etc. Normally home computer users will use ink-jets as they are relatively cheap but superior in quality to dot-matrix. Laser jets and other printers created by new technology are more expensive and more commonly found in the offices.

- **Ink-jets (bubble-jets):** printers spray ionized tiny drops of ink onto a page to create an image. This is achieved by using magnetized plates which direct the ink's path onto the paper in the desired pattern. Almost all ink-jets offer a color option as standard, in varying degrees of resolution. Ink-jet printers are capable of producing high quality print which almost matches the quality of a laser printer. A standard ink-jet printer has a resolution of 300 dots per inch, although newer models have improved on that. As a rule color link-jet printers can also be used as a regular black and white printer.



- **Laser printers:** operate by shining a laser beam to produce an image on a drum. The drum is then rolled through a pool, or reservoir, or toner, and the electrically charged portions of the drum pick up ink. Finally, using a combination of heat and pressure, the ink on the drum is transferred onto the page. Laser printers print very fast, and the supply cartridges work a long time. Color laser printers use the same toner-based printing process as black and white (B/W) laser printers, except that they combine four different toner colors. Color laser printers can also be used as a regular black and white laser printer.
- **LED/LCD printers:** are types of electro photographic printers that are identical to laser printers in most ways. Both LCD (liquid crystal display) and LED (light-emitting diode) printers use a light source instead of a laser to create an image on a drum. In most contexts, "laser printer" covers LCD and LED printers as well. The print process is almost identical, but LED printers use Light Emitting Diodes to charge the drum, and the other uses Liquid Crystals. These printers produce a very high quality text and graphics print out.
- **Impact (Dot-matrix) printers:** use a set of closely spaced pins and a ribbon to print letters or other characters on a page. These printers actually impact the page to print a character, much like a typewriter. Dot-matrix printers vary in terms of speed and the number of pins they have. They can run at a speed anywhere between 50 and 500 CPS (Characters Per Second). The number of pins, which can vary between 9 to 24, determines the quality of the print job. Dot matrix printers are commonly used for printing invoices, purchase orders, shipping forms, labels, and other multi-part forms. Dot matrix printers can print through multi-part forms in a single pass, allowing them to produce more pages than even high-speed laser printers.
- **Solid Ink printers:** are page printers that use solid wax ink sticks in a "phase-change" process. They work by liquefying wax ink sticks into reservoirs, and then squirting the ink onto a transfer drum, from where it is cold-fused onto the paper in a single pass. Solid-ink printers offer better color consistency than do most technologies, with little variation caused by changes in temperature, humidity, or type of paper. Solid ink machines have better reliability, because they have fewer components in comparison, for example with color laser printers.
- **Dye Sublimation printers:** are professional devices widely used in demanding graphic arts and photographic applications. True these printers work by heating the ink so that it turns from a solid into a gas. The heating element can be set to different temperatures, thus controlling the amount of ink laid down in one spot. In practice, this means that color is applied as a continuous tone, rather than in dots, as with an inkjet. One color is laid over the whole of one sheet at a time, starting with yellow and ending with black. The ink is on large rolls of film which contain sheets of each color, so for an A4 print it will have an A4-size sheet of yellow, followed by a sheet of cyan, and so on. Dye sublimation requires particularly expensive special paper, as the dyes are designed to diffuse into the paper surface, mixing to create precise color shades.
- **Portable printers:** are usually fairly lightweight and sometimes carry the option of using a battery instead of drawing power from the computer. Usually they realize basic print resolutions suitable for plain text printing. You can find on the market the following types of the portable printers: Thermal printer, Thermal transfer printer and Ink-Jet printer. The main advantage of thermal and thermal transfer printers is that they can be very small. The smallest thermal and thermal transfer printers weigh approximately one pound. Usually the ink-jet portable printer weighs more than 2 pounds. Thermal printers require a special type of paper.
- **Plotters:** are large-scale printers that are very accurate at reproducing line drawings. They are commonly used for technical drawings such as engineering drawings or architectural blueprints. The two basic types of plotters are called flatbed plotters and drum plotters. Flatbed plotters are horizontally aligned with a flat surface to which a piece of paper is attached. The paper remains stationary and the printer moves pens across the paper to draw the image. Drum plotters, also called upright plotters, are vertically positioned. They have a drum that the paper rolls on. Drum plotters usually make more noise and are more compact than flatbed plotters.
- **Digital Photo printers:** Many middle range printers are now able to print photo quality images. Usually an option with color printers, specialist photo print heads allow a greater resolution to be achieved to improve photo image quality. Photo ink jet printers expand their gamuts by adding additional ink colors, usually light cyan and light magenta.
- **Network printer;** is a printer that provides output capabilities to all network users.
- **Multifunction printers:** combine top-quality color ink-jet or laser printing with plain-paper and PC faxing, color copying and color scanning, telephoning- all in one convenient, space-saving machine. If you work from home or have a small office a multifunctional device may be ideal.
- **Bravo Auto Printer:** is the world's first automated CD/DVD printing system that can truly be called innovative. It combines automatic, robotic-based CD or DVD printing along with full-color, 2400 dpi disc printing all in one compact, desktop unit.
- **Printers for banking:** these printers realize innovative technology and functionality to increase productivity, and reduce costs.
- **EZ CD/DVD Printers:** provide a low cost way to create professional printed CD-Rs and DVD-Rs. Instead of writing on the CD or applying labels, you can print directly on the CD surface! With high speed capabilities, a full color image can be printed directly on the top surface of your CDs in less than 1 minute.
- **Label Printers:** are the smartest way to print labels one at a time. The printers allow easy installation. You can get high-quality, professional results every time.
- **VersaLaser:** (Universal Laser Systems Inc.) is peripheral tool, that can transform images or drawings on your computer screen into real items made out of an amazing variety of materials... wood, plastic, fabric, paper, glass, leather, stone, ceramic, rubber... and it's as easy to use as your printer. 2 models of VersaLaser have 16"x12"(VL-200) and 24"x12" (VL-300) work areas.
- **3D Printers:** (Z Corporation). The ZPrinter 310 System creates physical models directly from computer-aided design system ("CAD") and other digital data in hours instead of days.
The printer is fast, versatile and simple, allowing engineers to produce a range of concept models and functional test parts quickly and inexpensively. The system is ideal for an office environment or educational institution, providing product developers easy access to a 3D Printer.

MEMORY

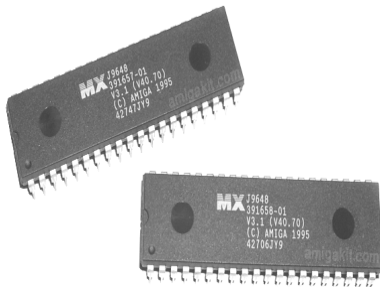
The term memory identifies data storage that comes in the form of chips, and the word storage is used for memory that exists on tapes or disks. Moreover, the term memory is usually used as shorthand for physical memory, which refers to the actual chips capable of holding data. Some computers also use virtual memory, which expands physical memory onto a hard disk.

In other words, Memory Unit is that component of a computer system, which is used to store the data, instructions and information before, during and after the processing by **ALU**. It is actually a work area (physically a collection of integrated circuits) within the computer, where the **CPU** stores the data and instructions. It is also known as a Main/Primary/Internal Memory. **Types of Memory:**

(1) Primary Memory (2) Secondary Memory (3) Cache Memory.

1. Primary memory: It has following three types:-

(A) Rom (Read Only Memory)



Read only Memory is an essential component of the memory unit. We know that the computer, being machine, itself has no intelligence or memory and requires instructions, which are given by man. Whenever the computer is switched on, it searches for the required instructions. The memory, which has these essential instructions, is known as Read Only Memory (ROM). The memory is permanent and is not erased when the system is switched off. As appears with its name, it is read type of memory i.e. it can be read only and not be written by user/programmer. The memory capacity of ROM varies from **64 KB to 256 KB** (1 Kilobyte = 1024 bytes) depending on the model of computer.

ROM contains a number of programs (set of instructions). The most important program of ROM is the Basic Input Output System (**BIOS**, pronounced as "**bye-os**") which activates the hardware (physical components of computer) such as keyboard, monitor, floppy disk etc. in communicating with the system and application software (set of instructions or programs).

There are following Types of ROM:

Mask ROM: There are many type of ROM chip. In this type of ROM, the information is stored at the time of its manufacturing. So, it cannot be altered or erased later on.

PROM: A PROM is a memory chip on which data can be written only once, a program has been written onto a PROM, it remains there forever. Unlike RAM, PROMs retain their contents when the computer is turned off. The difference as between a PROM and a ROM (read-only memory) is that a prom is manufactured as blank memory, whereas a ROM is programmed during the manufacturing process. To write data onto a PROM chip, you need a special device called a PROM programmer or PROM burner. The process of programming a PROM is sometimes called burning the PROM.

EPROM: EPROM is the acronym for Erasable programmable Read-Only Memory, and pronounced **ee-prom**, EPROM is a special type of memory that retains its contents until it is expos-ed to ultraviolet light. The ultraviolet light clears its contents, making it possible to re-pro-gram the memory. To write to and erase an EPROM, you need a special device called a PROM programmer or PROM burner.

EEPROM: Electrically Erasable programmable Read-only Memory or EEPROM is a special type of PROM, that can be erased by exposing it to an electrical charge, like other types of PROM, EEPROM retains its contents even when it is turned off. Also like other types of ROM, EEPROM is not, as fast as RAM. EEPROM is similar to flash memory (sometimes called flash EEPROM). The Principal difference is that EEPROM requires data to be written or erased once byte at a time whereas flash memory allows data to be written or erased in blocks, this makes flash memory faster.

(B) RAM (Random Access Memory)

Random Access Memory is another important component of the Memory unit. It is used to store data and instructions during the selection of programs. Contrary to ROM, RAM is temporary and is erased when the computer is switched off. RAM is a read/write type of memory, and thus can be read and written by the user/programmer; this memory is known as random access memory. The memory capacity of RAM varies from **640 KB** to several **megabytes** (1 Megabyte = 1024 KB) with different models of PC. **There are two types of RAM: (i) Static Ram (ii) Dynamic RAM.**



(i) Static Ram: is one that can store data as long as power is supplied to chip. These memories have the property that their contents are retained as long as power is kept on seconds, minutes, hours even days. **The advantage of Static RAM are-** No refresh necessary, simplified timing requirements & Higher Speed.

(ii) Dynamic RAM- Dynamic RAM are memory device in which the stored data will not remain permanently stored, even with power applied, unless the data are periodically written into memory. The dynamic memory cell of DRAMS retains data for only a limited time typically **10 nano second** after which the data are lost. **The advantage of Dynamic RAM are-** High storage capacity, less power requirements, less expensive & Data can not be stored permanent.

(C) Complementary Metal Oxide Semiconductor Memory (CMOS):

CMOS memory is used to store the system configuration, data, time and other important data. When the computer is switched on BIOS matches the information of CMOS with the peripheral devices and display error in case of mismatching.

2. Secondary Memory (External Storage Devices)

The purpose of external storage is to retain data and programs for future use. For example a program may be required at regular intervals. If such information is stored in an external storage media, then one can retrieve it as and when necessary, thus avoiding repeated typing. Any number of files containing information is stored on external media. Since they are permanent (they are not erased when the equipment is turned off) one can store a long file on external media, and later on work on it in sections, keeping all the sections in storage except the one currently in use. **The popular external storage media used with computers are:**

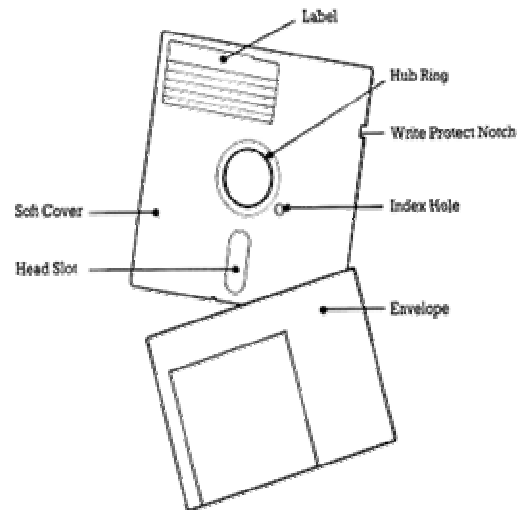
(A) Floppy Disks (B) Hard Disk (C) Magnetic Tapes (D) Optical Disk.

(A) Floppy Disks



The most common storage medium used on small today is floppy disks. It is a flexible plastic disk coated with magnetic material and looks like a phonograph record. Information can be recorded or read by inserting it into a disk drive connected to the computer. The disks are permanently encased in stiff paper jackets for protection and easy handling. An opening is provided in the jacket to facilitate reading and writing of information. Floppy disks are available in two standard sizes. One is **8-inch size** and the other

5^{1/4} inch, which is frequently referred to as the mini floppy. An 8-inch floppy holds much more information than a 5^{1/4} inch mini floppy. The actual volume of information depends not only on size but also on the density with which information can be recorded. The **5^{1/4} inch** floppy has become a standard one in industry. Recently, **3^{1/2} inch** floppy **5^{1/4} inch** disks have been announced for use in portable computers.



Storage Organization of Floppy Disk:

Data is recorded on disks in circular bands referred to as tracks. The read/write heads are designed to move in smaller increments across the data access area of the disk to find the appropriate tracks. As the precision of positioning. The read/write head increases width of the tracks become thinner. As the precision of positioning. The two most common track densities in use today are **48 tracks per inch (tpi)** and **96 tpi**. The recording surface of a **5-1/4 inch disk** is straightly less than **1 inch** therefore the usable tracks per inch are **40** or **80** in most case. Typically a disk is divided up into eight or nine sectors are equal wedge shaped areas used for storage the point at which a sector intersects a track is used to reference the data location. The track number indicates where to position. The read/write head and the sector number indicate when to activate the read/write heads as the disk spins.

Disks and drives are identifies as being either hard sectored or soft as below:-

- **Hard Sectored Disk:** Hard sectored disks always have the same numbers and size of sectors. The presence of the hard sectored marks allows data to be retrieved from the disk with less effort than from of double-sided, double density soft sectored disk. Hard sectored disks have been used most often with dedicated computer system that Handel the manipulation and production of text.
- **Soft Sectored Disk:** Today most microcomputer systems use soft sectored disk. Soft sectored disk are marked magnetically by the user's computer system during a process called formatting or initializing which determines the size and number of sectors on the disk. **IBM PC can have following type of diskette drives:** Single Side (160KB/ 180 KB) Double Sided (320KB/360KB), High Capacity (1.2MB)

(B) Hard Disks

Another magnetic media suitable for storing large volumes of information is the hard disk, popularly known as the Winchester disk. A hard disk pack consists of two or more magnetic plates fixed to a spindle; one below the other with a set of read / write heads. The disk pack permanently sealed inside a casing to protect it from dust and other contaminations, thus increasing its operational reliability and date integrity. In some hard disk system date is stored in the same way as it is diskettes (floppy). **Hard Disk has the following characteristics are:**



- They are rigid metal platters connected to a central spindle.
- The entire disk unit is placed in a permanently sealed containers.

- Air flows through the container is filtered to prevent contamination and
- The disks are rotated at very high speed (usually around 3600PRM)

These Disk drives can have four or more disk platters in a sealed unit. In most of disk these disk units the read/write heads never touch the surfaces of the disks. A set of disk drives are connected to a disk controller. The Disk controller accepts commands from the computer and positions the read/write head of specified disk for reading and writing. In order to recorder write in a disk pack. The computer must specify the driver no., cylinder no., surface no. And sector no., drive no. Should be specified because controller. Normally controls more than one driver.

(C) Magnetic Tapes

Relatively inexpensive storage media known as magnetic tapes are sometimes used a backup media. A standard 2,400 feet tape can store about 40 million characters and can be read at a speed of 1,60,000 characters per second. Remember that a tape, like music cassette, is a sequential device and therefore one has to read all previous records to reach a particular one. However, some computers support cassette tapes which are smaller and cheaper but slower. The storage capacity of a cassette is around 2, 50, 000 characters.



(D) Optical Disk



The Optical disk is made by resin material and it is coated by optical material such as Aluminum. Internally, the disk divided into different concentric circle called tracks and tracks divided into different number of block called sector. In Optical disk, involves the use of a high power laser beam to burn microscopic spots in an aluminum surface coating. Data is represented by the presence (binary 1) and the absent (binary 0) of holes in the storage location. A much lower power laser beam is used to retrieve the data. The patterns spots detected by the leaser (during the read operation) are converted into electrical signals used by the computer. **Following are the main kinds of optical disks:** (i) CD-Rom (Compact Disk- read only memory) (ii) Write once, read many (WORM) (iii) Erasable Optical Disk

(i) CD-Rom (Compact Disk-read only memory): In this disk the data is imprinted by the disk manufacturer. The user can not erase, change it, or write on the disk, the user can read only. The data thus type of optical disk is calling CD-Rom.

(ii) Write Once, Read Many (WORM): This optical disk is also imprinted by the manufacturer but the buyer can write once only. After that they can only be read from then on again, no changes can be made.

(iii) Erasable Optical Disk: In these disks the date can be read/write both operations can be performed.

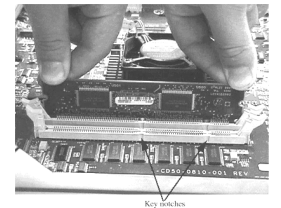


3. Cache Memory

The speed of CPU is extremely high compared to the access time of primary memory. Therefore the working of CPU decreases due to the slow speed of primary memory. To decrease the mismatch in operating speed, a small memory chip is attached between CPU and primary (Main Memory) whose access time is very nearest to the processing speed of CPU. It is called Cache Memory.

Cache (pronounced cash) memory is extremely fast in memory, built a computer's central processing unit (CPU), or beside it away on a separate chip. The CPU cache memory used for instructions that are needed again to run programs that improve the overall system speed store. The advantage of the cache memory is that not using the CPU on the motherboard system bus for data transmission. If data needs to be slowed passed through the system bus, the speed of data transmission capacity of the main board. The CPU can process data much faster by avoiding the bottlenecks of the system bus created.

Why is it when most programs are open and running, they use very little resources. If these resources are held in the cache, programs can work faster and more efficiently. All other things being equal, cache is so effective, the system performance for a computer with a fast processor cache can be a little lower, with benchmarks as a system with a slower CPU with more cache memory have. Cache in the CPU itself was built, referred to as Level 1 (L1) cache. Cache, which is on a separate chip in addition to the CPU, which is called Level 2 (L2) cache. Some CPUs have both L1 and L2 cache built-in and appoint each cache chip as a Level 3 (L3) cache.



COMPUTER SOFTWARE

Computer consists of four basic element hardware, software, firmware and human ware. The hardware of computer system alone is little different to any other complex piece of electronic machinery. The hardware would not work without programs (Set of instructions). The software directs and guides the operation of each device including CPU. The set of programs which control the activities of computer system or which may be processed on computer to do some useful work, are called software. As car needs fuel to run, similarly computer hardware needs software to do anything. Software may be put on disk, cassette, magnetic tape or Semi-conductor memory.

So we can say that software is a set of programs documents, procedure and routines associated with the operation of computer system. In other words, software means a collection of programs whose objective is to enhance the capabilities of the hardware.

Classification of Software

Software can be classified into two broad categories: **1. System Software** **2. Application Software**. *System software performs computer- related tasks, such as managing input and output devices. Application software performs people-related tasks, such as human resources and marketing.*

1. System Software:

System software performs the basic functions necessary to start and operate a computer. It controls and monitors the various activities and resources of a computer and makes it easier and more efficient to use the computer. **System software is classified into three categories as follow:**

- (A) **System Control software:** system control software includes programs that monitor, control, coordinate and manage the resources and functions of a computer system. The most important system software is the operating system and DBMS.
- (B) **System support software:** System support software is software that supports, or, facilitates, the smooth and efficient operation of a computer. There are four major categories of systems support software: utility programs, language translators, database management systems, and performance statistics software.
- (C) **Systems Development Software:** System development Software helps system developers design and build better system. An example is computer-aided software engineering or CASE, a collection of programs that assist developers in developing an information system.

2. Application Software

Application software can be divided into two categories: general purpose software and application dedicated software. Application software is designed to perform people-related tasks such as payroll, inventory, and sales analysis. **There are two types of application software:**

- **General Purpose Software:** General Purpose software is used to perform common business applications such as word-processing graphics, payroll, and accounting.
- **Special Application Based Software:** The second type of applications software is Special application-Based software which includes specialized, applications designed for every specific purpose. Such a program cannot easily be modified and adopted for other applications because it is designed to perform a specific task. (Educational related application, Medical related application and scientific application)

Firmware

A programs by which perform predefined instruction in machine memory called firmware, examples ROM, PROM.EPROM etc.

Humanware

The Human beings who used the computer called human ware.

Computer Language

The functioning of a computer is controlled by a set of instructions (called a computer program). These instructions are written to tell the computer. What operation to perform? Where to locate data? How to present results? When to make certain decisions? and so on. The communication between two parties whether they are machines or human beings always needs a common language or terminology. The language used in the communication of computer instructions is known as the programming language into this language. The computer has its own language and any communication with the computer must be in its language or translated into this language. A language is a system of communication. We communicate to one another ideas and emotions by means of language. Similarly, a computer language is a mean of communication, which is used to communicate between people and the machine (Computer). Using some computer language a programmer can still the computer what he wants to do.

Computer languages divide in three parts:- (a) Machine languages (low level languages) (b) Assembly (or symbolic) languages, and (C) High level language.

Lesson: 5

Operating System

Introduction

An operating system (OS) is software (programs and data) that runs on computers and manages the computer hardware and provides common services for efficient execution of various application software.

For hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between application programs and the computer hardware, although the application code is usually executed directly by the hardware. Operating systems are found on almost any device that contains a computer, from cellular phones and video game consoles to supercomputers and web servers. Operating systems are two-sided platforms, bringing consumers (the first side) and program developers (the second side) together in a single market. Some popular modern operating systems for personal computers include Microsoft Windows, Mac OS X, and Linux. Operating Systems is also a field of study within computer science. Operating System is the medium of interaction (communication) between application program and computer hardware.

In other words, An Operating System is System software which directs the computer in performing tasks that are basics to proper functioning of the system or commonly needed by system users.

The Operating System serves as the "**middleman**" between the computer hardware and application software. The Operating System is the set of software routines that sits between the application program and the hardware. All systems have system software.

Functions of Operating System:

An operating system is an integrated set of system programs whose major functions are:—

- Manage resources (CPU, disk, tape, printer, memory, etc.)
- Schedule resources
- Control Input and Output
- Handle error recovery
- Manage memory
- Manage processor
- Schedule tasks and jobs
- Provides security
- Supplies user commands

Operating Systems have developed separately from each other over the last thirty years, occasionally borrowing ideas from each other and occasionally working in a similar manner to solve common problems of the computer and user.

All computers must have an Operating System. The Operating System controls input and output; makes reasonable effort to control peripherals and in short acts as the interface between the user, the software, and the hardware.

Operating Systems

MS-DOS

IBM compatible machines used an operating system called MS-DOS. MS stands for "Microsoft" (the trade name), while DOS stands for "Disk Operating System", which tells us that the original purpose of DOS was to provide an interface between a computer and its disk drives. Technically, DOS is a high-level interface between an application program and the computer. DOS has been extended further, allowing programs to handle the tasks of simple memory management, disk operations, and assorted system tasks (e.g. date/time), user input commands and managing input/output devices i.e. it provides operating instructions for the computer to manage both hardware and software. Versions 3.1 and up also provided basic networking functions. Beyond this, DOS also provides the user with the important facility of file and disk management (often referred to as disk-housekeeping).

The development of MS-DOS/PC-DOS began in October 1980, when IBM began searching the market for a suitable operating system. Later, IBM approached a relatively small company called Microsoft, which specialized in language selling.

Many people said that DOS has no future. It has seen its heyday and now it's up to high-resolution GUI's (Graphic User-Interfaces - e.g. Windows 95) to lead the operating system pack. But let's not be too quick to dismiss it. There are many reasons why DOS is an essential part of many of today's finest systems.

OS/2

Having survived some dark ages since its invention in 1987. Operating System/7 (OS/2) was originally developed as a joint project between IBM and Microsoft. Its intention was to replace the Disk Operating System (DOS) as the operating system of choice.

OS/2 included several different applications and programs that you can use to perform a variety of tasks. It is a true multi-tasking operating system suitable for both desktop and server duties. The OS/2 version 2.1 delivers a robust platform that offers a user-friendly desktop paradigm, flawless DOS and Microsoft Windows support connectivity to all classes of computers.

Microsoft Windows

Microsoft Windows is a family of proprietary operating systems most commonly used on personal computers. It is the most common family of operating systems for the personal computer, with about 90% of the market share. Currently, the most widely used version of the Windows family is Windows XP, released on October 25, 2001. The newest version is Windows 7 for personal computers and Windows Server 2008 R2 for servers.

It originated in 1981 as an add-on to the older MS-DOS operating system for the IBM PC. Released in 1985, Microsoft came to dominate the business world of personal computers, and went on to set a number of industry standards and commonplace applications beginning with Windows XP, all modern versions are based on the Windows NT kernel. Current versions of Windows run on IA-32 and x86-64 processors, although older versions sometimes supported other architectures.

Windows is also used on servers, supporting applications such as web servers and database servers. In recent years, Microsoft has spent significant marketing and research & development money to demonstrate that Windows is capable of running any enterprise application, which has resulted in consistent price/performance records (see the TPC) and significant acceptance in the enterprise market. However, its usage in servers is not as widespread as personal computers, and here Windows actively competes against Linux and BSD for market share, while still capturing a steady majority by some accounts

UNIX and UNIX-like operating systems

Ken Thompson wrote **B**, mainly based on **BCPL**, which he used to write UNIX, based on his experience in the MULTICS project. **B** was replaced by **C**, and UNIX developed into a large, complex family of inter-related operating systems which have been influential in every modern operating system (see History). The Unix-like family is a diverse group of operating systems, with several major sub-categories including System V, BSD, and GNU/Linux. The name "UNIX" is a trademark of The Open Group which licenses it for use with any operating system that has been shown to conform to their definitions. "Unix-like" is commonly used to refer to the large set of operating systems which resemble the original UNIX.

Unix-like systems run on a wide variety of machine architectures. They are used heavily for servers in business, as well as workstations in academic and engineering environments. Free UNIX variants, such as GNU/Linux and BSD, are popular in these areas.

Some UNIX variants like HP's HP-UX and IBM's AIX are designed to run only on that vendor's hardware. Others, such as Solaris, can run on multiple types of hardware, including x86 servers and PCs. Apple's Mac OS X, a hybrid kernel-based BSD variant derived from NeXTSTEP, Mach, and FreeBSD, has replaced Apple's earlier (non-Unix) Mac OS.

UNIX interoperability was sought by establishing the POSIX standard. The POSIX standard can be applied to any operating system, although it was originally created for various Unix variants.

BSD and its descendants

A subgroup of the UNIX family is the Berkeley Software Distribution family, which includes FreeBSD, NetBSD, and OpenBSD. These operating systems are most commonly found on web servers, although they can also function as a personal computer OS. The internet owes much of its existence to BSD, as many of the protocols now commonly used by computers to connect, send and receive data over a network were widely implemented and refined in BSD. The **World Wide Web** was also first demonstrated on a number of computers running an OS based on BSD called NextStep.

BSD has its roots in UNIX. In 1974, University of California, Berkeley installed its first Unix system. Over time, students and staff in the computer science department there began adding new programs to make things easier, such as text editors. When Berkeley received new VAX computers in 1978 with Unix installed, the school's undergraduates modified Unix even more in order to take advantage of the computer's hardware possibilities. The Defense Advanced Research Projects Agency of the US Department of Defense took interest, and decided to fund the project. Many schools, corporations, and government organizations took notice and started to use Berkeley's version of Unix instead of the official one distributed by AT&T. Steve Jobs, upon leaving Apple Inc. in 1985, formed NeXT Inc., a company that manufactured high-end computers running on a variation of BSD called **NeXTSTEP**. One of these computers was used by Tim Berners-Lee as the first web server to create the World Wide Web.

Developers like Keith Bostic encouraged the project to replace any non-free code that originated with Bell Labs. Once this was done, however, AT&T sued. Eventually, after two years of legal disputes, the BSD project came out ahead and spawned a number of free derivatives, such as FreeBSD and NetBSD. However, the two year wait had set the stage for two projects that would ultimately eclipse both BSD and UNIX: GNU and Linux.

Mac OS X

Mac OS X is a line of partially proprietary graphical operating systems developed, marketed, and sold by Apple Inc., the latest of which is pre-loaded on all currently shipping Macintosh computers. Mac OS X is the successor to the original Mac OS, which had been Apple's primary operating system since 1984. Unlike its predecessor, Mac OS X is a UNIX operating system built on technology that had been developed at NeXT through the second half of the 1980s and up until Apple purchased the company in early 1997.

The operating system was first released in 1999 as **Mac OS X Server 1.0**, with a desktop-oriented version (Mac OS X v10.0) following in March 2001. Since then, six more distinct "client" and "server" editions of Mac OS X have been released, the most recent being Mac OS X v10.6, which was first made available on August 28, 2009. Releases of Mac OS X are named after big cats; the current version of Mac OS X is "Snow Leopard".

The server edition, Mac OS X Server, is architecturally identical to its desktop counterpart but usually runs on Apple's line of Macintosh server hardware. Mac OS X Server includes work group management and administration software tools that provide simplified access to key network services, including a mail transfer agent, a Samba server, an LDAP server, a domain name server, and others.

Plan 9

Ken Thompson, Dennis Ritchie and Douglas McIlroy at **Bell Labs** designed and developed the **C programming language** to build the operating system **UNIX**. Programmers at Bell Labs went on to develop Plan 9 and Inferno, which were engineered for modern distributed environments. Plan 9 was designed from the start to be a networked operating system, and had graphics built-in, unlike UNIX, which added these features to the design later. It is currently released under the Lucent Public License. Inferno was sold to Vita Nuova Holdings and has been released under a GPL/MIT

Linux and GNU

Linux is the generic name for a UNIX like operating system that can be used on a wide range of devices from supercomputers to wristwatches. The Linux kernel is released under an open source license, so anyone can read and modify its code. It has been modified to run on a large variety of electronics. Although estimates suggest it is used on only 0.5-2% of all personal computers, it has been widely adopted for use in servers and embedded systems (such as cell phones). Linux has superseded UNIX in most places, and is used on the 10 most powerful supercomputers in the world.

The GNU project is a mass collaboration of programmers who seek to create a completely free and open operating system that was similar to UNIX but with completely original code. It was started in 1983 by Richard Stallman, and is responsible for many of the parts of most Linux variants. For this reason, Linux is often called GNU/Linux. Thousands of pieces of software for virtually every operating system are licensed under the GNU General Public License. Meanwhile, the Linux kernel began as a side project of Linus Torvalds, a university student from Finland. In 1991, Torvalds began work on it, and posted information about his project on a newsgroup for computer students and programmers. He received a wave of support and volunteers who ended up creating a full-fledged kernel. Programmers from GNU took notice, and members of both projects worked to integrate the finished GNU parts into the linux kernel in order to create a full-fledged operating system.

Google Chrome OS

Chrome is an operating system based on the Linux kernel and designed by **Google**. Chrome targets computer users that spend most of their time on the internet—it is technically only a web browser with no other applications, and relies on internet applications used in the web browser to accomplish tasks such as word processing and media viewing.

Other

Older operating systems which are still used in niche markets include OS/2 from IBM and Microsoft; Mac OS, the non-Unix precursor to Apple's Mac OS X; BeOS; XTS-300. Some, most notably Haiku, RISC OS, MorphOS and AmigaOS 4 continue to be developed as minority platforms for enthusiast communities and specialist applications. OpenVMS formerly from DEC, is still under active development by Hewlett-Packard. Yet other operating systems are used almost exclusively in academia, for operating systems education or to do research on operating system concepts. A typical example of a system that fulfills both roles is MINIX, while for example Singularity is used purely for research.

Lesson: 6

Windows

Introduction

Windows is a personal computer operating system from Microsoft that, together with some commonly used business applications such as Microsoft Word and Excel, has become a de facto "standard" for individual users in most corporations as well as in most homes.

The original 1985 version of Windows introduced to home and business PC users many of the graphical user interface (GUI) ideas that were developed at an experimental lab at Xerox and introduced commercially by Apple's Lisa and Macintosh computers.

In other words, Microsoft Windows is a series of software operating systems and graphical user interfaces produced by Microsoft.

Microsoft first introduced an operating environment named Windows in November 1985 as an add-on to MS-DOS in response to the growing interest in graphical user interfaces (GUIs). Microsoft Windows came to dominate the world's personal computer market, overtaking Mac OS, which had been introduced previously.

As of October 2009, Windows had approximately 91% of the market share of the client operating systems for usage on the Internet. The most recent client version of Windows is Windows 7, the most recent server version is Windows Server 2008 R2, the most recent mobile OS version is Windows Mobile 6.5.

Current versions of windows

- **Windows 7:** for home and business desktops and portable computers.
- **Windows 7 Starter:** A variant for developing countries and netbooks, in which the Aero theme is not included, nor 64-bit compatibility. This edition will be available pre-installed on computers through system integrators or computer manufacturers.
- **Windows 7 Home Basic:** Windows 7 Home Basic will be available in emerging markets such as Brazil, People's Republic of China, India, Indonesia, Mexico, Pakistan, the Philippines, and Thailand. It will not be available in countries such as Australia, Canada, France, Germany, The Netherlands, United Arab Emirates, Saudi Arabia, New Zealand, the United States, and the United Kingdom. Some Aero options are excluded along with several new features.
- **Windows 7 Home Premium:** This edition contains features aimed at the home market segment, such as Windows Media Center, Windows Aero and touch-screen controls.
- **Windows 7 Professional:** This edition is targeted toward enthusiasts and small business users. It includes all the features of Windows 7 Home Premium, and adds the ability to participate in a Windows Server domain. Additional features include operating as a Remote Desktop server, location aware printing, Encrypting File System, Presentation Mode and Windows XP Mode.
- **Windows 7 Enterprise:** (Microsoft Windows NT 6.1.7600) This edition targets the enterprise segment of the market and will be sold through volume licensing to companies which have Software Assurance contract with Microsoft. Additional features include support for Multilingual User Interface (MUI) packages, BitLocker Drive Encryption, and UNIX application-support. Not available through retail or OEM channels, this edition will be distributed through Microsoft Software Assurance (SA). As a result it includes several SA-only benefits, including a license allowing the running of multiple virtual machines, and activation via VLK.
- **Windows 7 Ultimate:** Windows 7 Ultimate contains the same features as Windows 7 Enterprise, but unlike that edition it will be available to home users on an individual license basis. Windows 7 Home Premium and Windows 7 Professional users will be able to upgrade to Windows 7 Ultimate for a fee using Windows Anytime Upgrade if they wish to do so. Unlike Windows Vista Ultimate, the Windows 7 Ultimate edition will not include the Windows Ultimate Extras feature or any exclusive features. (6.1.7600)
- **Windows Server 2008 R2 for servers.**
- **Windows Web Server 2008 R2.**
- **Windows Server 2008 R2 Standard Edition.**
- **Windows Server 2008 R2 Enterprise Edition.**
- **Windows Server 2008 R2 Datacenter Edition.**
- **Windows Server 2008 R2 for Itanium-based Systems.**
- **Windows HPC Server 2008 R2 for high Performance supercomputers.**
- **Windows Server 2008 R2 Foundation.**
- **Windows Mobile 6.5:** for smartphones and PDAs
- **Windows Home Server:** Announced at the 2007 Consumer Electronics Show (CES) in Las Vegas. Windows Home Server is intended to be a solution for homes with multiple connected PCs to offer file sharing, automated backups, and remote access.
- **Windows XP Embedded:** for embedded systems requiring parts of the Windows XP infrastructure

- **Windows Fundamentals for Legacy PCs:** a low-end version of Windows XP that is intended to be a thin-client that works with older hardware.
- **Windows Embedded CE 6.0:** for embedded systems (not based on the Windows NT kernel)

Future versions

Windows 8: Currently being developed as the successor to Windows 7. It will be released in 2011.

Windows 9: A voice-activated operating system succeeded by Windows 8 scheduled to be released in Christmas 2013.

Brief Explanation of popular window version.

WINDOWS 95

We have been using DOS and Windows version that ran on DOS. Now we have Windows version that itself is an operating system. The look and feel of Windows has been improved and make it easier and faster for us to get our work done. Windows 95 is an integrated and complete Windows Operating System that starts with the basic functionalities of DOS and Windows.

Windows 95 added major enhancements when compared to Windows 3.11. **Some of the new features that Windows 95 have which Windows 3.11 does not have are:**

- Plug and Play, which allowed hardware devices to be automatically installed into the computer with the proper software.
- 32 Bit, 32-Bit operating system allowing the computer to run faster and more efficiently.
- Memory, Windows 95 has an improved memory handling processes compared to Windows 3.11.
- Right mouse click, allows you new access and text manipulation by utilizing both buttons instead of one.
- CD-Player enhanced CD-Player with improved usability and AutoPlay feature.

WINDOWS NT

Windows NT 4.0 is the look and feel of Windows 95 however is a completely different Operating System. Windows NT contains advanced security features, advanced network support, Full 32-bit operating system, advanced multitasking, user administration and much more. While NT is a very advanced Operating system it does lack the support of drivers, features, and gaming support when compared to Windows 95/Windows 98 and is why even today Windows NT is still used primarily by businesses and technical users.

WINDOWS 98

Microsoft Windows 98 is the upgrade to Microsoft Windows 95 Operating System. While this was not as big as release as Windows 95, Windows 98 has significant updates, fixes and support for new peripherals. Today every machine is supporting Windows 98 Operating System. You will also be using Windows 98 as your operating system.

In Windows 98, you can move items that are already in the Start menu by dragging and dropping as well. Simply point to an item, click the left mouse button, it down as you drag. As with adding a shortcut, hovering over a submenu item opens at submenu, and Windows displays a divider to indicate where the item would appear if you dropped it. **Features of Windows 98 Operating System:**

- **Protection:** Windows 98 includes additional protection for important files on your computer such as backing up.
- **Improved support:** Improved support for new digital devices
- **FAT32:** Windows 98 has the capability of converting your drive to FAT32 without losing any information.
- **Interface:** Users of Windows 95 and NT will enjoy the same easy interface.
- **Internet Explorer 4.0:** Included Internet Explorer 4.0 web browser for net surfing.
- **Customizable Taskbar:** It has added many nice new features to the taskbar which Windows 95 and WindowsNT do not have.
- **Active Desktop:** Includes Active Desktop which allows the users to customize there desktop with the look of the Internet.

WINDOWS 2000

Windows 2000 was released on February 17, 2000. Some computer manufacturers were selling computers preinstalled with Win 2000 in January. Windows 2000 is the new name for Windows NT 5.0, the replacement for the current Windows NT 4.0. It employs the same core technologies as NT, but adds many new ones that were not previously available in NT, such as Plug-and-Play, support for USB devices, power management, DirectX 7.x, etc. **There are different types of versions of Windows 2000:**

- **WINDOWS 2000 PROFESSIONAL:** Windows 2000 Professional is the workstation edition of Windows 2000.
- **Windows 2000 Server/Advanced Server:** Windows 2000 Server/Advanced Server is the server edition of Windows 2000, which is designed to serve small to mid-sized businesses and workgroups. Server supports up to 4GB of physical RAM and up to 4 processors per computer. Advanced Server supports up to 8GB of RAM and 8 processors per computer.
- **Windows 2000 Datacenter Server:** Windows 2000 Datacenter Server is designed for large businesses and computer clusters. Datacenter supports up to 32 processors per computer and up to 64GB of RAM, as well as built-in clustering and load-balancing features.

WINDOWS XP

It is produced by Microsoft for use on personal computers, including home and business desktops, laptops and media centers. First released to computer manufacturers on August 24, 2001, it is the second most popular version of Windows, based on installed user base. The name "XP" is short for "eXPerience".

WINDOWS 7

is the current release of Microsoft Windows, a series of operating systems produced by Microsoft for use on personal computers, including home and business desktops, laptops, netbooks, tablet PCs, and media center PCs. Windows 7 was released to manufacturing on July 22, 2009 and reached general retail availability worldwide on October 22, 2009, less than three years after the release of its predecessor, Windows Vista. Windows 7's server counterpart, Windows Server 2008 R2, was released at the same time.

Unlike Windows Vista, which introduced a large number of new features, Windows 7 was intended to be a more focused, incremental upgrade to the Windows line, with the goal of being compatible with applications and hardware with which Windows Vista was already compatible. Presentations given by Microsoft in 2008 focused on multi-touch support, a redesigned Windows shell with a new taskbar, referred to as the Super bar, a home networking system called Home Group, and performance improvements. Some standard applications that have been included with prior releases of Microsoft Windows, including Windows Calendar, Windows Mail, Windows Movie Maker, and Windows Photo Gallery, are not included in Windows 7; most are instead offered separately at no charge as part of the Windows Live Essentials suite.

WINDOWS 8

is the official name for the next version of Microsoft Windows, a series of operating systems produced by Microsoft for use on personal computers, including home and business desktops, laptops, netbooks, tablet PCs, and media center PCs. According to unofficial sources, the release date for Windows 8 has been set for October 2012.

How to start up windows.

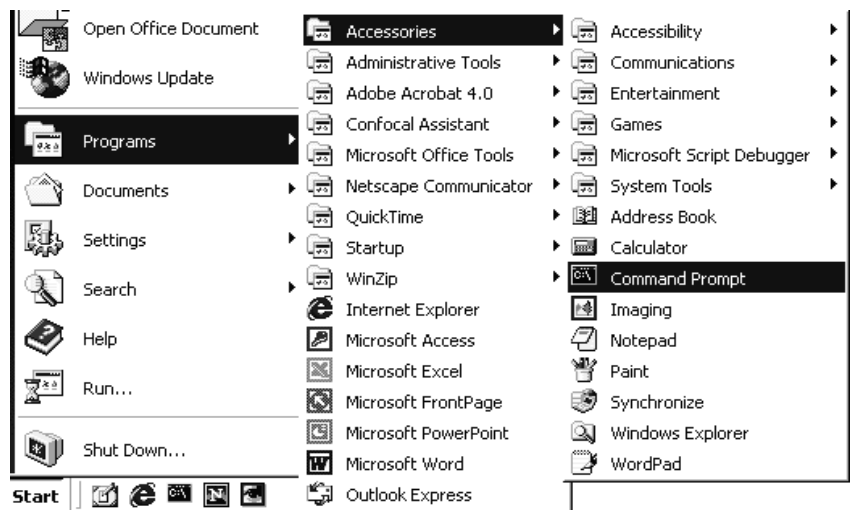
After a few seconds you'll see the Windows start-up logo. Now the Windows 'starting screen-the Desktop-appears as below:
Depending on your computer and the options you have chosen, you may see different desktop on your computer.)

Starting with the "Start" Menu

When you click the Start button using Mouse, you see a menu that contains everything you need to begin using Windows.

To select an item from the menu, move the mouse around the menu box and click on it. Also, there is a highlighted shaded color which moves along with mouse pointer inside the menu.

An overview of each command is shown below:-



Note: *Depending on your computer and the options you have chosen, you may see additional items on your menu.*

Command	Does this
Programs	Displays a list of Programs you can start.
Documents	Displays a list of documents that you've opened previously.
Setting	Displays a list of system components for which you can change setting.
Find	Enables you to find a folder file.
Help	Starts help. You can then use the Help Contents, Index.
Run	Starts a program or opens a folder when you type an MS-DOS command.
Shut Down	Shuts down or restarts you computer, or logs you off.

Selecting Menu Commands:

Once a menu is open, you can select any of the highlighted commands in the menu. You can also select any of the menu commands **in any of the following ways:**

- By typing the underlined letter in the command name.
- By moving the mouse down and clicking on a command's name.
- By pressing the down-arrow or up-arrow keys on your keyboard to highlight the desired command name and then pressing **<Enter>**.

You can cancel a menu (that is, make the menu disappear without selecting any commands) by simply pressing **Esc key** or by clicking from the mouse anywhere outside the menu.

Special Indicators in Menus

Menus often have special symbols that tell you a little more about the menu commands. For example, notice that many of these menu commands have additional words or symbols next to the command name. The following are the meanings of these words or symbols:

A Grayed (Dimmed) Command

When a command shown is not highlighted or dimmed or grayed, it means that this choice is not currently available to you. A command can be dimmed for a number of reasons. For example, if you want to paste the particular item or data you must select that item or data and then you can access the dimmed commands.

Function of a triangle (>)

A triangle to the right of a menu command means that the command has additional sub choices for you to make. This is called cascading menu. You can select from the submenu or cascaded menu the same way you select from a normal menu.

Exiting From Windows

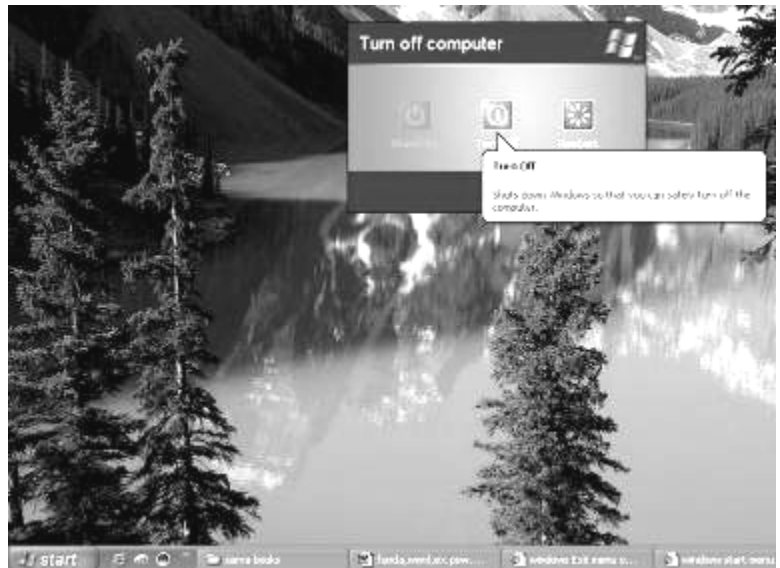
After your work is finished, you must shut down the computer. You should not switch off the computer directly. By selecting the shut down option from start button you can shut down your computer. By clicking on the shut down button you can see your entire desktop colour changes and menu appears in the middle of your desktop as shown in figure.

What does Accessories mean in window?

Window has word has word processor, calculator, calendar, etc So to start Accessories click Start on the Desktop –**Program- Accessories**.

Following are the accessories in Windows:

1. Calculator
2. Character Map
3. Note Pad
4. WordPad
5. Paint
6. Games
7. Media Player
8. Clock
9. Sound Recorder



How to reinstall Windows XP?

First, locate the Windows CD that shipped with your PC, along with the CDs for your application software. If you downloaded your antivirus, firewall, or other programs, copy those downloads to a CD or to some other type of removable media. (If your system didn't ship with a Windows CD, your reinstallation files are situated on your hard drive; I'll describe how to access them in just a minute.) Also, dig up the instructions that your ISP sent you for configuring your network settings, and keep them close at hand.

Copy the contents of your '**C:\Documents and Settings**' folder (or whichever folder you store your personal files on) to a CD or other removable medium. Then grab any other critical data and back it up. It helps to collect the installers for the latest drivers for your PC's graphics card and other hardware, too.

Ready to Reinstall

Now insert the Windows CD that came with your PC, and reboot your system. If you didn't receive a Windows disc with your machine, the files you need are sitting in a hidden partition on your hard drive. To access them, press the keys indicated on your screen when you reboot, but before Windows loads. The keys differ from vendor to vendor, so contact your PC's manufacturer if you don't see the prompt. In many instances, the only available option is 'Return the drive to its factory condition', which destroys all documents, photos, and other data files on your PC. That's why you made a copy of your data folders.

You get more options--including the ability to preserve your files and settings--when you use Microsoft's own Windows XP installation disc. Make your selection, and follow the on-screen prompts to complete the reinstallation.

Starting Over

Regardless of which option you choose, you'll have to reconfigure your network connections, reinstall some of your device drivers, and update XP and your applications manually.

To configure your Internet connection, right-click My Network Places, click Create a new connection, and follow the prompts, entering the appropriate information you received from your ISP.

Once you've re-established your Internet link, you must reinstall and update your firewall, antivirus, and antispyware programs.

Next, check to see which of your device drivers need updates: Right-click My Computer and select Properties, Hardware, Device Manager. Look for entries with yellow question marks or red exclamation points. A question mark indicates that Windows is using a generic driver for that device instead of one specifically designed for it; an exclamation point means that the device is not working.

The drivers for graphics boards, sound cards, and printers are most likely to need an update. If you haven't already done so, visit the vendors' Web sites to download updated drivers to your PC. Run the installer for each updated driver, allowing XP to reboot when needed, or right-click the entry in Device Manager, choose Update Driver, and step through the wizard, selecting No, not this time to the Windows Update question, and choosing the specified location option when it appears. When you can navigate to the driver file, select it and click OK to install it. When you finish updating your drivers, close all open windows.

Updates Galore

Your next stop is Microsoft's Windows Update site. Click Start, Windows Update, and follow the prompts. Since you'll probably be downloading many megabytes of updates, you might want to find yourself a good book or seek some other diversion while you wait.

When the downloading is complete, you'll be ready to reinstall and update your applications. Don't forget to update your critical apps as well. Microsoft Office, in particular has some important updates. Download them at the Microsoft Office Online Downloads page.

Once you've restored your applications, begin replacing your data. The first priorities are the My Documents and Application Data folders, which you'll find in the folder with your logon name inside 'C:\Documents and Settings'. To bring back your Internet Explorer favorites, restore the contents of the Favorites folder. Also restore the Shared Data and Application Data folders inside 'C:\Documents and Settings\Shared Documents'. Once you've reintroduced all of your data, your Windows refresh will be complete.

Basic of Window 7

Windows 7 is the latest in graphical operating systems from Microsoft. Its roots go back to early versions of Windows which acted as a shell on top of MS-DOS. Today's operating system is a distant cousin to the early versions of Windows. You will find Windows 7 to be a very powerful, friendly, and easy to use operating system. In the past, Microsoft has been criticized relative to Apple for what was said to be gaps in power and usability between Windows and Mac OS. Many of these gaps have now disappeared and in some ways, Windows is easier to use and more powerful than its nemesis, Mac OS X.

Windows 7 tries to hide a lot of back end processing and is noticeably faster than Windows Vista at many of the same tasks. You will like what you find in Windows 7.

The first thing you will notice upon booting into Windows 7 for the first time is the more simplistic feel it provides. Your desktop is not inundated with icons (some with no perceived value to you) and instead a simple Recycle Bin sits on the desktop. Some PC manufacturers may helpfully provide a bunch of shortcut icons to their favorite applications, but a clean install of Windows would find a clean desktop. The traditional "Quick Launch" bar is missing and the status bar icons helpfully hide away so you do not need to see them when you don't want to. They've added the date to the larger task bar, a great feature for those of us always running our mouse pointed to the bottom right to figure out what the date is.



At this point, we recommend checking out the new interface. Click on the Start menu, open a few windows. Open an application. It's going to be a different feel than previous Windows versions, but still feel familiar to you. The first thing we're going to check out is the **Task Bar**.



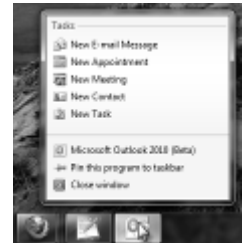
The Taskbar

The Windows 7 **Taskbar** is the starting point for almost everything you do in Windows 7. The first button on the far left is the Start Menu. You'll notice the *Quick Launch* toolbar that a lot of us found handy in Windows XP is missing and instead is replaced with the ability to *pin* software icons to the bar so that you can quickly launch it at any time.



On the bar above, the  icon has button outline around it with a second layer behind it. The outline indicates that Internet Explorer is open and the second layer indicates that two IE windows are open. Contrast this with the  icon which is not open. Without an outline, the application is simply *pinned* to the taskbar and not currently open. In the Taskbar image at the top, you can see Firefox as two layers behind the main one, this indicates Firefox has three or more windows open at a time.

When you run your mouse over the icon on the Taskbar, you will get a preview of the windows currently open. When you run your mouse over one of the Windows show, it will appear on your screen for you to preview.



In the taskbar **Notification Area** (formerly called the System Tray) you will see the first menu, allowing you access to all of the hidden notification area icons, and then the other options which have been pinned to the notification area such as the battery life, windows messages, networking, and audio settings. Additionally, you see the time & current date.

At the far right you see a box with a slight shadow effect. This button is the **Show Desktop** button and will minimize your open windows to show you the Windows desktop.

When you click on the show hidden notifications arrow, you will see a popup of all of the notification icons that are currently hidden. If you'd like to access one of them, simply click on it to open. You can also customize the notification area to include one of those icons by clicking **Customize**....

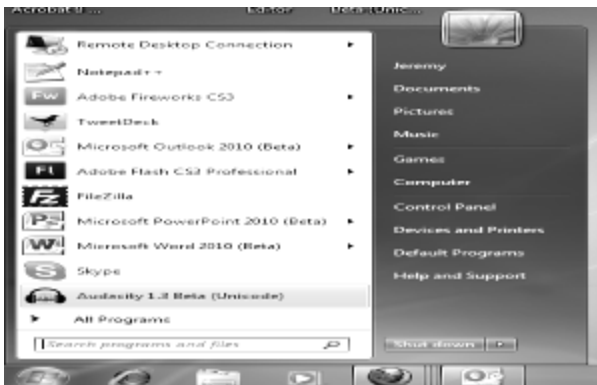
How to Customize the Notification Area

1. Click on the **Show hidden icons** button in the *Notification Area*.
2. Click **Customize**...
3. This opens the *Notification Area Icons* control panel. To the right of each icon, you have a pull down menu listing *Behaviors*.
4. The first option, *Show icon and notifications*, displays the icon in the notification area and alerts you if the program or utility needs attention.
5. The second option, *Hide icon and notifications*, hides the notifications from view and does not alert you.
6. The third option, *Only show notifications*, only displays the icon when the application or utility needs to alert you to something.
7. Select the menu next to the item you want to customize and change the setting.
8. When you're finished, click **OK** to save your changes, or click **Cancel** to cancel out and keep everything the way it is.

Just a note, in marketing materials, Microsoft has changed the name of the Taskbar to the **Superbar**. We've found the help documentation and options within Windows still refer to it as the *Taskbar*. If you see something on the web referring to the Superbar, they typically mean the Taskbar.

The Start Menu

The **Start Menu** has not changed much from Windows Vista or Windows XP, but if you're used to earlier versions of Windows, the Start Menu will be a big change for you.



On the left hand side of the Start menu, you see the icons you have both *pinned* to the Start menu and the recently used applications. At the bottom of the left hand column is the *Search programs and files* text field. You can search for a file in this field, or launch a shortcut for any software you know the name of.

In the right hand column of the Start menu, you see several shortcuts to **libraries** – folders of documents or files such



as *Jeremy*, my profile folder; *Documents*, the equivalent of *My Documents* in previous versions of Windows; *Pictures*, the equivalent of *My Pictures* in previous versions of Windows; and so on.

The remaining items are shortcuts to the associate utility, such as Control Panel or Help and Support. At the bottom of the right hand column, you have a **Shutdown** button shortcut. If you click the arrow to the right of **Shut down**, you will see different options such as Restart, Shut Down, or Sleep.

Accessing Help

There are several methods to access Windows help. The most common method of accessing help is to press the **F1** key to access context-sensitive help. This will open the help file to help information specific to the window you're in. If you're in a software application, most software developed for Windows supports the F1 key to find context sensitive help.



Windows continues to improve its help system and Windows 7 probably has the best help and support knowledgebase versus any of the previous versions of Windows. When you select **Help and Support** from the **Start Menu**, you will start in a simple and clear help box. We will explore the help and support system in a whole section of this tutorial devoted entirely to help. The great thing is – since Windows is so common in home and business environments, no matter what your problem is, you can likely find someone experiencing the same thing and either find a resolution or a workaround. The trick is knowing how to ask the right questions!


Online Help

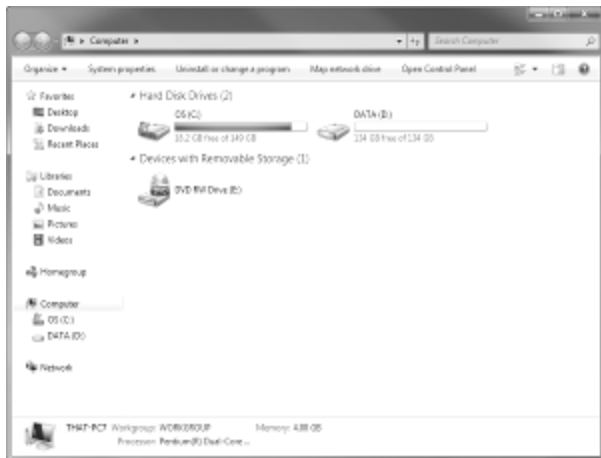
There are many sources of help available online and we explore those in the **Getting Help** section of this free tutorial. We've created a great resource in a Windows 7 reference guide section on Learnthat.com. You can find step by step instructions to do just about anything in Windows 7.

Working with Windows

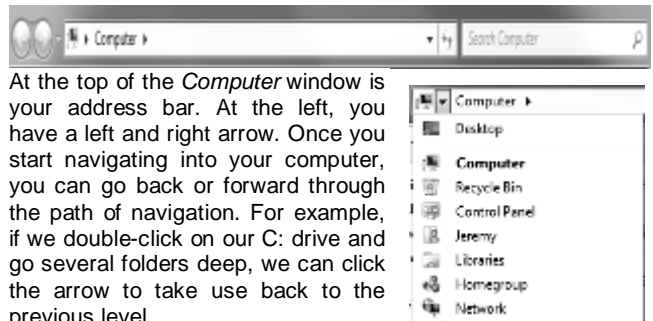
Windows is a powerful operating system. It's easy to use, but it's not simple – there is a lot going on to run an efficient operating system across a variety of hardware platforms and manufacturers. After you take this tutorial, you will understand how to work with Windows 7 and make it work for you.

If you're new to Windows, let's explore some of what's going on:

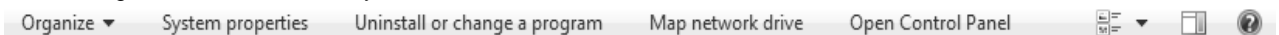
1. Turn on your computer.
2. Login to Windows if you have a password and user account set.
3. Click on the **Start** menu,  button.



4. Click on the **Computer** link in the right hand column of the **Start Menu**.
5. In previous versions of Windows, this was called *My Computer*. Now, it's just called *Computer*. This is the center of what's happening on your computer system. Let's break down this screen a little for you to understand how to navigate in Windows 7.



6. At the top of the *Computer* window is your address bar. At the left, you have a left and right arrow. Once you start navigating into your computer, you can go back or forward through the path of navigation. For example, if we double-click on our C: drive and go several folders deep, we can click the arrow to take use back to the previous level.
7. In the middle of the address bar, you have location of where you are currently at, surrounded by little black arrows. This address portion of the address bar tells you both where you are at, and the previous and next levels. If you click on one of the arrows, it will show the path before, or other options you can pursue.
8. At the far right of the address bar is your search field.
9. The next bar is the toolbar. This replaces the old menu based structure (which is still just hiding under the surface). This toolbar lets you quickly select a destination to manage your computer.
10. In the left hand side of your explorer window is the shortcut list of items you can quickly click to go to.



11. On the right hand side, you see the drives on your computer. Double-click to navigate into one.



THAT-PC7 Workgroup: WORKGROUP

Memory: 4.00 GB

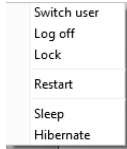
Processor: Pentium(R) Dual-Core ...

12. Finally, at the bottom of the window is your information box. In previous versions of Windows, when you needed to find out your computer name, workgroup or domain, memory, and processor, there were several places you had to go. Help desks and support centers often need this information and you now have a quick and easy way to access it.

Shutting Down the Computer

As we learned earlier, there is a **Shut down** button/menu on the Start Menu. Click **Start** and select **Shut down**. This will quickly shut down your computer.

If you click the arrow on the right of the *Shut down* button, you will be given a list of options for shutdown. Here's a screenshot of my list of options (yours may be different):



Switch user allows you to switch user accounts to someone else while remaining logged into the computer. You will use this option if someone else wants to use the computer but you do not want to exit out of your open software applications. **Log off** logs you off of your account, but does not shutdown the computer. This option takes you back to a login screen where you or another user could log in. This option leaves the computer turned on.

Lock locks the screen requiring you to login to unlock the computer. The keyboard shortcut to lock your computer is Windows Key + L. **Restart** turns off your computer, then turns it back on and brings you back to the login screen for you or another user to enter your username and password. **Sleep** saves what you're currently working on and sets your computer into a low power mode (not completely turned off). It is in a low power mode, versus completely turned off, so that you can more quickly start it back up when you want to use it. **Hibernate** saves what you're currently working on as an "image" of your current system state to the hard drive. This allows the computer to completely power down. This is often used by laptops – if your battery runs low, the computer *hibernates* so that what you're working on is saved until you can plug the computer in and get recharged.


Customizing Windows 7

Windows is infinitely customizable from the desktop image, colors on the screen, to the font size, screensaver, and security settings. You will find just about every kind of look and feel available to make Windows look and operate how you want it to. In this section of our free Windows 7 tutorial, we're going to look at how to customize the Windows desktop, change the video settings, customize the start menu, make the taskbar work for you, and set folder settings. Along the way, you will learn about power settings, screensavers, and a few tips on how to make Windows look like an older version – if you want to revert back to something old school. First, let's explore the Windows desktop.



Customizing the Desktop

The **Desktop** is the background of what you see when Windows first starts up. It typically contains many icons, but by default only has the *Recycle Bin* icon. The other icons you see in my desktop above are **Shortcuts** to start a program. A **shortcut** is a link to start an application – it's not the application itself.

As you can see on the icon above, there is a shortcut arrow, , indicating this icon is a shortcut and not the actual application. Here's the actual application icon, copied to my desktop:

The icon on the left is the shortcut to the application, the one on the right is the actual application file.

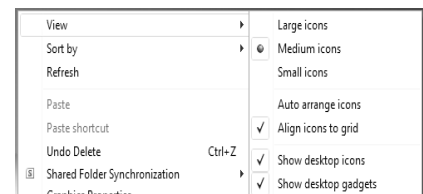
You can delete an icon on the desktop by clicking once on it and pressing the **Delete** key, by dragging it to the *Recycle Bin*, or by right-clicking on the icon and selecting **Delete**.

As in any other folder on your computer, you can store any types of files you wish on the desktop, including folders. We don't recommend using the desktop for file storage (that's what your *Documents* folder is for), but many people find it easy to store files on the desktop to retrieve them quickly.

Customizing the Windows 7 Desktop

When you right-click in an open area on your desktop, you're going to see a list of options to change settings on the desktop, like this one: **Changing the Desktop Views**

1. Right-click on the desktop and select the **View** menu.
2. If you would like to change the size of the icons, select the size at the top.
3. If you'd like Windows to Auto arrange the icons how it sees fit, select that option.



4. *Align icons to grid* keeps the icons well aligned where turning off this feature will allow you to place icons where ever you want.
5. If you don't like all those icons cluttering your desktop, you can turn them off using the *Show desktop icons* – they are still present, just hidden.
6. Finally, if you're using **Desktop Gadgets**, you can show or hide them with the final option.

Personalizing Windows

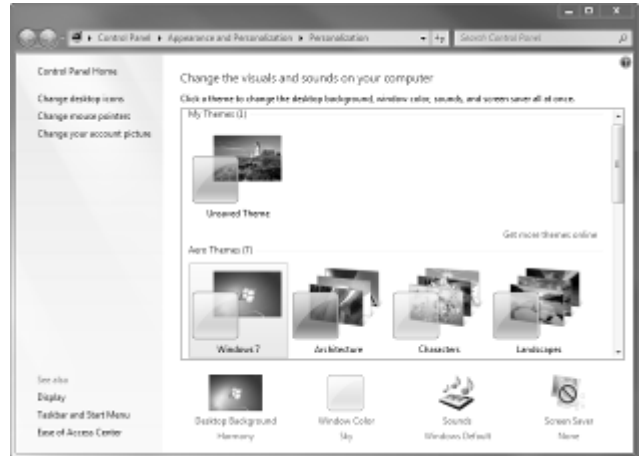
At the bottom of the desktop right-click menus is the *Personalize* option. This link opens the *Personalization* control panel allowing you to set the user interface to look and feel how you desire.

- **Change desktop icons:** decide which desktop icons you want displayed on your Windows desktop.
- **Change mouse pointers:** don't like your current mouse pointers? Change the cursors and arrows to suit your desires.
- **Change your account picture:** change the image shown at login and at the top of your Start menu.

In the middle, you will see the different themes available with an option to obtain more themes online. As you see, several of the themes have multiple desktop images – these themes will rotate the desktop images so you see a different picture throughout the day. As you scroll down in the middle, you can select from many different themes to suit your personal style. You also will see a link near the top for **Get more themes online** which allows you to find many other unique themes to install for your computer.

Across the bottom, you can see there are several different options for you to change if you'd like, including:

- Change the desktop background image/colors
- Change your window colors
- Change the default Windows sounds
- Change/enable/disable your screensaver



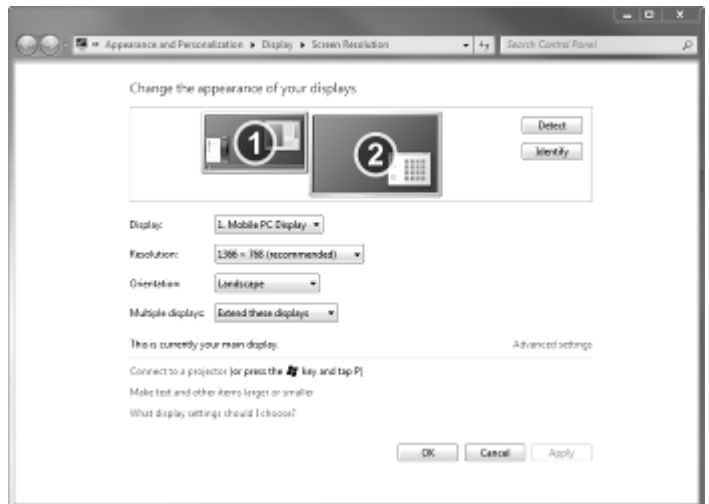
Setting a New Windows Aero Theme

If you would like to set a new theme, it's pretty simple. In the **Personalization control panel**, click on the **theme** you're interested in activating.

Video Settings

There are several things you can customize for the video settings on your computer. Windows tries to guess the appropriate screen resolution and settings for multiple monitors, but you may want to tweak this to meet your needs.

1. Right-click anywhere on the desktop and Select **Screen resolution**.
2. The *Screen Resolution* control panel opens. You have several options you can change on this screen. If you have several monitors, click on the monitor you'd like to customize. In the screenshot above, you can see I have two monitors – the internal laptop screen and a bigger external screen.
3. To change the screen resolution, pull down the **Resolution** menu and select a resolution you would prefer.
4. You can also decide how you would like to handle multiple monitors. *Extend these displays* treats the two monitors as one, allowing you to move windows between them. You can also **Duplicate the displays**, or have the same screen running on both monitors (for example, if you treat your laptop as docked, you may only want to work with your external screen). You can also decide if you simply want to have your desktop on monitor 1 or monitor 2.
5. Once you've customized your display settings, click **OK** to save your settings.



Customizing the Start Menu

The Start Menu is one of the most frequent places you will go when using Windows 7. As such, Microsoft wanted it to be highly customizable to work well for you. You can customize the Start Menu to make it work any way you want it to.

1. Right-click on the **Start** menu and select **Properties**.
2. Click on the **Customize** button.
3. There are many options to customize in the Start menu. Scroll through the list to see all of the different features you can customize.
4. Once you've made any changes, click **OK** to save your settings.

Customizing the Taskbar

The Taskbar, aka the *Superbar*, is where your running applications and any programs pinned are located. There are a few options you can customize on the taskbar, let's explore them:

To access the Taskbar properties, right-click anywhere in an empty area of the **Taskbar** and select **Properties**. The first option is to **Lock the taskbar**. This locks the current icons in place. Next, you have an option to **Auto-hide the taskbar**, selecting this option will hide the taskbar and start menu whenever your mouse is not at the bottom of the screen, when you move your mouse to the bottom of the screen, the task bar will show. The third option is to **Use small icons**, this changes the icon size from large to small.

Next, you can move the taskbar to some other location on the screen (such as left, right, or top).

You can change how Windows groups the icons by changing the **Taskbar buttons** option to always combine, combine when the taskbar is full, or never combine.

We discussed changing the notification area icons in an earlier section of this tutorial.

Finally, you can change the *peek*, if you run your mouse to the **Show Desktop** button at the bottom right of the taskbar; it will show you a peek at your desktop and temporarily make all of the windows transparent. You can turn this off.

Once you have configured your taskbar, click **OK** to close the properties window.

Folder Settings

By default, Microsoft tries to protect you from yourself and hides operating system files to keep you from messing anything up! However, you may want to change folder settings to show hidden files, turn off simple file sharing, or show operating system files.

How to Show Hidden Files in Windows 7

1. Click on the **Start** menu. Click on **Computer**.
2. Click on the **Organize** button.
3. Click on **Folder and Search Options**.
4. Click on the **View** tab.
5. Click on the radio button next to **Show hidden files, folder, and drives**.
6. Click **OK** to show hidden files.

How to Show File Extensions of Known File Types

Windows hides the extensions (such as .doc or .txt) of known file types. You can show these extensions in Explorer if you'd prefer.

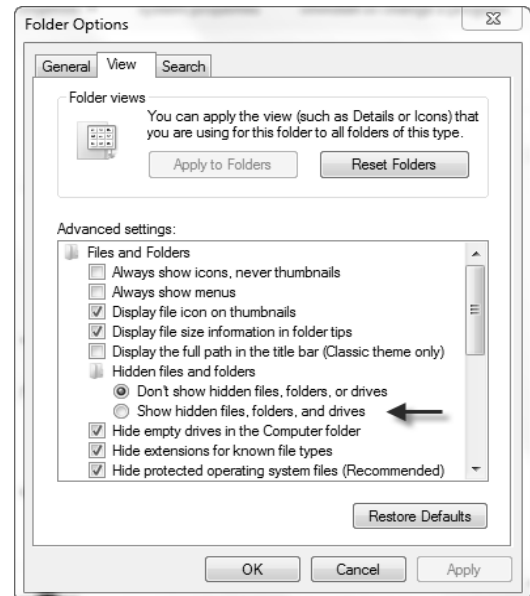
1. Click on the **Start** menu. Click on **Computer**.
2. Click on the **Organize** button. Click on **Folder and Search Options**.
3. Click on the **View** tab.
4. Uncheck the checkbox next to **Hide extensions for known file types**.
5. Click **OK** to show hidden files.

How to Show Protected Operating System Files

Windows hides protected operating system files. You can show these files in Explorer if you'd prefer.

1. Click on the **Start** menu. Click on **Computer**.
2. Click on the **Organize** button. Click on **Folder and Search Options**.
3. Click on the **View** tab.
4. Uncheck the checkbox next to **Hide protected operating system files (Recommended)**.
5. Click **OK** to show the protected operating system files.

As you scroll through the *Folder Options* list, you will see many options you can use to customize how you interact with Windows Explorer. If you change some options and find out you made a mistake – don't worry! – just click on the **Restore Defaults** button to get things back to normal.



Getting Help

Windows 7 has the most robust help system of any version of Windows to date. Unfortunately, in the past, Windows has been lacking a great help system which forced hundreds of thousands of users to find help online or from a friend or relative. Now, the Windows help system has a much better search system, step by step instructions for many of your common problems, and an occasional video resource online to watch how to do it.

Accessing Windows Help

There are two ways to quickly access Windows Help, the first is to press the F1 key on your keyboard while the desktop or a Windows Explorer window is active. The second way is to click the Start menu, then select Help and Support.

At the top of the window, you have several options: go to the help home page, print the current topic, browse help topics, learn about other support options, and the options menu for the help system. If you have an idea of what you're looking for, type it into the *Search Help* text field and press **Enter**. We're

going to search for. When you press **Enter**, you will see a list of help topics.

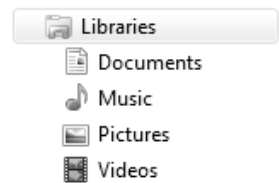
When you press **Enter**, you will see a list of help topics.

Working with Files and Folders

Windows organizes your files into folders on your storage device, aka hard drive. Folders can contain both files and subfolders, allowing you to go as deep as you want in file structure and become as organized as you want. In this section of the Windows 7 tutorial, we're going to discuss the Windows 7 file structure, how to manage folders and files, creating zip archives, using the recycle bin, and creating shortcuts. First, let's start with the Windows 7 folder structure: **libraries**.

Windows 7 User Files

Microsoft Windows creates a series of libraries to store your personal data in. You can find your libraries by clicking on the Start menu and then clicking Computer. Click on the Libraries link on the left:



This will open the **libraries** on your computer. A Library is not a real folder; it's really a collection of files or folders in different locations around your computer. This enables you to; **for example**, store all of the music on your computer in a single library but in different locations across your hard drive.

If you click on the **2 Locations** link at the top of the library window, you will see a list of all of the folders and folders in the library. You can **Add a location** to the library by clicking on the **Add** button. When you add other locations, you will start seeing those files in the library.

Creating Folders

A folder is a directory of files and folders on your computer. There are several ways to create a folder. Here's the most common:

1. Open up the folder or hard drive you want to create a folder in. We're going to create a new folder in the Documents library.
2. Click on the **Start** menu. Click on **Documents**.

New folder

3. Click on the **New folder** button at the top of the Explorer window.



4. A new folder is create in the current directory. You can start typing to rename the folder.

Renaming Objects

In an explorer window, click once on the file you want to rename, pause a couple of seconds, then click on the file name. It should highlight so you can rename it.

Alternatively, right-click on the file or folder and select **Rename** to rename the object.

Moving and Copying Files/Folders

The most frequent way to move or copy files is to drag and drop them. When you drag and drop a file or older from one place on a hard drive to another place on the same hard drive, Windows **moves** the objects. If you drag and drop files from one hard drive to another, Windows **copies** the files. When you drag and drop, you can do so with your right mouse button and at the destination, a popup window will appear asking you which action you'd like to take. Select which you'd like to do, Copy the file, Move the file, or create a shortcut.

You can also use your standard windows keyboard short cuts – copy a file using **CTRL+C** and paste it using **CTRL+V**. You can move a file by cutting it using **CTRL+X** and pasting it via **CTRL+V**.

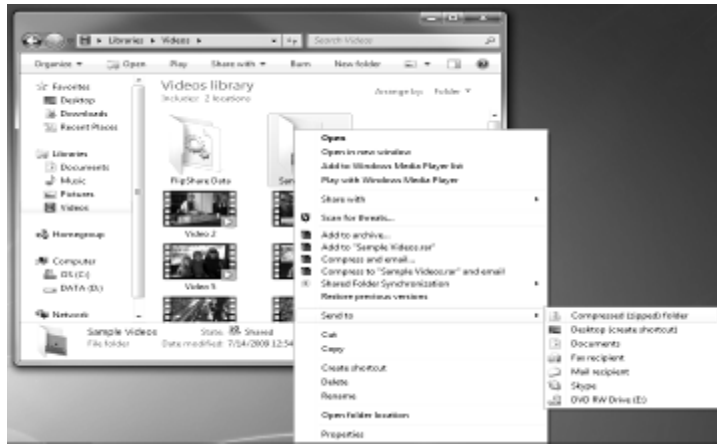
Copy here
Move here
 Create shortcuts here
 Cancel

Deleting and Undeleting Files/Folders

When you delete a file or folder in Windows 7, it isn't completely deleted. Instead, the record of the file locator is moved into a special storage area called the Recycle Bin. It is removed from display from where it is currently residing, but it can be brought back if you deleted it on accident. This is also important to remember if you're deleting something confidential – make sure you read the section of this tutorial which discusses the **Recycle Bin**. If you delete a file or folder on a removable drive such as a thumb drive, it is likely deleted forever. Click on the file or folder you'd like to delete once and press the **Delete** key on your keyboard. You will be asked for confirmation. Alternatively, right-click on the file or folder and select **Delete** on the pop up menu. You can also drag and drop the object into the **Recycle Bin** and this will delete it as well.

Creating Zip Archives

A zip file is a compressed file containing one or more files or folders. Windows integrated in zipping and unzipping files into Windows Explorer in Windows XP. This feature allows you to combine several files into one, compress it, and then send it to someone or just use it to reduce space on your computer.



If you are compressing several files, copy them into a single folder to make it easier to compress. Right-click on the folder and select **Send to** then click on **Compressed (zipped) folder**. This will compress the folder into a single zip file.



The file icon of the zipped file appears to have a zipper on it. You can unzip a zipped file by right-clicking on it and selecting **Extract All**.

The Extract Compressed (Zipped) Folders wizard appears allowing you unzip the contents of the file.

Using the Recycle Bin

When you delete a file in Windows 7, the file isn't deleted. Instead, Microsoft moves the record pointing to the file into the **Recycle Bin** and stores it there

until the Recycle Bin is emptied. This allows you to easily recover files if you accidentally deleted them. Keep this in mind if you're deleting sensitive files – they may still be around on your computer somewhere. (In fact, even once you remove them in the Recycle Bin, they aren't really gone yet. A full deletion/cleaning utility will permanently remove the files). When you open the Recycle Bin on your desktop, you will see a list of files and folders you deleted.

There are several options available to you:

- Empty the Recycle Bin (remove all of the files from the list and delete them permanently)
- Restore all items (return them to their original location)
- Restore files one at a time

Restoring an Item from the Recycle Bin

1. Open up the **Recycle Bin**.
2. Click on the item you would like to restore.
3. Click on the **Restore this item** button at the top of the window.
4. The item is restored to its original location.

You can also empty the entire Recycle Bin by right-clicking on it and selecting the **Empty Recycle Bin** option.

Note: when you are deleting a file, you can permanently delete it without sending it to the Recycle Bin by pressing **Shift+Delete** after selecting the file.

Creating Shortcuts

A shortcut is a link to a file somewhere else on the computer. A shortcut is commonly used to create icons which link to programs on the computer, but you could create a shortcut of any file or folder anywhere it is convenient for you on your computer. Right-click and drag and drop a folder or file into the location you want a shortcut. When you release the right-click button, a popup menu will appear. Select **Create shortcut here** to create a shortcut. If you'd like to create a shortcut of a file or folder on the desktop, there is a quick way to accomplish that. Right-click on the file or folder and select the **Send to** menu. Click on **Desktop (create shortcut)**.

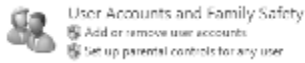
Managing Users in Windows 7

User accounts in Windows 7 allow you to setup different profiles for different people using your computer. This will keep your settings, documents, mail files, favorites, and so on separate so you can all lead your own lives on your computer! It's easy to setup and use multiple accounts in Windows 7 and this section will show you how to create and manage users and setup parental controls so you know your children will be safer on the Internet.

Creating Users

You can setup as many user accounts as you wish on your computer, allowing each person in your household to have a Windows profile with their own documents, desktop images, mail files, Internet Explorer favorites, and so on, so you do not intrude on each other on one physical computer. You can share files among your different user accounts to make it easy if you want to write a Christmas letter with your wife, as an example. By default, you setup at least one account when you installed Windows, here's how you create another user account:

1. Click on the **Start** menu and select **Control Panel**.



2. Click on **Add or remove user accounts**.
3. Click on **Create a new account**.
4. Enter the account name you want to use. Select whether or not the user will be a *Standard user*, one which will not be able to change some system settings or install some types of software, or an *Administrator*, a user with full control on the computer. A **Standard user** is recommended for most user accounts you will create so that the user does inadvertently cause major problems on your computer.
5. Click **Create Account**. A new user account has been created!

Resetting a User's Password

When you create a new account, by default, it does not have a password set. If you set a password or the user creates their own password and subsequently forgets it, you can reset the password with any administrator account. If you forget the password of an administrator account and have no other administrator accounts on the machine, you're in some trouble! To reset the password of a user on the computer:

1. Click on the **Start** menu and select **Control Panel**.
2. Click on **User Accounts and Family Safety**.
3. Click on **User Accounts**.
4. Click on **Manage another account**. (You can change your own password on this screen if you'd like).
5. Click on the account you want to reset the password for.
6. Click **Change the password**.
7. Enter a new password, confirm it, and then enter a password hint.
8. Click **Change password** to change the user's password.

Deleting an Account

If no longer need a user account, you can delete it to remove it from your computer. When you delete an account, you can choose whether or not save the person's documents (not their email, however). Once you delete an account, the user's profile – all of his or her settings and files – is deleted.

1. Click on the **Start** menu and select **Control Panel**.
2. Click on **Add or remove user accounts** under *User Accounts and Family Safety*.
3. Click on the user account you would like to delete.
4. Click on **Delete the account**.
5. Select whether or not you want to *Delete* or *Keep* the user's files.
6. Confirm you would like to delete the account.
7. The account is deleted and any of the user's files are copied to your desktop.

Configuring Parental Controls

Windows 7 contains flexible parental controls you can use to help lock down your child's account. They aren't a good substitute for parental monitoring and involvement (in other words, an enterprising kid can bypass some of the controls if they're smart enough and have the right access level), but it is a good option for young kids or as a baseline of control over what you're children do. The first step to using parental controls is to setup a user account for your child. Next, let's setup some parental controls:

1. Click on the **Start** menu and select **Control Panel**.
2. Click on **Set up parental controls for any user** under *User Accounts and Family Safety*.
3. Click on the user account you would like to setup parental controls for.
4. Turn parental controls on by clicking on the **On, enforce current settings** radio button.
5. You have three ways you can control what the user does: time limits, games, and allow or block specific programs. Time limits allows you to select what hours of what days the user is permitted to logon to the computer and use it. Games allows you to block all games that use parental ratings or select specific game ratings permitted. You can also block or allow specific games. Finally, you can allow or block specific programs on the computer. This allows you to allow the user to only use programs you specify. Once you've set the parental controls you want to enable, click **OK**.

Adding and Removing Software in Windows 7

Understanding User Account Control (UAC)

In older versions of Windows (before Vista), Windows had set user levels and if a user was an Administrator on the machine, anything that user did was at the Administrator level. This could cause problems if a **virus** or **trojan**, or some other unwanted program, gained access to your system. You could become infected and not even know it!

Microsoft borrowed from the security and stability of other operating systems such as Unix, Linux, or Mac OS, and introduced a feature called **User Account Control (UAC)**. UAC limits privileges for software applications to those of a *standard user* (versus an administrator), and only elevates privileges after an administrator authorizes the elevation. This is designed to allow a user to decide if they trust an application before granting it administrative privileges to prevent malware from compromising the entire operating system. You will see a *User Account Control* window (and the dimming of everything else on your computer) whenever a software application performs a function requiring administrative privileges, such as when we attempt to change UAC settings. If the account you are logged in with does not have administrative privileges, you would be required to enter a **username** and **password** which does.



Disable User Account Control

You can disable UAC, but it is not something we recommend. UAC does give your computer some protection from rogue software applications (but as well know not total protection – malware still seems to find its way in). We recommend leaving it active – we don't see it too often and when we do, it's quick and easy to determine if it's doing something I want my computer to be doing. However, if you still want to disable UAC, here's how to do it:

How to Disable User Account Control (UAC)

1. Click on the **Start** menu.
2. In the search field, type in *UAC* and click the **Change User Account Control Settings** link at the top.
3. In the *User Account Control Settings* window, there is a slider with different level of notifications from *Always notify* to *Never notify*. If you'd like to disable UAC, drag the slider to the bottom and click **OK**.
4. When you click **OK**, you will receive a UAC confirmation dialog box. Click **Yes** to save your change.
5. In the future, you will not receive **UAC popup** once you disable them.

Installing a Software Program

Software programs for Microsoft Windows 7 typically come with their own setup program. This program installs the software and configures Windows to support the new software. There are thousands of applications you could install; we'll review the installation process for Firefox, a web browser and common replacement for the built-in browser on Windows, Internet Explorer.

How to Install Mozilla Firefox

Mozilla Firefox is a free, open source web browser which replaces Microsoft Internet Explorer as the browser of choice for millions around the world. You can download Firefox at <http://www.getfirefox.com>.

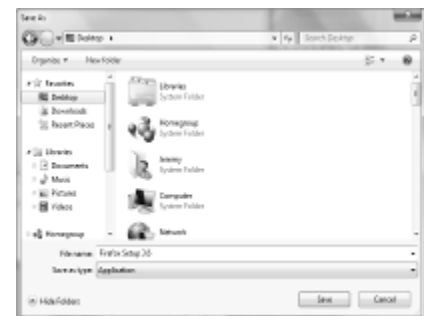
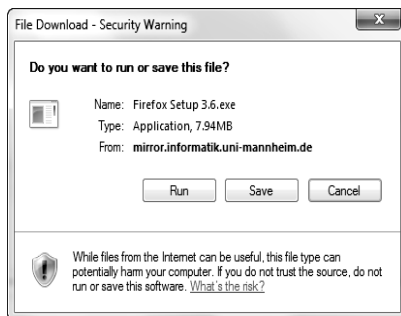
1. Open **Internet Explorer** to download Firefox.



2. Type in <http://www.getfirefox.com> into the Internet Explorer address bar at the top. The address will redirect to the download page.

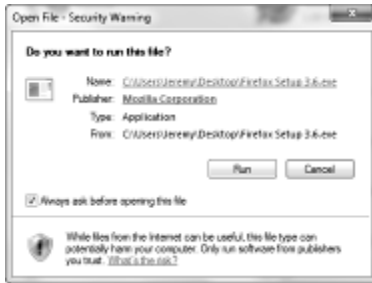


3. Click on the **Free Download** button to download the latest version of Firefox.
4. You will see a security warning from Internet Explorer. Click **Save** to save the installation program to your computer. This security warning is there to make sure a piece of bad software such as a malware does not download something without your permission. You want to download Firefox, so it's ok to continue. Now, you will be presented with the **Save As** dialog box. By default, it



will open in your **Downloads** folder – it's fine to save it there. If you don't want to save it there, navigate to another folder. In the screenshot above, you will see I am downloading it to my desktop.

- The file will now download. Once it's complete, navigate to the folder you saved the setup program in (most likely your download folder). To find the file, click the **Start** menu, select **Computer**. On the left, click on the **Downloads** link. This will open your downloads folder.



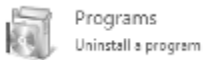
- Find the *Firefox Setup 3.x* icon and double-click on it.
- You'll see a security alert, click **Run** to continue. The setup files will extract.
- Click **Yes** on the *User Account Control* dialog box.
- Firefox setup will start. Click **Next>** to move forward with installation.
- Leave the *Standard* radio button selected and click **Next >**.
- Click **Next** or **Install** to continue.
- Click **Finish**. Firefox is now installed.



Removing a Software Application

There will come a time when you need to remove a software application on your computer. Perhaps it's an old version, you need to free up space, or you just don't want a software program installed. Here's how to uninstall software in Windows 7:

- Click on the **Start** menu. Click **Control Panel**.



- Click **Uninstall a program** under the *Programs* section.
- The *Programs and Features* control panel opens. It contains a list of all of the programs installed on your computer. Scroll down until you find the program you want to uninstall.
- Click on the program you want to uninstall and then click on the **Uninstall** button at the top.
- Follow the application setup program to uninstall the software program.

Setting Default Programs

For many years, Microsoft has been fighting antitrust lawsuits from governments worldwide and as a part of the settlement with the US government; Microsoft has defined a "default program" setting for you to define what application opens up with something needs to start a Web browser or email. If you don't desire to use Internet Explorer or Windows Mail, you could set a different default program. For example, I prefer to surf the web using Firefox and not Internet Explorer, so my default web browser is set to Firefox. In this section of the free Windows 7 tutorial, we're going to explore how to manage the default programs and change them, if necessary.

How to Set Default Programs in Windows 7

- Click on the **Start** menu.
- Click on the **Default Programs** link on the right-hand column of the **Start** menu.
- Click on the **Set your default programs** option.
- You will see a list of programs on the left. Click on one, such as *Firefox* or *Internet Explorer* to see the options available.
- You have two options available, *Set this program as default*, which will set the program to the default for all of the file types and protocols it can open, or *Choose defaults for this program*, which allows you to set which protocols and file types to open.
- Normally, I would like Firefox to handle all web browsing activities, but I will click on **Choose defaults for this program** for you to see the file types and protocols it will open.
- As you see in the list, Firefox handles web pages (such as .html) and web protocols (such as HTTP). If you double-click on a .html file in Windows Explorer, Firefox will open. If you select an **HTTP** link in an email, Firefox will load for that as well. We could selectively choose file types or protocols for Firefox to handle and for Internet Explorer to handle.
- If you make any changes, click **Save**, and then click **OK** to close the **Set Default Programs** window.

Turning Windows Features On and Off

By default, not every feature of Windows is installed nor enabled. This is because a majority of users do not need every possible feature and some, such as the IIS web server, could cause more harm than good. However, if you do need one of these other Windows features, you can easily turn them on in Windows 7.

Installing Additional Windows Features

- Click on the **Start** menu.
- Select **Control Panel**.

3. Click on **Programs** in the control panel.
4. Click on the **Turn Windows features on or off** at the top.
5. Select the feature you would like to install in Windows 7. We're going to install the **Telnet Client**. Telnet allows you to connect to servers via the command line interface and we occasionally need to do so for testing mail servers. Scroll down the list and select **Telnet Client** then click **OK**.
6. Windows will make the necessary changes. During this time, User Account Control may popup. When the process is complete, the window will close and your feature will be installed.

Windows 7 Networking

Microsoft continues to improve the ease of use of networking and has improved file sharing and network access in Windows 7. In Windows 7, you can connect to a wired or wireless network, with all kinds of security options. Windows 7 introduces the HomeGroup feature to allow you to quickly share files among computers on your home network, while helping to keep out intruders from accessing your network. You can also easily share printers or other resources from one computer to another.

Connecting to Your Network

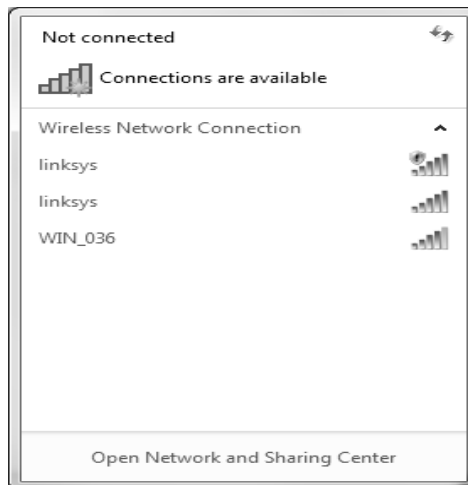
If you have a wired network, connecting to it is usually as easy as just plugging in a cable. A HomeGroup allows you to connect other computers on your network to share files, music, and printers. You can create a HomeGroup by:

1. Click the **Start** menu and select **Control Panel**.
 2. Click on **Choose homegroup and sharing options** under *Network and Internet*.
 3. Click on **Create a HomeGroup**. You can determine what types of file and content you would like to share.
 4. Click **Next** to create the HomeGroup. You will receive a password for other users to join your HomeGroup.
- Note:** HomeGroups are only available on Windows 7, Windows Vista and Windows XP users will not be able to join.

Setting Up a Wireless Network

Connecting to a wireless network in Windows 7 is a world's difference from previous versions of Windows. In Windows XP, it was very painful to connect to a wireless network with any kind of security on it. In Windows 7, the process is much easier.

1. In the notification area, you should have a wireless icon  if you have a wireless adapter and are not connected.



2. Click on the icon to see the wireless networks available.

Select the network you would like to connect to. If it requires a password, Windows will prompt you. Otherwise, Windows will attempt to connect. Once you're connected to the wireless network, your icon will change.

Lesson: 7

Basic of Multimedia

Introduction

Multimedia has become a popular technology in the ever- changing world of computers. Since a few years it seems to be much sought after and talked about not only in the world of Information Technology but also in the various functional fields like advertisement, corporate sectors, cinemas, fashion designing, education, art and craft etc.

More and more research work on this technology and new technology of sounds, animation and text is making it better and better with every passing day. It is one of the most realistic ways of working even for the people who do not have any knowledge of computers.

Multimedia software is used for electronic publishing and electronic games and in employee training programs. The term multimedia is also used to describe home entertainment systems and other electronic products and services, particularly interactive ones that combine text, sound, video, and the like.

Concept of Multimedia

The term multimedia is often associated with the information superhighway, or with the interactive TV that can produce videos, graphics, and animations or with hypermedia. Multimedia can be considered as text graphics, images, audio and video in the computer. One of the key features of multimedia is its interactivity i.e. it has the capability to convey enriched interactive information to its users.

Multimedia is interactive, a non-linear media in comparison to a broadcast television. In addition it may provide user with as several meaningful paths. Thus, it is the interaction between the user

and information that makes multimedia a very powerful media for activities that require the process of communicating information, such as education and training, reference material, business presentations, manuals, multimedia databases, geographic information system, advertising, documentaries and so on.

Multimedia, in personal computing, is software and applications that combine text, high-quality sound producing high quality presentation to the user.

The basic components of multimedia can be used as:—

- The text provided can be used for adding emphasis
- Graphics provides a visual impact. It is generally said that a picture is worth a thousands words. Thus graphics can be used for enhancing the presentations.
- Voice tries to enhance the presentation to the extent that a presentation moves on to the form of persuasion. Many people want to listen about a particular topic rather then reading about it, here the voice enhancement makes the topic interesting also.
- The animation can be used effectively for attracting attention. Animation also makes a presentation light, thus can be used for presentation of several complex subjects. It is also a tool that helps in focusing attention, for example, a chart if drawn through the help of animation effects may be focused by the user on to quickly.
- The video part of multimedia can be used as a powerful communicator providing clear-cut Instructions.

Use of multimedia in various applications can be justified by the levels of user friendliness, it provides to its users with its interactivity and customization. Multimedia is widely used now a day in various applications and business in one of them. As the market competition is increasing with the introduction of better products in the market everyday, it has become absolutely necessary to provide better service and timely information to your client in a brief, precise and more understandable manner in a short time.

The interactive features of multimedia brings life to the presentations where one can present various aspects of information on a particular subject. The information which is digitized in multimedia makes it more assessable as compared to the conventional ways of presentation using video, chart etc. where you can not edit or modify whatever is already video taped. Even if you do it, the cost of the task involved will be high. But now days, organizations have already started creating powerful databases that can store and distribute digital media as easily as text.

Another critical application of multimedia is in the educational sector. It enhances the quality of education. It provides a new way for teachers to encourage one of the most rare and important elements of learning i.e. curiosity to learn and explore. Topics can be linked with other related information. On the other hand students will also be able to further explore the topics using standard multimedia platform. In complete sense pictures, graphics, text and sound is the essence of multimedia and it provides the user-friendly environment with most flexible interactive facilities.

Application Areas for Multimedia

With the advancement of technology many applications are evident for the multimedia technology. The advancement of technology has opened up newer fields for the application development.

Multimedia in Entertainment

The entertainment industry has used this technology the most to create real life like games. Several developers have used graphics, sound, animation of multimedia to create a variety of games. The special technology such as virtual reality have made this game just like experiences of real life. One such example is flight simulator that creates real life imaging.

Multimedia in Edutainment

Edutainment is nothing but educational entertainment. Many computer games with focus on education are also available now. For example is an educational game that plays various rhymes for little kids. Similarly many other edutainment packages which provide a lot of detailed information for students are also available popularly called "tutors".

Microsoft has produced many such CD-based multimedia such as Sierra, knowledge Adventure etc. that in addition to play provide learning components also.

Multimedia in Business Communication

Multimedia is also a very powerful tool for enhancing the quality of business communications. The business communications such as employee related communications, product promotions, customer information and reports for investors can be presented in multimedia form.

Multimedia and Publishing Industry

The publishing industry can be classified according to the market it caters for. One of the classifications is based on the information, which is presented in published text, for example a publication may be for reference purposes or archival purposes or tutorials. The publishing meant for children has changed tremendously with the advent of multimedia. Today many encyclopedias and books providing a sort of edutainment are available.

Hardware for Multimedia Computers

In order to work with multimedia, a personal computer typically requires a powerful microprocessor, large memory and storage capabilities, a high-quality monitor and a video accelerator, external loudspeakers or headphones and a sound card (or sound board) for improved sound generation, and a CD-ROM or DVD-ROM (digital video disc) drive, as well as special software to utilize many of these devices. A multimedia computer may also use other devices, such as a microphone or keyboard for audio input and a videocassette recorder or camcorder for video input or output.

Let us explore more about the hardware related to the multimedia technology.

The CPU

The CPU which is recommended as the microprocessor should be a Pentium Processor on the computer or any other advanced chip such as PowerPC etc.

Apple Macintoshes and Silicon graphics computers have their own set of powerful processors to enable multimedia. However, the CPU of multimedia computer should be at least 486 with a math co-processor attached with it otherwise the response time of the multimedia will be poor. The co-processor chip greatly reduces the load of the CPU. The powerful co-processor chip added for supporting graphics is called graphics accelerator.

The Monitor

A typical representation, which may be used in multimedia, can be 720x640 or 1200x680 etc. The multimedia PC should be equipped with a monitor having a Super Video Graphics Arrays (**SVGA**) card. The basic advantage of having the SVGA card is that it has a better resolution, thus the graphics display will be of better quality.

Input-Output Devices

Keyboard and mouse are two important components for any multimedia PC. Since multimedia computers are accessed using a graphical user interface (GUI) the mouse is an essential part of this system. It is the most required input-output device for it.

There should also be sound speakers, which produce sound output and microphones that are used for on-line recording of sound using various multimedia Softwares.

CD-ROM

CD-ROM (Compact Disc-Read Only Memory), a form of CD that can only be use for reading purpose, by a computer using a CD-ROM drive and that can contain computer programs and digitized text, sound, photographs, and video.

CD-R (Compact Disc-Recordable) and **CD-RW** (Compact Disc-Re Writable), which can be written to once and multiple times, respectively; interactive CDs, CD-I, CDTV, and other formats, which require special players with built-in microcomputers; and Photo CD, a format for storing photographs.

DVD-ROM

DVD-ROM (Digital Video Disk Read Only Memory) discs hold computer data and are read by a drive hooked up to a computer. These disks can only be read, not erased and written or recorded to. DVD-R (Recordable) discs can be written to sequentially only once. DVD-RAM (Random Access Memory), DVD-RW, and DVD+RW (Re-Writable) disks can be written or recorded to thousands of times; they differ in their technical standards and amount of data they can hold.

Digital Versatile Disc (DVD) is an advanced optical technology used to create a disk that holds far more information than a CD can.

Sound Card

The most important reason for adding a sound card to a computer is to be able to use full multimedia recording and playing back the digital audio. While selecting an add on sound card quality of sound from the loudspeaker has to be taken into consideration and the software provided with a sound card should be adequate enough to suit your requirements for handling sound effects in multimedia. While installing a sound card one should keep in mind that it should not conflict with any other external devices installed in the computer system. Installation of sound card might require some default settings to be changed to make it compatible with the computer system.

Different Types Software for Multimedia

Among the Softwares used for multimedia presentations the most popular Softwares are Designer, Corel Draw, Picture Publisher, Photo Magic, Animator pro, Image Macromedia Director etc.

Director

Director is one of the professional rating drawing and graphics package made for windows. It is specially meant for graphic artists and technical illustrators. It has a wide range of drawing tools and powerful text handling features.

Photo Publisher

Similarly, Photo Publisher is a professional photo retouching or image-editing multimedia package designed to enable retouching and enhancing photos faster. It has powerful masking and retouching tools and more than 30 special effects and filters. It has an image browser, processor, scanner, printer calibration, a stitching tool and over 50 ready to use textures and images. Similarly other multimedia related software also work on the same type of working environment along with their own features to experiment upon.

ImageQ

ImageQ is another multimedia authoring software package. Although it is a Windows 3.1 application but it can also play back on Windows 98. It lacks only the intuitive programming language and strong interface necessary for truly productive multimedia applications development.

Macromedia Director

Macromedia Director is better suited to multimedia presentations and kiosk application. This product offers a central scoring component that provides precise timing control, cross platform compatibility, strong animation features and extensive architecture to add functionality.

Macromedia Director 8, the powerful, cross-platform application helps you create dynamic interactive movies for multimedia and Internet productions.

Macromedia Flash Player

Macromedia Flash Player is pre-installed in most Web browsers and on most computers. It is included in Windows 98 (including all new Windows 98 and Windows XP computers), Netscape Navigator, Apple Macintosh operating systems, America Online, and WebTV, among others.

Macromedia Flash Player displays Web application front-ends, high-impact Web site user interfaces, interactive online advertising, and short-form to long-form animation.

Macromedia Shockwave Player displays destination Web content such as high-performance multi-user games, interactive product simulations, online entertainment, and training applications

Fixing photos using Photoshop

We are taking the following picture for an example how you can fix photographs using the Adobe Photoshop multimedia software.

The photo has been taken on a very short distance. That has resulted in a significant distortion in the left part of the image. But the photo is not to be wasted; it just has to be corrected. The great imaging editor Photoshop has the tools.

You open the photo in Photoshop from the Start Menu and Programs option menu and choose Select all (**Control+A**). Then select Distort option from the Transformer option of Edit Menu.

Now you see handles eight in the corners of the image. You may drag one of the handles, and the image is geometrically distorted. This is how this tool works.

You can apply the transformation by hitting the Enter key. The image is OK from a geometrically point of view.

You may need to do a little further editing. In the left corner there is a grey area which is an unwanted effect of the transformation.

Finally the image should be saved in a high quality JPEG file.

Lesson: 8

DOS (Disk Operating System)

Introduction to Dos Command

Disk Operating System (DOS) is the first program which must be loaded in the memory of your PC before you can use it for any purpose (word processing or database management). A command, in simple term is the name of a program that you want the computer to carry out. All DOS commands are accepted either in upper or lower case letter and DOS treats them as the same. Various versions of DOS, such as 2.0, 3.0, 3.2,3, 4.0, 5.0, 6.0 and 6.2 are available. The higher versions have more features and commands but the basic commands and features are available in all versions.

You can load DOS from the floppy drive or the hard disk, Loading DOS is also called booting up the PC. Complete the following steps to load DOS in your PC.

If you PC has No Hard disk

Put the DOS diskette in drive A and close the drive door.

Then on the power on off switch, which is usually located on the right hand side of the main processing units. If your monitor also has on/off switches, turn on that switch too. and wait for some time. Your PC performs the "self test" and the loads the DOS diskette in its memory. The monitor displays the DOS prompt A Self test means power on self test program (POST) that is designed for checking (in first step) to confirmation of device attachment and device working position with system. Mainly these device are MONITOR.KEYBOARD, MOUSE, HARD DISK, RAM etc. and Second step, it locate and loading the operating system.

If your PC has a hard disk PC

If your PC has a hard disk, you can load DOS from a floppy disk or the hard disk. To load dos from the hard disk perform the following steps:

Turn on the Power ON/OFF switch which is usually located on the right hand side of the main processing unit.

If your monitor has on/off switch, turn on that switch too.

Do not put any diskette in drive A.

Wait for some time. Your PC performs "self test" and loads DOS. Your monitor displays `c:\>`.

Booting Process:

You can load DOS from the floppy drive or the hard disk. Loading DOS is also called booting process of PC. In Booting process DOS execute mainly these files: COMMAND.COM, IO.SYS and MSDOS.SYS. In these the COMMAND.COM file gives the instruction to execute IO.sys and MSDOS.SYS files. IO.SYS file configure the input and output devices and then MSDOS.SYS file run the all DOS command.

Basic For File Name

In computer terminology a file is a collection of text or data stored on the storage device, such as a disk or magnetic tape. The information spread in various kinds of documents (invoice, letters, memo etc.). Usually one computer files is used to store only one kind of information. Different types of files are used to in a computer. The file that store database information, such as an address list of sales details, is called a database file and the file that store textual document is a document of text file. The file name can have up to eight alpha-numeric characters. Optionally, it can also have a period(.) and an extension name. The extension name can be upto three characters long. For instances, consider the following files names:

MCS1, MSC2. & DOC

Here, MSC1 and MSC2 are filenames. DOC is the extension name. Some file name, such as COM1 -communication port (used for serial communication), LPT1- first parallel printer port, CON- CON stands for console, For input, CON points to the keyboard; for output, CON points to the screen and PRN-The Parallel Printer port, are reserved by DOS for its own use. Therefore do not use them to name your files.

Batch File

A batch file is simply a text file that you can create by using unformatting text editor tools, e.g. the EDIT command in MS-DOS. (some other methods will be discussed later)

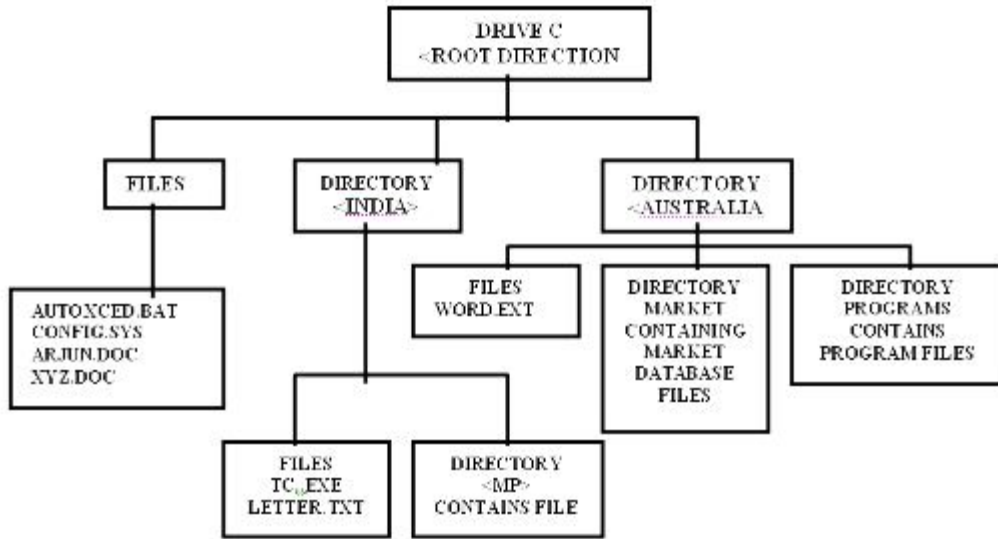
A batch file must be named with an extension BAT, e.g. autoexec.bat, menu. bat

A batch file is a program which contains MS-DOS commands. Each command used in the batch file must be started from a new line and written in a correct syntax. The syntax of a command is just the same as that you use it at the DOS prompt.

What is a Directory?

As the storage capacity of the hard disk is usually quite large as compared to the capacity available on a floppy diskette, the hard disk is usually divided into various segments (sections) which are called directories. In other words, a directory is nothing but a named section of the storage area of the disk (hard or floppy diskette) which is used for storing files. The directory serves the purpose of organizing the files in a better manner. For instance, word program files can be stored in a separate directory; the user Arjun may store his personal files in a directory-Arjun.

Like the filename, the directory name can have up to eight alpha- numeric characters and can also have up to 3 characters long extension name. However, normally the extension name is not used with the directory name. When you start your computer from the hard disk, it responds with C:\> and selects the main or root directory. Any file that you create or copy to drive C is added to this (root) directory. If you continue to add files in the root directory, after a few days, the root directory will have too many files. This will not only confuse you, but will also make the PC slow. Therefore you should try to use the directories (and sub-directories) in the hard disk. The root directory which contains files can also have one or more directories. Each directory in the root directory can have files as well as directories. Thus, the file and directory organization in DOS looks like the roots of tree, as shown in Fig.



In these figure, the root directory in drive C contains a few files and two directory INDIA and ASTRILIA. The India directory contains files & MP directory. The India directory contains files & MP-directory. The Australia directory contains files and two directories MARKET and PROGRAMS (called Sub-directory).

Wild card

Wild card use in DOS for specifying a file name and any match the specification a file name. Two wild card*, ? and one the asterisk (*) mean any file and the question mark (?) for any character.

For example:-

1. Display all files stored in C drive then the command will be: C:\>dir *.*
2. Display all the stored in C drive where extension is .txt then the command will be: C:\>dir *.txt
3. Display all files where extension that letter is E and first file name is A then the command must be:

C:\>dir A*.* or C:>dir A????????.*

4. Display all files name start with character A and extensions will be start with any character then the command will be:

C:\>dir A????????E??

Elementary DOS Command

DOS has internal and external commands there are program inherent in DOS with a number of service or commands available for us to use. The commands are in memory all the time once DOS has been read off the desk and start up. These are called the Internal /Resident commands since this are one internal to DOS. All other command programs one called External and they are kept in the disk (Secondary Memory) until they required.

Internal/Resident commands

(A) DATE & TIME (B) DIR/DIRECTORY (C) CLS (D) VOL/VOLUME (E) VER/VERSION (F) REN/RENAME (G) TYPE (H) COPY (I) DEL/DELETE/ERASE (J) MD (K) CD and CD\ (L) RD (M) COPY CON (N) PATH (O) PROMPT

(A) DATE & TIME: DOS display the date and time of the day. Time we can create or change some internal a disk, the disk file is marked with the current date and time.

SYNTAX:

```
C:\>DATE
C:\>TIME
```

Example: C:\> Date

Current Date is 03-16-2001:

Enter new date (mm-dd-yy):

(B) DIR/DIRECTORY: Dir is a directory using command it is and to display the list of files on a disk.

SYNTAX:

```
C:\>dir
[drive:] [path] [file name] [/p] [/w] [/A[: attributes]]
[/o[: sortrdr ]][/s[/b] [/I] [/v] [/4]
```

We can also use different switches to see information by directory command

/P - this switch is used for pauses after each screen to information.

/W - this switch is used for apply screen in wide termite.

/A - this switch is used to display file with specified attributes.

Attributes

D - Directory

R - Read-only Files

H - Hidden Files

S - System File

- prefix meaning not

/O - this command use to display the list by files in sorted order.

Sort Order

N - By name (Alphabetic)

S - By size (smallest first)

E - By extension (Alphabetic)

D - By date or time (finalist first)

G - group directory first

- - Prefix service order

/s - It is used to display directory and all subdirectory.

/b - It is used to display files with no heading information or summary.

/V - verbose mode

/4 - It is used to display year with 4 digits.

Example:

C:\> DIR/P Directory Page wise

C:\> DIR/W Directory width wise

C:\> DIR/P/W Directory width & Page wise

C:\> DIR/S Directory

C:\> DIR/ON (By Name, see in ascending order)

C:\> DIR/O-N (By Name, see in descending order)

C:\> DIR/OD (By date, see in ascending order)

C:\> DIR/O-D (By date, see in descending order)

C:\> DIR/OE (By Name, see in ascending order)

C:\> DIR/O-E (By Name, see in descending order)

C:\> DIR/P Directory/Files, see in Lower case

C:\> DIR/G Group Directory, to see first

(C) CLS: These command used to Clears the screen.

SYNTAX:

```
C:\>CLS
```

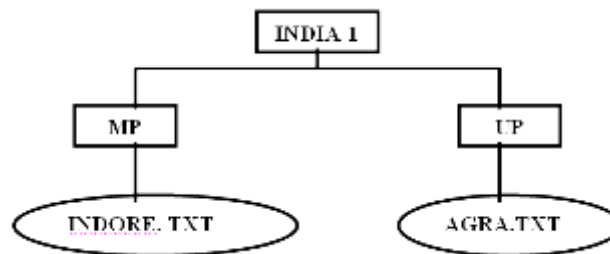
(D) **VOL:** These commands report to you the Volume cable on a disk.

SYNTAX: `C:\>VOL`

(E) **VER:** These command report to you the Version number of MS-DOS (1.0,2.1,3.0,3.3 etc.)

SYNTAX: `C:\>VER`

BASIC STRUCTURE FOR USING FOLLOWING COMMANDS



(F) **RENAME:** It is used to renames a files/ directories.

REN [`<old name of file/directory>`] [`file name of file directory`]
RENAME [`old name of file/directory`] [`new name of file directory`]

Example: `C:\> RENAME C:\INDIA1\MP\INDORE.TXT C:\INDIA1\MP\XXY.TXT`

(G) **TYPE:** It displays the information of file on monitor you can see only.

SYNTAX: `C:\>TYPE <filename>` **Example -** `C:\V> Type indore.txt`

(H) **COPY:** This is a command to make copies of disk files. It can also duplicate files from one disk to another we can copy several files by using with this command.

SYNTATX: `C:\> Copy <source path> <destination path>` **Example:** `C:\>Copy C:\INDIA\MP\INDORE.TXT C:\INDIA\UP`

(I) **DEL/DELETE /ERASE:** This is one command but with 2 different name, del and erase by which we can delete The file from the disk directory.

SYNTAX: `C:> DEL [drive:][path]filename [/P]`
`C:\>ERASE [drive:][path]filename [/P]`

[drive:][path]filename specifies the file(s) to delete. Specify multiple files by using wildcards. **/P** Prompts for confirmation before deleting each file.

Example-
`C:>CD INDIA 1`
`INDIA1 C:\INDIA1 > CD MP1`
`C:\INDIA1\MP> DEL INDORE.TXT`

(J) **MD:** This command is used for Creates a directory.

SYNTAX: `MKDIR [drive:]path` **Example-** `C:\>MD INDIA1`
`MD [drive:]path`

(K) CD/CDX: This Command Displays the name of or changes the current directory.

SYNTAX:

```
CHDIR [drive:][path]
CHDIR[.]
CD [drive:][path]
CD[.]
```

Specifies that you want to change to the parent directory.

Example- C:>RD INDIA1

(L) RD: This is used for Removes (deletes) a directory.

SYNTAX:

```
RMDIR [drive:]path
RD [drive:]path
```

Example- C:>RD MP

(M) COPY CON: This Command is used to make a file in DOS.

SYNTAX:

```
C:\> Copy Con <File Name>
-----
-----
^Z or F6
```

Example- C:> Copy con Indore.Txt
Indore is good city
^Z

(N) PATH: This Command Displays or sets a search path for executable files.

SYNTAX:

```
PATH [[drive:]path[;...]]
PATH :
```

Example- C:> Path C:\INDIA1\MP

(O) PROMPT COMMAND: Prompt command by using these command we can close the window command prompt.

SYNTAX:

```
Prompt [text]
```

"text" specifies a new command prompt.

prompt can be made up according to following special codes:

\$Q	=	(equal sign)
\$\$	\$	(dollar sign)
\$T		current time
\$D		current date
\$P		current drive and path
\$V		window version number
\$N		current drive
\$G	>	(Greater-than sign)
\$L	<	(less-than sign)
\$B		(pipe)

Example- Prompt \$ Arjun \$
ARJUN>

External Commands

(A) FORMAT (B) DISK COPY (C) CHKDSK (D) TREE (E) UNDELETE (F) EDIT (G) XCOPY (H) SORT (I) MOVE (J) FIND (K) MODE (L) DELTREE (M) SCANDISK (N) SYS (O) PRINT (P) ATTRIB (Q) DOSKEY

(A) FORMAT: These command is used for create tracks and sector for storing information in file.

SYNTAX:

```
C:\>FORMAT<disk name>
```

There are following different switches is used in FORMAT Command.

- /v** - [:label] Specifies the volume label.
- /Q** - Performs a quick format.
- /F: size** - specifies the size of the floppy disk to format (such as 160, 180, 320, 360, 720, 1.2, 1.44, 2.88).
- /S** - Copies system files to the formatted disk.
- /1** - Formats a single side of a floppy disk.
- /8** - Formats eight sectors per track.

Example- C:\>Fcrmat D:

(B) DISKCOPY: This command is used to make duplicate copy of a disk of copies the content of source disk to target drive.

SYNTAX: **DISKCOPY [drive1: [drive2:]] [/1] [/V]**

- /V** - It ensures that the disk is copied currently.
- /1** - To make copy one side.

Example- C:\>DISKCopy E:\

(C) CHKDSK: It is used to report disk and memory status by checking the directory and file allocation table of the target of current disk. By using these command switches you can also repair errors in the directories.

SYNTAX: **C:\>CHKDS**

Switches are:

- /F** corrects the excess in FAT file allocation table.
- /V-** Display the message of error and providing defaults about each error.

(D) TREE: This command is used to display all directory and subdirectory on tree format.

SYNTAX: **C:\>TREE [/F]**

- /F** - This switch is used to display file name with directory name.

(E) UNDELETE: This command is used to recover deleted file.

SYNTAX: **C:\>UNDELETE [/All]**

- /All** - This command automatically undelete all files.

(F) EDIT: This command is used to write a text in dos editor

SYNTAX: **EDIT [/B] [/H] [/R] [/S] [/<nnn>] [/?] [File(s)]**

- /B** - Forces monochrome mode.
- /H** - Displays the maximum number of lines possible for your hardware.
- /R** - Load file(s) in read-only mode.
- /s** - Forces the use of short filenames.
- /?** - Displays this help screen.
- [file]** - Specifies initial files(s) to load. Wildcards and multiple File spaces can be given.

(G) XCOPY: This command is used to copy file and directory.

SYNTAX: **XCOPY Source [destination] [/A | /M]**

- Source** - Specifies the file(s) to copy.
- Destination** - Specifies the location and/or name of new files.

/A - Copies files with the archive attribute set, doesn't change the attribute.
/M - Copies files with the archive attribute set, turns off the archive attribute.
/S - copy sub Directory & Files.
Example: - C:\>XCOPY C:\India1*. * C:\xx/s

(H) SORT: It is used to display internals of the in sorted order.

Syntax: **SORT [/R] [/+N] [[drives:][Path] file name]**

/R - Reverse the sort order
/+N - Sorts the file according to character in column N.
Example- C:\>TYPE INDORE.TXT: SORT
 C:\> TYPE INDORE.TXT: SORT/R
 INDORE.TXT

(I) MOVE: It is used to moves files and rename files and dir

SYNTAX: **MOVE [Source Path Name] [Destination Path Name]**

Example- C:\> MOVE C:\INDIA1\MP\INDORE.TXT C:\ INDIA1XUP *

(j) FIND: It is use to search the text string is a files or file.

SYNTAX: **FIND [/V]/[C]/[N] "string" [[drive:][path] file name[...]]**

/V - displays all lines NOT containing the specified string.
/C - displays only the count of lines containing the string.
/N - displays line numbers with displayed lines.
Example- C:\>FIND "INDORE" C:\INDORE\MP\INDORETXT\

(K) MODE: Configures system devices

SYNTAX: **C:\>MODE**

(L) DELTREE: This Command deletes a directory and all the subdirectories and files in it.

SYNTAX: **DELTREE [/Y] [drive:]path [[drive:]path[...]]**

/Y - Suppresses prompting to confirm you want to delete the subdirectory.
[drive:]path - Specifies the name of the directory you want to delete.
Example- C:\>Deltree C:\India1

(M) SCANDISK: For information about the command-line parameters supported by ScanDisk for Windows, look up 'checking for errors, in disks' in the Windows Help index. Then view the topic '**Checking your disk for errors**' every time your computer starts.

SYNTAX: **C:\>SCANDISK**

(N) SYS: Copies MS-DOS system files and command interpreter to a disk you specify.

SYNTAX: **SYS [drive1:][path] drive2:**

[Drive1 :][path] Specifies the location of the system files.
[Drive2:][path] Specifies the drive the files are to be copied to.

(O) PRINT: Print command is used to print a file,

SYNTAX: **C:\> Print**

(P) ATTRIB: This Displays or changes file attributes.

SYNTAX:

**ATTRIB [+R | -R] [+A | -A] [+S | -S] [+H | -H] [[drive:]
[path]filename] [/S]**

- /S** - Sets an attribute.
- - Clears an attribute.
- R** - Read-only file attribute.
- A** - Archive file attribute.
- S** - System file attribute.
- H** - Hidden file attribute.
- S** - Processes files in all directories in the specified path.

Example- C:\> ATTRIB + H C:\India\MP1\Indore.Txt
C:\> ATTRIB - H C:\India\MP1\Indore.Txt

(Q) DOSKEY: It is used to edit command lines, recalls command lines and macros.

- Doskey** - [SWITCH...]
- Up, Down** - Scroll commands.
- ESC** - Clears Current Command.
- F7** - Displays command history.
- ALT+F7** - Clears command history
- F8** - Searches for command beginning with characters.
- F9** - Select command number with characters

Comparison Between .COM,.EXE,.BAT .

COM: The extension meaning of these file is command file. The Internal command of dos written in command file.

EXE: The extension meaning of these file is executable file. The extension is used to execute any program or external command.

.BAT: The extension is represents batch file. There are many commands used many times then these file give the facility to write them in-group and execute sequentially.

Unit-II MS-Word 2010

Lesson: 1

Introduction to M.S Word 2010

What is M.S Office?

Microsoft Office 2010 (also called Office 2010 and Office 14) is a productivity suite for Microsoft Windows, and the successor to Microsoft Office 2007. Office 2010 includes extended file format support, user interface updates, and a changed user experience. A 64-bit version of Office 2010 is available, although not for Windows XP or Windows Server 2003.

On April 15, 2010, Office 2010 was released to manufacturing. The suite became available for retail and online purchase on June 15, 2010. Office 2010 is the first version to require product activation for volume license editions.

M.S Office 2010 marks the debut of free online versions of Word, Excel, PowerPoint, and OneNote, which work in the web browsers Internet Explorer, Firefox, Chrome and Safari, but not Opera. Office Starter 2010, a new edition of Office, replaced the low-end home productivity software, Microsoft Works.

Microsoft's update to its mobile productivity suite, Office Mobile 2010, will also be released for Windows Phones running Windows Mobile6.5 and Windows Phone 7. In Office 2010, every application features the ribbon, Outlook, including, OneNote, Publisher InfoPath, SharePoint Workspace (previously known as Groove), and the new Office Web Apps.

New Feature in M.S Office 2010

Office 2010 is more "role-based" than previous versions. There are features tailored to employees in "roles such as research and development professionals, sales people, and human resources." In its Internet implementation, Office 2010 incorporates features of SharePoint Server and borrows from "Web 2.0" ideas.

Microsoft Office 2010 includes updated support for **ISO/IEC 29500:2008**, the International Standard version of Office Open XML (OOXML) file format. Office 2010 provides read support for ECMA-376, read/write support for ISO/IEC 29500 Transitional, and read support for ISO/IEC 29500 Strict. In its pre-release (beta) form, however, Office 2010 only supported the Transitional variant, and not the Strict. The intent of the ISO/IEC is to allow the removal of the Transitional variant from the ISO/IEC compliant version of the OOXML standard. Microsoft Office 2010 supports Open Document Format (ODF) 1.1, which is an OASIS standard.

New features also include a built-in screen capture tool, a background removal tool, new SmartArt templates and author permissions. The 2007 "Office Button" was replaced with a menu button that leads to a full-window file menu, known as Backstage View, giving easy access to task-centered functions such as printing and sharing. A notable accessibility regression from 2007 is that the menu button scores worse with the Fitts's law accessibility calculation than previous versions. A modified Ribbon interface is present in all Office applications, including Office Outlook, Visio, OneNote, Project, and Publisher. Office applications also have functional jumplists in Windows 7, which would allow easy access to recent items and tasks relevant to the application.

Features of Office 2010 include: Ribbon interface and Backstage View across all applications, Background Removal Tool, Letter Styling, The Word 2007 Equation editor is common to all applications, replacing Microsoft Equation Editor 3.0, New SmartArt templates, New text and image editing effects, Screen Capturing and Clipping tools, Live collaboration functions Jumplists in Windows 7, New animations and transitions in PowerPoint 2010, View Side by Side/Synchronous Scrolling in Word 2010.

A new feature in Microsoft Office 2010 is Outlook Social Connector, which allows users to connect to and receive updates from their social network inside Microsoft Outlook. When users view their emails a name, picture, and title is available for the person they are contacting. Upcoming appointments can also be viewed with this new feature and users can request friends. Outlook Social Connector currently supports Facebook, LinkedIn, MySpace and Windows Live Messenger. The Volume edition can be activated using a Multiple Activation Key (MAK) which is limited by the number of times a machine can activate when connected to Microsoft's servers, or using a Key Management Server (KMS) which requires activation every 180 days.

What is M.S Word?

Microsoft Word is a non-free commercial word processor designed by Microsoft. It is part of the Microsoft Office Suite. Microsoft Word is currently the most common word processor on the market. Because it is so common, the .doc/.docx format has become the de facto format for text documents. **What is Microsoft Word used for:** MS Word is a popular word-processing program used for creating documents such as letters, brochures, learning activities, tests, quizzes and students' homework assignments. There are many powerful features available in Microsoft Word to make it easier to learn for students with disabilities.

Word 2010 is software for word processing. In the new Microsoft 2010 Office Suite. Word allows you to easily create professional-looking documents using various themes, visual designs, formatting tools, sharing features and more.

Microsoft Word is a word processor and was previously considered the main program in Office. Its proprietary **DOC** format is considered a de facto standard, although Word 2007 can also use a new XML-based, Microsoft Office-optimized format called

.DOCX, which has been controversially standardized by Ecma International as Office Open XML and its SP2 update supports PDF and a limited ODF. Word is also available in some editions of Microsoft Works. It is available for the Windows and Mac platforms. The first version of Word, released in the autumn of 1983, was for the MS-DOS operating system and had the distinction of introducing the mouse to a broad population. Word 1.0 could be purchased with a bundled mouse, though none was required. Following the precedents of LisaWrite and MacWrite, Word for Macintosh attempted to add closer WYSIWYG features into its package. Word for Mac was released in 1985. Word for Mac was the first graphical version of Microsoft Word. Despite its bugginess, it became one of the most popular Mac applications.

New features in Word 2010

Microsoft Word is a word processing software package. You can use it to type letters, reports, and other documents. It helps a lot in spelling-check and words-count.

1. Create visually compelling documents

With Word 2010, you can create compelling documents while applying formatting effects such as shadow, bevel, glow, and reflection to your document text. You can spell-check text that uses visual effects, and add text effects to paragraph styles. Many of the same effects used for images are now available to both text and shapes, enabling you to seamlessly coordinate all of your content.

2. Turn your text into compelling diagrams

Word 2010 offers you more options to add visual impact to your documents. Choose from dozens of additional SmartArt® Graphics to build impressive diagrams just by typing a bulleted list. Use SmartArt to transform basic, bullet-point text into compelling visuals that better illustrate your ideas.

3. Add visual impact to your document

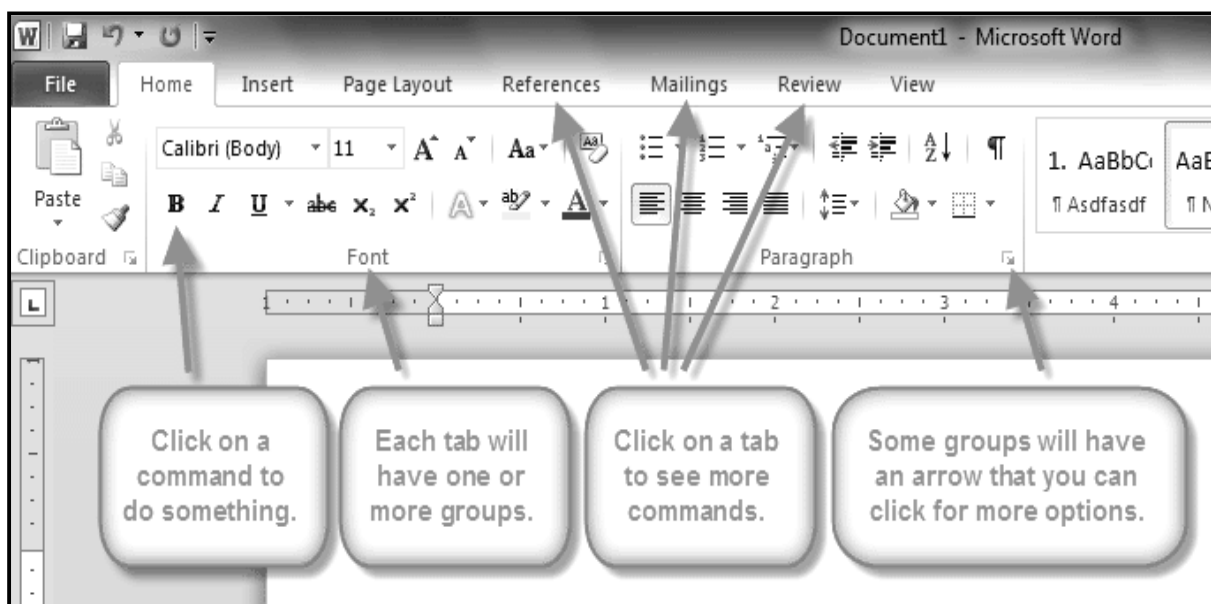
New picture-editing tools in Word 2010 enable you to add special picture effects without additional photo-editing software. You can easily adjust pictures with color saturation and temperature controls. You also get improved tools for easier and more precise cropping and image correction, to help you turn a simple document into a work of art.

Getting to Know Word 2010

Word 2010 is a bit different from earlier versions, so even if you've used Word before, you should take some time to familiarize yourself with the interface. The toolbars are similar to those in Word 2007, and they include the Ribbon and the Quick Access Toolbar. Unlike Word 2007, commands such as Open and Print are housed in **Backstage view**, which replaces the **Microsoft Office Button**.

The Ribbon

The new, tabbed Ribbon system was introduced in Word 2007 to replace traditional menus. The Ribbon contains all of the commands you'll need in order to do common tasks. It contains multiple tabs, each with several groups of commands, and you can add your own tabs that contain your favorite commands. Some groups have an arrow in the bottom-right corner that you can click to see even more commands.



To Minimize and Maximize the Ribbon:



The Ribbon is designed to be responsive to your current task and easy to use; however, you can choose to minimize it if it's taking up too much screen space.

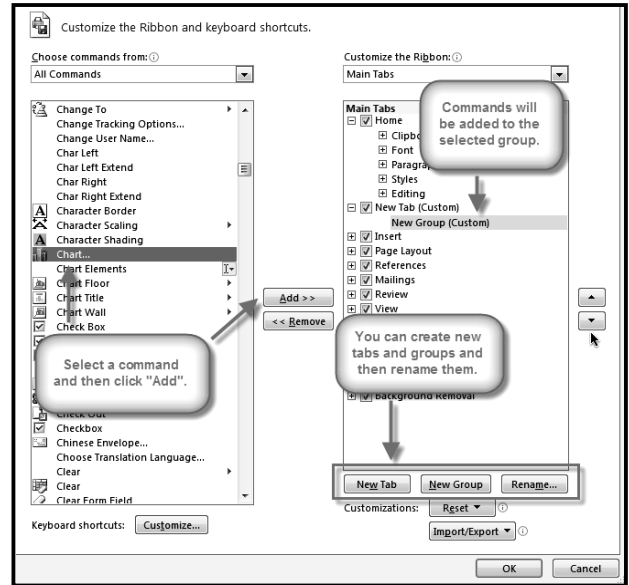
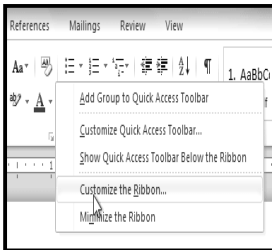
1. Click the **arrow** in the upper-right corner of the Ribbon to minimize it.
2. To maximize the Ribbon, click the arrow again.

When the Ribbon is minimized, you can make it reappear by clicking on a tab. However, the Ribbon will disappear again when you're not using it.

To Customize the Ribbon:

You can customize the Ribbon by creating your own tabs with whichever commands you want. Commands are always housed within a group, and you can create as many groups as you want in order to keep your tab organized. If you want, you can even add commands to any of the default tabs, as long as you create a custom group in the tab.

1. Right-click the **Ribbon** and select **Customize the Ribbon**. A dialog box will appear.
2. Click **New Tab**. A new tab will be created with a new group inside it.
3. Make sure the new group is selected.
4. Select a command from the list on the left, then click **Add**. You can also drag commands directly into a group.
5. When you are done adding commands, click **OK**.



If you don't see the command you want, click on the **Choose commands from:** drop-down box and select **All Commands**.

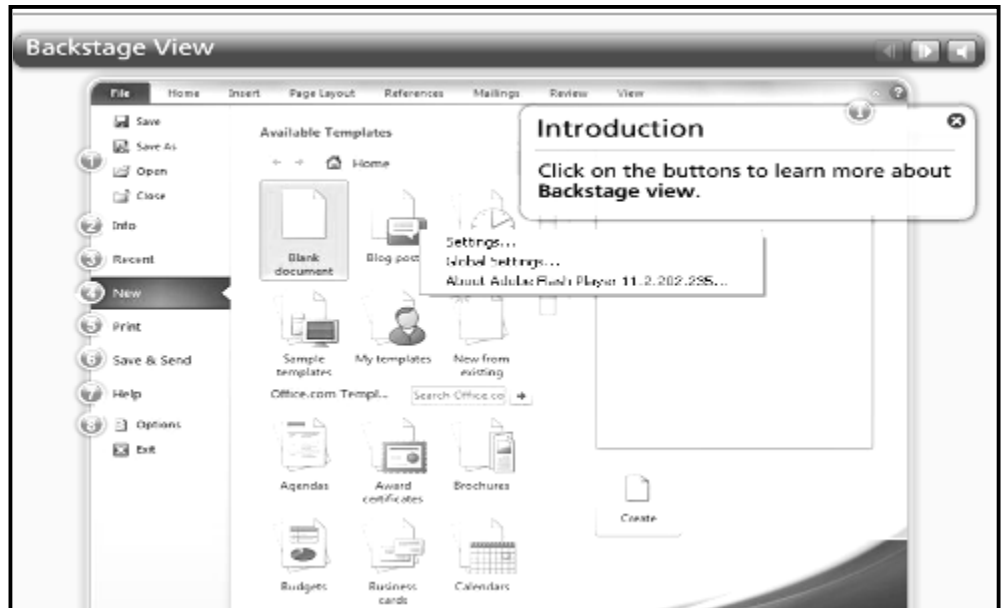
Backstage View

Backstage view gives you various options for saving, opening a file, printing, or sharing your document. It is similar to the Office Button Menu from Word 2007 or the File Menu from earlier versions of Word. However, instead of just a menu, it is a full-page view which makes it easier to work with.

To Get to Backstage View:

1. Click the **File** tab.
2. You can choose an option on the left side of the page.
3. To get back to your document, just click any tab on the Ribbon.

Click on the buttons to learn more about **Backstage view** as shown in following image.

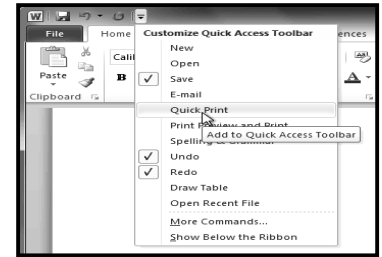


The Quick Access Toolbar

The Quick Access Toolbar is located above the ribbon, and it lets you access common commands no matter which tab you're on. By default, it shows the Save, Undo, and Repeat commands. You can add other commands to make it more convenient for you.

To Add Commands to the Quick Access Toolbar:

1. Click the **drop-down arrow** to the right of the **Quick Access Toolbar**.
2. Select the command you wish to add from the drop-down menu. It will appear in the Quick Access toolbar.

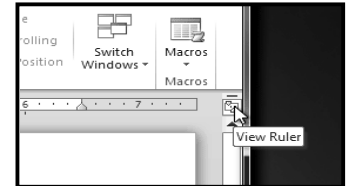


The Ruler

The Ruler is located at the top and to the left of your document. It makes it easier to adjust your document with precision. If you want, you can hide the Ruler to free up more screen space.

To Hide or View the Ruler:

1. Click the View Ruler icon over the scrollbar to hide the ruler.
2. To show the ruler, click the View Ruler icon again.



Creating and Opening Documents

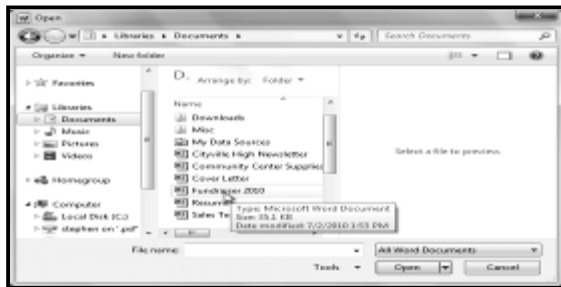
To Create a New, Blank Document:

1. Click the File tab. This takes you to Backstage view.
2. Select New.
3. Select Blank document under Available Templates. It will be highlighted by default.
4. Click Create. A new, blank document appears in the Word window.

To save time, you can create your document from a template, which you can select from the New Document pane.



To Open an Existing Document:



1. Click the File tab. This takes you to Backstage view.
2. Select Open. The Open dialog box appears.
3. Select your document and then click Open.

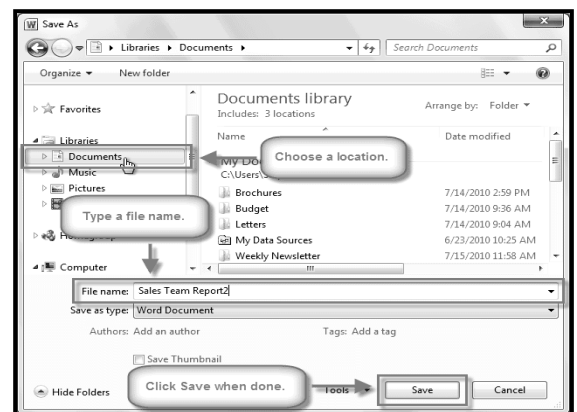
If you've opened a file recently, you can also access it from the Recent Documents list. Just click on the File tab and select Recent.

To Use the Save As Command:

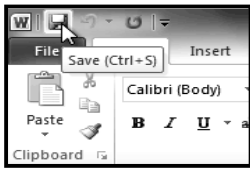
Save As allows you to choose a name and location for your document. It's useful if you've first created a document or if you want to save a different version of a document while keeping the original.

1. Click the **File** tab.
2. Select **Save As**.
3. The **Save As dialog box** will appear. Select the **location** where you wish to save the document.
4. **Enter a name** for the document and **click Save**.

If you're using Windows 7, you'll usually want to save things to your Documents library, and in other versions of Windows you'll save them to the My Documents folder.



To Use the Save Command:



1. Click the **Save** command on the **Quick Access Toolbar**.
2. The document will be saved in its current location with the same file name.

If you are saving for the first time and select **Save**, the **Save As** dialog box will appear.

AutoRecover:

Word automatically saves your documents to a temporary folder while you're working on them. If you forget to save your changes, or if Word crashes, you can recover the auto saved file.

1. Open a document that was previously closed without saving.
2. In **Backstage view**, click **Info**.
3. If there are auto saved versions of your file, they will appear under **Versions**. Click on the **file** to open it.
4. To save changes, click **Restore** and then click **OK**.

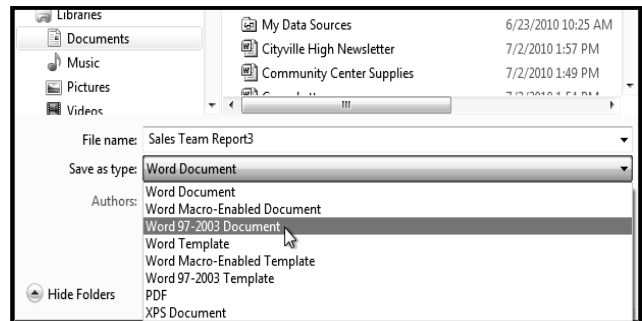
By default, Word **autosaves** every **10 minutes**. If you are editing a document for less than 10 minutes, Word may not create an autosaved version.

Other File Formats

You can share your documents with anyone using Word 2010 or 2007, since they use the same file format. However, earlier versions of Word use a different file format, so if you want to share your document with someone using an earlier version of Word, you'll need to save it as a Word 97-2003 Document.

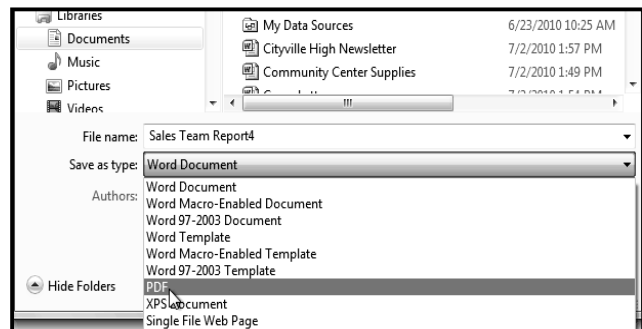
To Save As Word 97 - 2003 Document:

1. Click the **File** tab.
2. Select **Save As**.
3. In the **Save as type** drop-down menu, select **Word 97-2003 Document**.
4. Select the location you wish to save the document.
5. Enter a name for the document and click **Save**.



To Save As a PDF:

1. Click the **File** tab.
2. Select **Save As**.
3. In the **Save as type** drop-down menu, select **PDF**.
4. Select the location you wish to save the document.
5. Enter a name for the document.
6. Click the **Save** button.



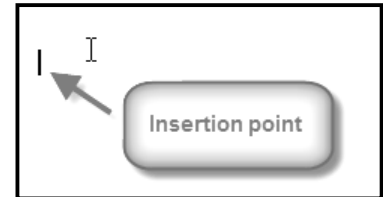
Lesson: 2

Text Basic

It is important to know how to perform basic tasks with text when working in a word processing application. In this lesson you will learn the basics of working with text including how to insert, delete, select, copy, cut, paste, and drag and drop text.

To Insert Text:

1. **Move your mouse** to the location you wish text to appear in the document.
2. Click the **mouse**. The insertion point appears.
3. **Type the text** you wish to appear.



To Delete Text:

1. Place the insertion point next to the text you wish to delete.
2. Press the **Backspace key** on your keyboard to delete text to the left of the insertion point.
3. Press the **Delete key** on your keyboard to delete text to the right of the insertion point.

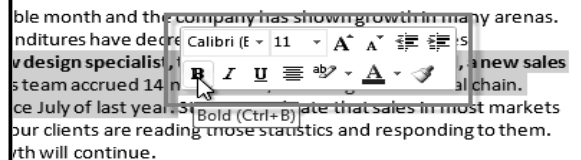
To Select Text:

1. **Place the insertion point** next to the text you wish to select.
2. Click the **mouse**, and while holding it down, **drag** your mouse over the text to select it.
3. **Release** the mouse button. You have selected the text. A **highlighted box** will appear over the selected text.

Executive Summary

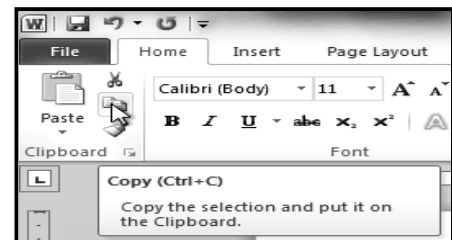
January 2010 has been a profitable month and the company has shown growth in many arenas. Ad sales are up by 23% and capital expenditures have decreased since 4th quarter in the Sales Department. The sales team hired a **new design specialist**, the role of **VP of sales was filled**, a **new sales chief** position was created, and the sales team accrued 14 new clients, including one national chain. Additionally, online ad sales doubled since July of last year. Statistics indicate that sales in most markets increase with the use of online ads and our clients are reading those statistics and responding to them. Marketing trends indicate that this growth will continue.

When you select text or images in Word, a **hover toolbar** with formatting options appears. This makes formatting commands easily accessible, which may save you time. If the toolbar does not appear at first, try moving the mouse over the selection.



To Copy and Paste Text:

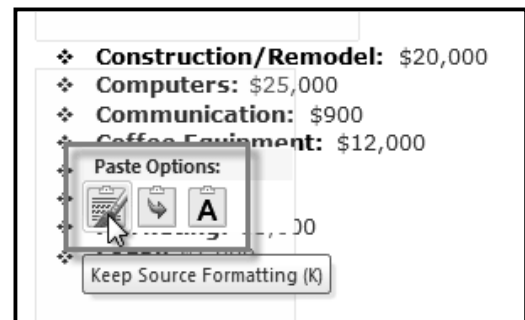
1. Select the text you wish to copy.
2. Click the **Copy command** on the **Home tab**. You can also right-click your document and select **Copy**.
3. Place your insertion point where you wish the text to appear.
4. Click the **Paste command** on the **Home tab**. The text will appear.



To Cut and Paste Text:

1. Select the text you wish to copy.
2. Click the **Cut command** on the **Home tab**. You can also **right-click** your document and select **Cut**.
3. Place your insertion point where you wish the text to appear.
4. Click the **Paste command** on the **Home tab**. The text will appear.

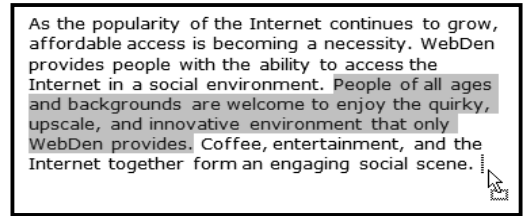
You can also cut, copy, and paste by right-clicking your document and choosing the desired action from the drop-down menu. When you use this method to paste, you can choose from three options that determine how the text will be formatted: Keep Source Formatting, Merge Formatting and Keep Text Only. You can **hover** the mouse over each icon to see what it will look like before you click on it.



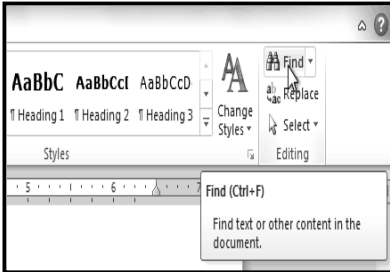
To Drag and Drop Text:

1. Select the text you wish to copy.
2. **Click** and **drag** the text to the location you wish it to appear. The cursor will have a rectangle under it to indicate that you are moving text.
3. **Release** the **mouse button** and the text will appear.

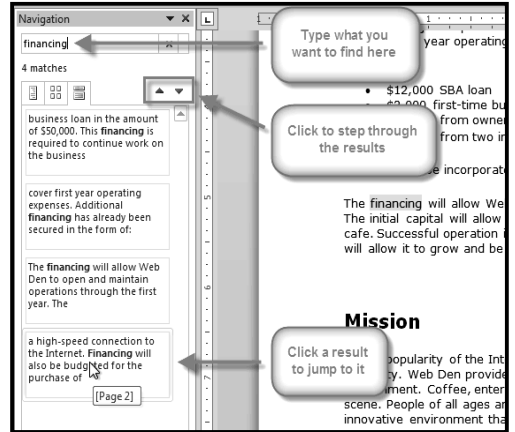
If text does not appear in the exact location you wish, you can click the Enter key on your keyboard to move the text to a new line.



To Find Text:



1. From the **Home** tab, click the Find command. The Navigation pane will appear on the left side of the screen.
2. **Type the text** you wish to find in the field at the top of the Navigation pane.
3. If the text is found in the document, it will be highlighted in yellow, and a preview will appear in the Navigation pane.



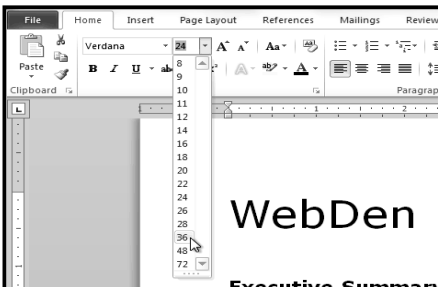
4. If the text appears more than once, you can click the arrows on the Navigation pane to step through the results. You can also click the **result previews** on the Navigation pane to jump to the location of a result in your document.
5. When you **close** the Navigation pane, the highlighting will disappear.

To Replace Text:

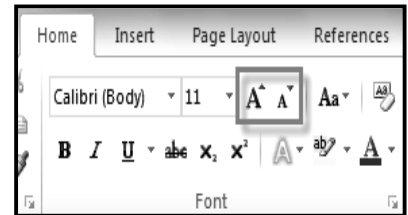
1. From the **Home** tab, click the **Replace** command. The **Find and Replace** dialog box will appear.
2. Type the text you wish to find in the **Find what** field.
3. Type the text you wish to replace it with in the **Replace with** field.
4. Click **Find Next** and then **Replace** to replace text. You can also click **Replace All** to replace all instances within the document.



To Change the Font Size:



1. Select the **text** you wish to modify.
2. Click the **drop-down arrow** next to the **Font Size** box on the **Home** tab. A drop-down menu appears.
3. **Move the mouse pointer** over the various font sizes. A live preview of the font size will appear in the document.
4. Select the **font size** you wish to use.
5. You can also use the **Grow Font** and **Shrink Font** commands to change the size.

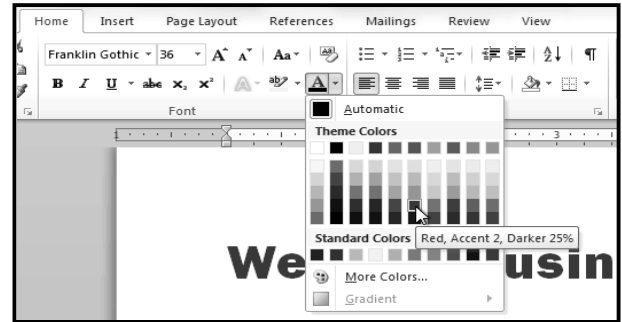


To Change the Font:

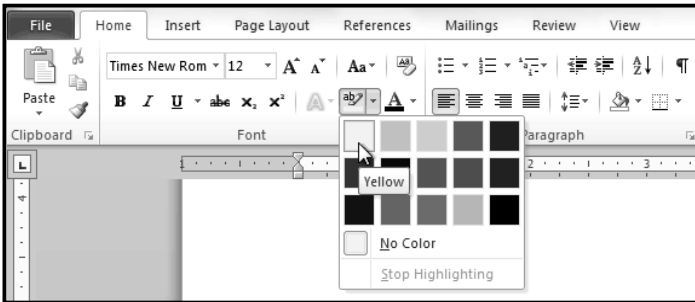
1. **Select** the **text** you wish to modify.
2. Click the **drop-down arrow** next to the Font box on the **Home** tab. The Font drop-down menu appears.
3. **Move the mouse pointer** over the various fonts. A live preview of the font will appear in the document.
4. Select the font you wish to use. The font will change in the document.

To Change the Font Color:

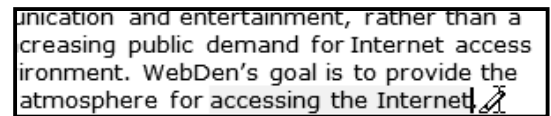
1. Select the text you wish to modify.
2. Click the **Font Color drop-down arrow** on the **Home tab**. The Font Color menu appears.
3. **Move the mouse pointer** over the various font colors. A live preview of the color will appear in the document.
4. Select the **font color** you wish to use. The font color will change in the document.
5. Your color choices aren't limited to the drop-down menu that appears. Select More Colors at the bottom of the list to access the Colors dialog box. Choose the color that you want and click OK.



To Highlight Text:

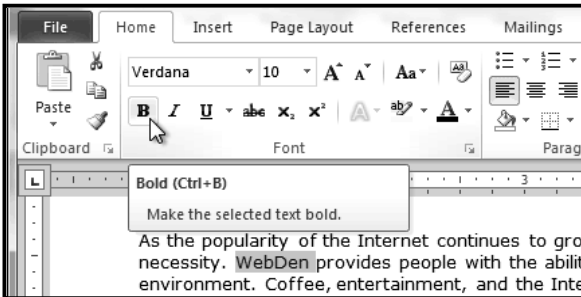


1. From the **Home tab**, click the Text Highlight Color drop-down arrow. The Highlight Color menu appears.
2. Select the **desired highlight color**.
3. Select the text you wish to modify. It will then be highlighted.
4. To switch back to the normal cursor, click the Text Highlight Color command.



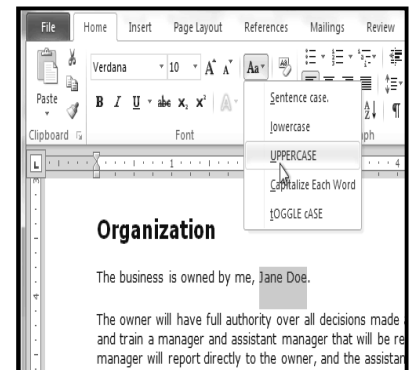
To Use the Bold, Italic, and Underline Commands:

1. Select the text you wish to modify.
2. Click the **Bold (B)**, **Italic (I)**, or **Underline (U)** command in the **Font group** on the **Home tab**.



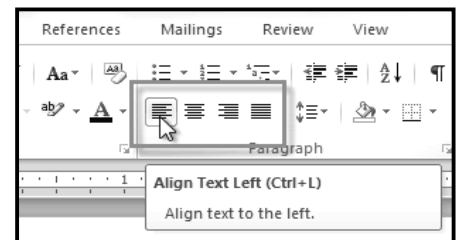
To Change the Text Case:

1. Select the text you wish to modify.
2. Click the **Change Case** command in the **Font group** on the **Home tab**.
3. Select the **desired case option** from the list.



To Change Text Alignment:

1. Select the text you wish to modify.
2. Select one of the four alignment options from the Paragraph group on the Home tab.
 - **Align Text Left:** Aligns all the selected text to the left margin.
 - **Center:** Aligns text an equal distance from the left and right margins.
 - **Align Text Right:** Aligns all the selected text to the right margin.
 - **Justify:** Justified text is equal on both sides and lines up equally to the right and left margins. Many newspapers and magazines use full-justification.

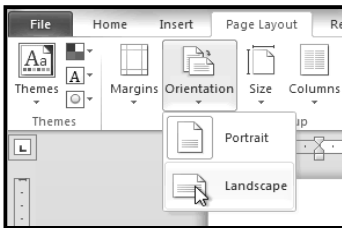


Lesson: 3

Modifying Page Layout & Checking Spelling

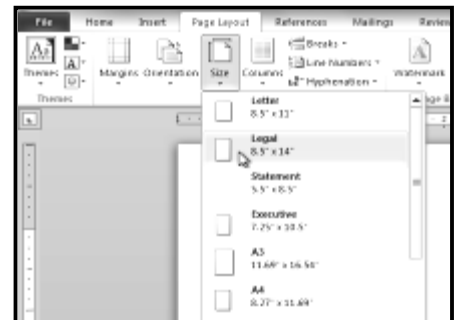
You may find that the default page layout settings in Word are not sufficient for the document you wish to create, in which case you will want to modify those settings. For example, if you are printing on a different paper size, you'll want to change the document page size to match the paper. In addition, you may want to change the page formatting depending on the type of document you are creating.

To Change Page Orientation:



1. Select the **Page Layout** tab.
2. Click the **Orientation** command in the Page Setup group.
3. Click either **Portrait** or **Landscape** to change the page orientation.

Landscape format means that the page is oriented horizontally, and portrait format is oriented vertically.



To Change the Page Size:

1. Select the **Page Layout** tab.
2. Click the **Size** command and a drop-down menu will appear. The current page size is highlighted.
3. Click the **size option** you desire. The page size of the document changes.

To Format Page Margins:



1. Select the **Page Layout** tab.
2. Click the **Margins** command. A menu of options appears. **Normal** is selected by default.
3. Click the **predefined margin size** you desire.

To Use Custom Margins:

1. From the **Page Layout** tab, click **Margins**.
2. Select **Custom Margins**. This will take you to the **Page Setup** dialog box.
3. Adjust the **margin sizes** for each side of the page and click **OK**.

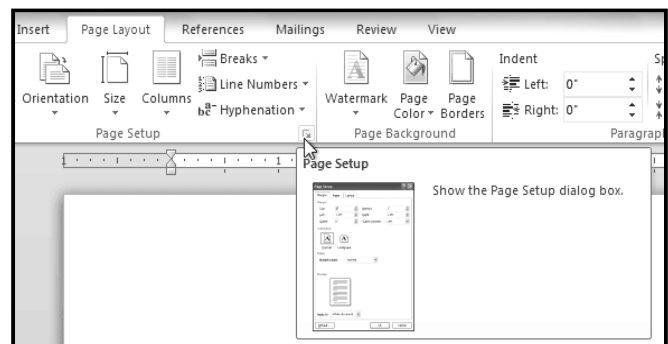


The Page Setup Dialog Box

Previously, we showed how to open the Page Setup dialog box from the Margins drop-down menu. As you become more familiar with Word, you may find that you want to use the Page Setup dialog box more often to fine-tune the page margins and adjust other settings. To get there more quickly, you may want to use a shortcut that's conveniently located on the Page Layout tab.

To Open the Page Setup Dialog Box:

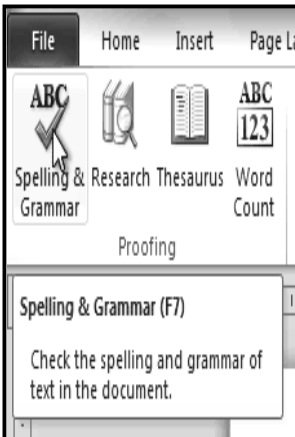
1. Click the **Page Layout** tab.
2. Click the small arrow in the bottom-right corner of the **Page Setup** group. The **Page Setup** dialog box will appear.



Checking Spelling & Grammar

Worried about making mistakes when you type? Don't be. Word provides you with several proofing features that will help you produce professional, error-free documents. In this lesson you will learn about the various proofing features, including the Spelling and Grammar tool.

To Run a Spelling & Grammar Check:



1. Go to the **Review** tab.
2. Click on the **Spelling & Grammar** command.
3. The **Spelling and Grammar** dialog box will open. For each error in your document, Word will try to offer one or more **suggestions**. You can select a suggestion and then click **Change** to correct the error.
4. If no suggestions are given, you can manually type in the correct spelling.



Ignoring "Errors"

The spelling and grammar check is not always correct. Particularly with grammar, there are many errors that Word will not notice. There are also times where the spelling and grammar check will say that something's an error when it's actually not. This often happens with people's names, which may not be in the dictionary.

If Word says that something is an error, you can choose not to change it. Depending on whether it's a spelling or grammar error, you can choose from several options:

For spelling "errors":

- **Ignore Once:** This will skip the word without changing it.
- **Ignore All:** This will skip the word without changing it, and it will also skip all other instances of this word in the document.
- **Add to Dictionary:** This adds the word to the dictionary so that it will never come up as an error. Make sure that the word is spelled correctly before choosing this option.

For grammar "errors":

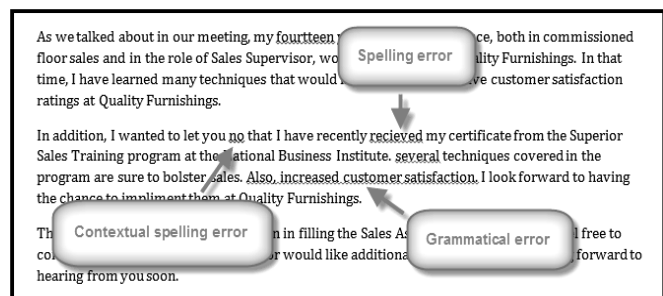
- **Ignore Once:** This will skip the "error" without changing it.
- **Ignore Rule:** This will skip this "error" as well as all other instances that relate to this grammar rule.
- **Next Sentence:** This skips the sentence without changing it, and leaves it marked as an error. That means it will still show up if you do another Spelling and Grammar check later on.

If you're not sure about a grammar error, you can click Explain to see why Word thinks it's an error. This can help you determine whether you want to change it or not.

Automatic Spelling and Grammar Checking

By default, Word automatically checks your document for spelling and grammar errors, so you may not even need to run a separate Spelling and Grammar check. These **errors** are indicated by **colored, wavy lines**.

- The **red line** indicates a misspelled word.
- The **green line** indicates a grammar error.
- The **blue line** indicates a contextual spelling error. This feature is turned off by default.



To Use the Spelling Check Feature:

1. Right-click the **underlined word**. A menu will appear.
2. Click on the **correct spelling** of the word from the **listed suggestions**.
3. The corrected word will appear in the document.

You can choose to **ignore** an underlined word, add it to the **dictionary**, or go to the Spelling dialog box for more options.

To Use the Grammar Check Feature:

1. Right-click the **underlined word or phrase**. A menu will appear.
2. Click on the **correct phrase** from the **listed suggestions**.
3. The corrected phrase will appear in the document.

You can also choose to **ignore** an underlined phrase, go to the **Grammar dialog box**, or click **About This Sentence** for information about the grammar rule.

To Change the Automatic Spelling and Grammar Check Settings:

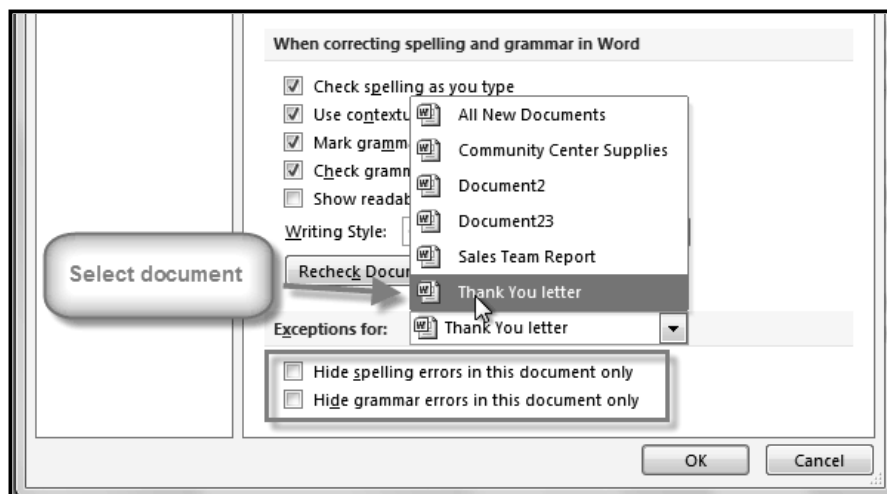
1. From **Backstage view**, click on **Options**.
2. Select **Proofing**. The dialog box gives you several options to choose from:
 - If you don't want Word to automatically check spelling, uncheck **Check spelling as you type**.
 - If you don't want grammar errors to be marked, uncheck **Mark grammar errors as you type**.
 - To check for contextual spelling errors, check **Use contextual spelling**.

If you've turned off the automatic spelling and/or grammar checks, you can still run a check by going to the **Review tab** and clicking the **Spelling & Grammar** button.

To Hide Spelling and Grammar Errors in a Document:

If you're sharing a document such as a resume with someone, you might not want them to see those annoying red, green, and blue lines. Turning off the automatic spelling and grammar checks only applies to your computer, so the lines may still show up when someone else views your document. Luckily, you can hide spelling and grammar errors in a document so that the lines will not show up on any computer.

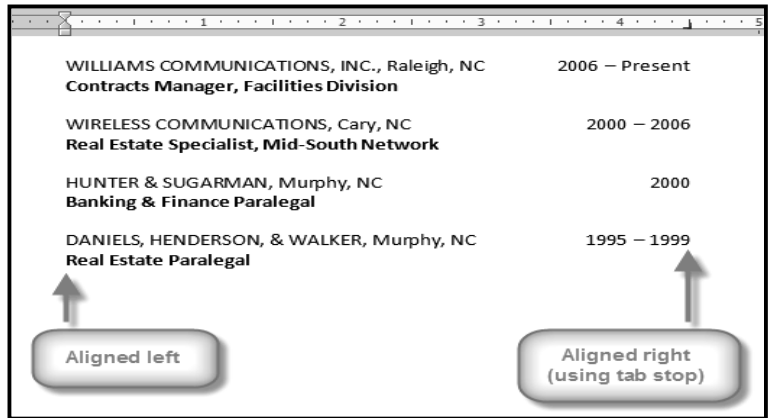
1. From **Backstage view**, click on **Options**.
2. Select **Proofing**.
3. In the drop-down box next to "**Exceptions for:**" select the correct document (if you have more than one document open).
4. Put a checkmark next to **Hide spelling errors in this document only** and **Hide grammar errors in this document only**.
5. Click **OK**.



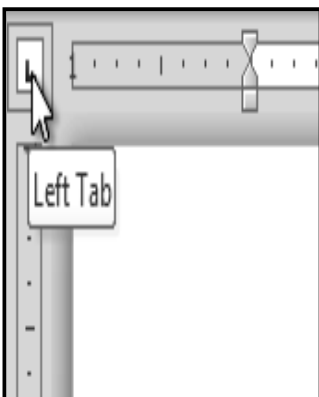
Tabs

Using tabs is often the best way to control exactly where text is placed. By default, every time you **press the tab key**, the insertion point will move **1/2 inch** to the right. By adding tab **stops** to the Ruler, you can change the size of the tabs, and you can even have more than one type of alignment in a single line. **For example**, you could **Left Align** the beginning of the line and **Right Align** the end of the line by simply adding a Right Tab.

Pressing the tab key can either add a tab or create a first line indent depending on where the insertion point is. Generally, if the insertion point is at the beginning of an existing paragraph, it will create a first line indent; otherwise, it will create a **tab**.










The Tab Selector



The **tab selector** is above the **vertical ruler** on the **left**. **Hover** over the **tab selector** to see the name of the type of tab stop that is active.

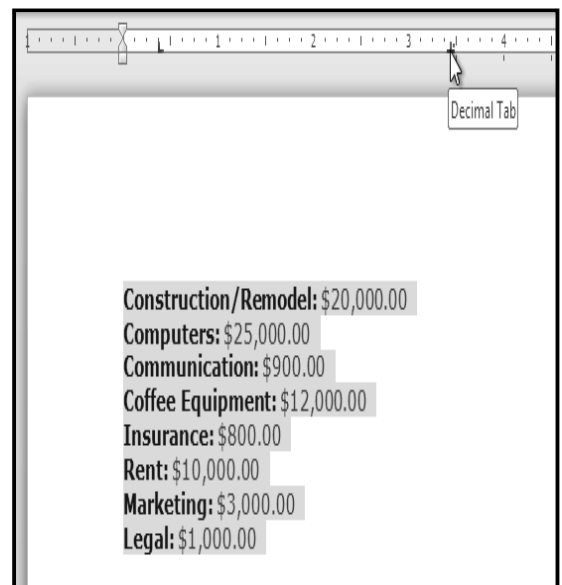
The types of tab stops include:

- **Left Tab** : Left-aligns the text at the tab stop.
- **Center Tab** : Centers the text around the tab stop.
- **Right Tab** : Right-aligns the text at the tab stop.
- **Decimal Tab** : Aligns decimal numbers using the decimal point.
- **Bar Tab** : Draws a vertical line on the document.
- **First Line Indent** : Inserts the indent marker on the ruler and indents the first line of text in a paragraph.
- **Hanging Indent** : Inserts the hanging indent marker and indents all lines other than the first line.

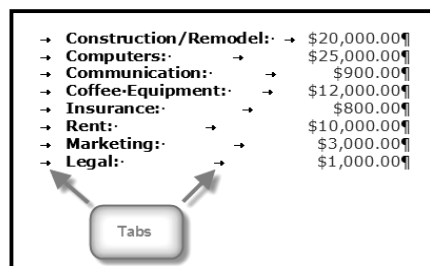
Although **Bar Tab**, **First Line Indent**, and **Hanging Indent** appear on the tab selector, they're not technically tabs.

To Add Tab Stops:

1. Select the paragraph or paragraphs that you want to add tab stops to. If you don't select any paragraphs, the tab stops will apply to the **current paragraph** and any **new paragraphs** that you type below it.
2. Click the **tab selector** until the tab stop you wish to use appears.
3. Click the **location on the horizontal ruler** where you want your text to appear (it helps to click on the **bottom edge** of the ruler). You can add as many tab stops as you want.
4. Place the **insertion point** where you want to add the tab, and press the **Tab** key. The text will jump to the next tab stop.
5. To remove a tab stop, just drag it off of the Ruler.



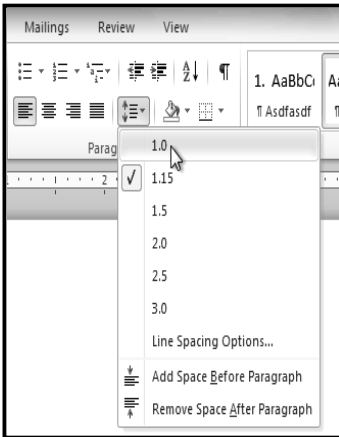
Click the **Show/Hide ¶** command on the **Home tab** (in the Paragraph group). This will allow you to see the nonprinting characters **such as**: the spacebar, paragraph (**¶**), and Tab key markings.



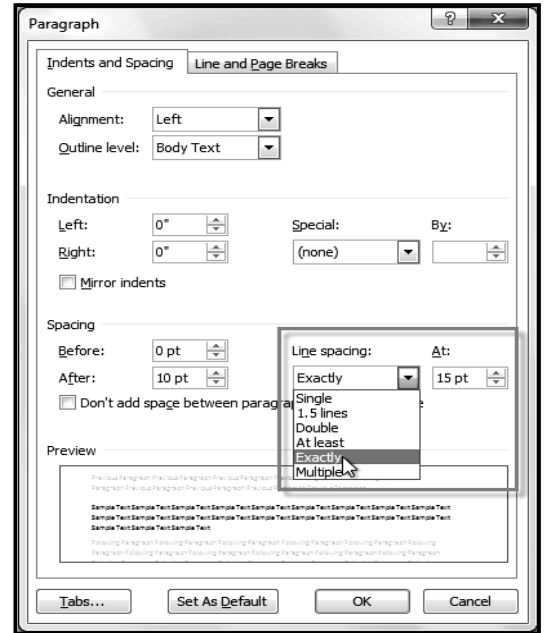
Line Spacing

Line spacing can either be measured in **lines** or **points**. For example, when text is **double-spaced**, the line spacing is **two lines high**. On the other hand, you might set **12-point text** with something like **15-point spacing**, which gives enough height for the text plus a little extra space. You can reduce the line spacing to fit more lines on the page, or you can increase it to improve readability. Line spacing is also known as leading (pronounced to rhyme with "**wedding**").

To Format Line Spacing:



1. Select the text you want to format.
2. Click the **Line and Paragraph Spacing** command in the **Paragraph** group on the **Home** tab.
3. Select the desired spacing option from the drop-down menu.
4. From the drop-down menu, you can also select **Line Spacing Options** to open the **Paragraph** dialog box. From here, you can adjust the line spacing with even more precision.



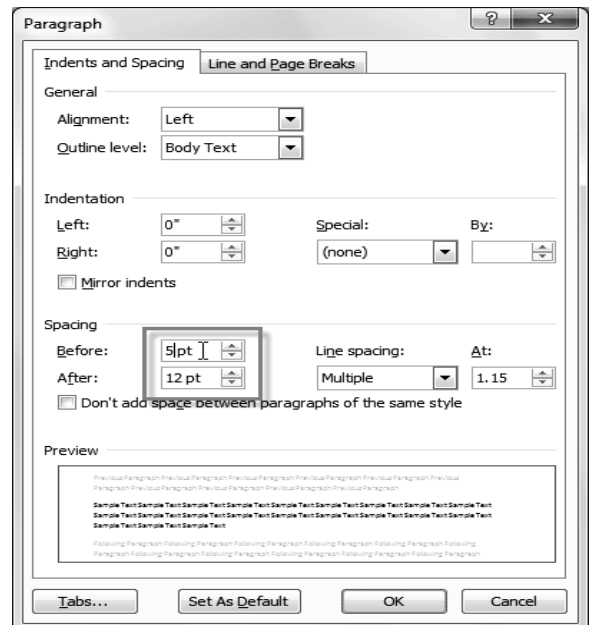
If you select **At least** or **Exactly** in the **Paragraph dialog box**, the line spacing will be measured in **points**. Otherwise, it will be measured in **lines**.

Paragraph Spacing

Just as you can format spacing between lines in your document, you can also choose spacing options between each paragraph. Typically, extra spaces are added between paragraphs, headings, or subheadings. Extra spacing between paragraphs helps to make a document easier to read.

To Format Paragraph Spacing:

1. Click the **Line and Paragraph Spacing** command on the Home tab.
2. Select **Add Space Before Paragraph** or **Remove Space After Paragraph** from the drop-down menu.
3. From the drop-down menu, you can also select **Line Spacing Options** to open the Paragraph dialog box. From here, you can control exactly how much space there is **before** and **after** the paragraph.



Lesson: 5

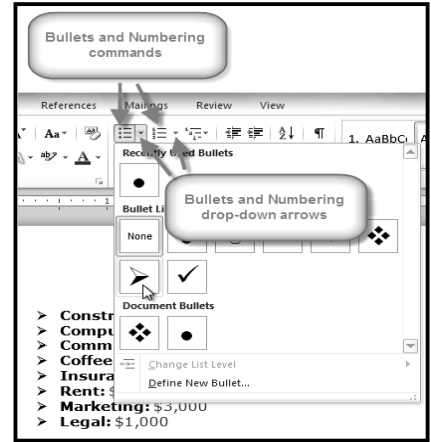
Working with List, Adding Breaks, Column & Hyperlinks

Bulleted and numbered lists can be used in your documents to format, arrange and emphasize text. In this lesson, you will learn how to modify existing bullets, insert new bulleted and numbered lists, select symbols as bullets, and format multilevel lists.

To Create a List:

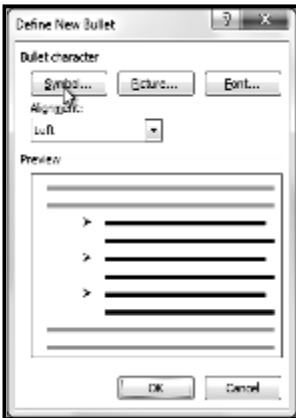
1. Select the **text** that you want to format **as a list**.
2. Click the **Bullets** or **Numbering** drop-down arrow on the **Home tab**.
3. Select the **bullet** or **numbering style** you would like to use, and it will appear in the document.
4. To remove numbers or bullets from a list, select the **list** and click the **Bullets** or **Numbering commands**.

When you're editing a list, you can press Enter to start a new line, and the new line will automatically have a bullet or number. When you've reached the end of your list, press Enter twice to return to "normal" formatting.

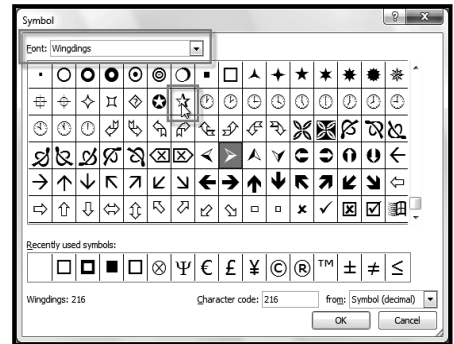


Bullet Options

To Use a Symbol as a Bullet:

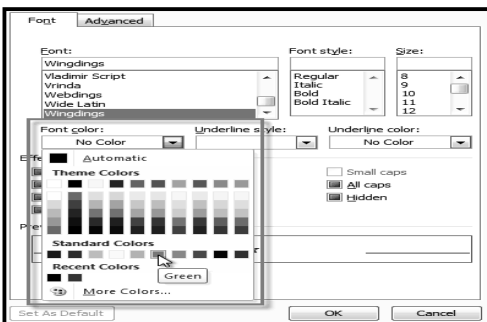


1. Select an existing list.
2. Click the **Bullets** drop-down arrow.
3. Select **Define New Bullet** from the drop-down menu. The Define New Bullet dialog box appears.
4. Click the **Symbol** button. The Symbol dialog box appears.
5. Click the **Font** drop-down box and select a font. The **Wingdings** and **Symbol** fonts are good choices as they have a large number of useful symbols.
6. Select the desired symbol.
7. Click **OK**. The symbol will now appear in the Preview section of the Define New Bullet dialog box.
8. Click **OK** to apply the symbol to the list in the document.



You can use a picture as a bullet. Click the Picture button in the Define New Bullet dialog box, and then locate the image file on your computer.

To Change the Bullet Color:



1. Select an existing list.
2. Click the **Bullets** drop-down arrow.
3. Select **Define New Bullet** from the list. The Define New Bullet dialog box appears.
4. Click the **Font** button. The Font dialog box appears.
5. Click the **Font Color** drop-down box.
6. **Choosing a bullet color**
7. Click on the desired color to select it.
8. Click **OK**. The bullet color will now appear in the Preview section of the Define New Bullet dialog box.
9. Click **OK** to apply the bullet color to the list in the document.

Multilevel Lists

Multilevel lists allow you to create an outline with multiple levels. In fact, you can turn any bulleted or numbered list into a multilevel list by simply placing the insertion point at the beginning of a line and pressing the Tab key to change the level for that line. You can then use the Multilevel List command to choose the types of bullets or numbering that are used.

To Create a Multilevel List:

1. Select the text that you want to format as a multilevel list.
2. Click the **Multilevel List command** on the **Home tab**.
3. Click the **bullet or numbering style** you would like to use. It will appear in the document.
4. Position your **cursor** at the end of a list item and press the **Enter** key to add an item to the list.

To remove numbers or bullets from a list, select the list and click the Bullets or Numbering commands

To Change the Level of a Line:

1. Place the **insertion point** at the beginning of the line.
2. Press the **Tab** key to increase the level.
3. Hold **Shift** and press **Tab** to decrease the level.



Adding Breaks

Word has several different types of breaks that you can add to your document to change the layout and pagination. Each type of break serves a different purpose and will affect the document in different ways. Page breaks move text to a new page before reaching the end of a page, while section breaks create a barrier between parts of the document for formatting purposes. Column breaks split text in columns at a specific point. In this lesson, you'll learn how to insert and delete breaks.

Breaks allow you to have more control over the layout of your document. You might use a page break if you're writing a paper that has a bibliography to ensure that the bibliography starts on a new page. Or, you might use a column break if you are using columns and want them to be arranged in a particular way.

To Insert a Break:

1. Place the **insertion point** where you want the **break** to appear.
2. Select the **Page Layout** tab.
3. Click the **Breaks** command. A menu appears.
4. Click the desired **break option** to create a break in the document.

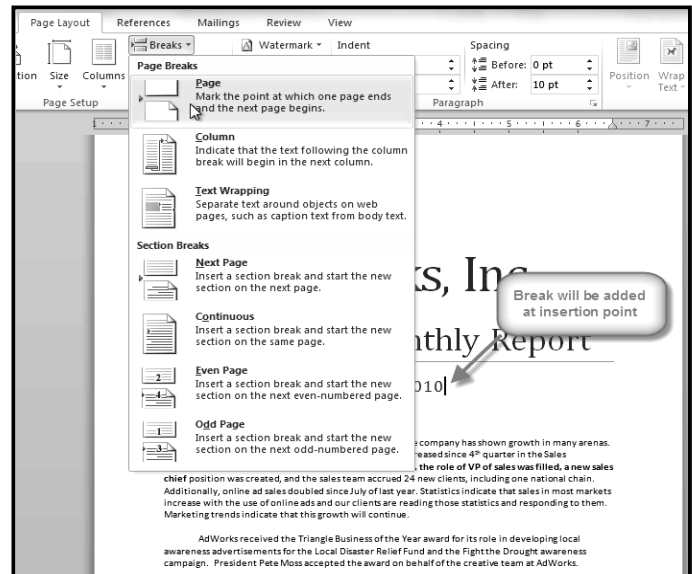
To Delete a Break:

Breaks are hidden by default. If you want to delete a break, then you'll probably want Word to show the breaks so you can find them for editing.

1. From the **Home tab**, click the **Show/Hide ¶** command.
2. **Double-click the break** to select it.
3. Press the **Backspace** or **Delete** key to delete the break.

Working with Columns

Columns are used in many types of documents, but are most commonly used in newspapers, magazines, academic journals, and newsletters. In this lesson you will learn how to insert columns into a document and create column breaks.



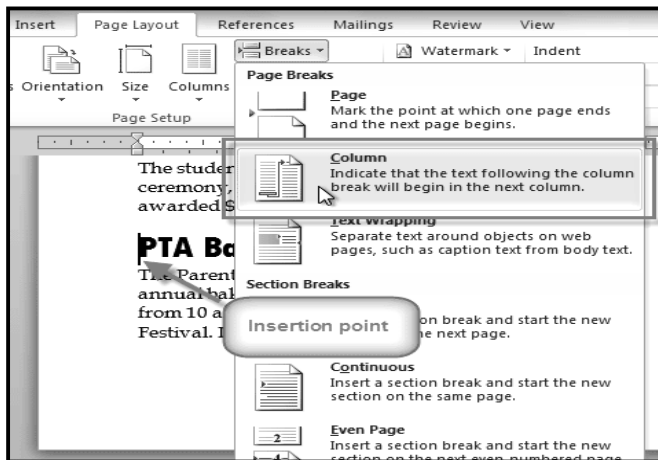
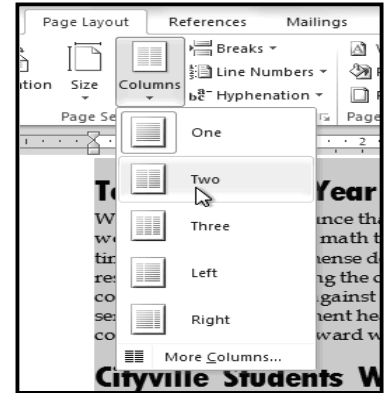
To Add Columns to a Document:

1. Select the text you want to format.
2. Click the **Page Layout** tab.
3. Click the **Columns** command. A drop-down menu will appear.
4. Select the **number of columns** you would like to insert.

If you want to get rid of the columns, just click the Columns command and select One for the number of columns.

To Add Column Breaks:

1. Place the **insertion point** where you would like to add the break.
2. Click the **Page Layout** tab.
3. Click the **Breaks** command in the **Page Setup** group. A drop-down menu will appear.
4. Select **Column** from the list of break types.
5. The text will shift to reflect the column break.



<p>Teacher of the Year</p> <p>We are pleased to announce that the 2010 Cityville High teacher of the year is Ms. Mary Jenkins. Ms. Jenkins has worked as a high school math teacher for 16 years and has been with Cityville High for 12 years. In that time she has shown immense dedication to her students and the school. She is single-handedly responsible for organizing the corporate spelling bee and Mathematics Quiz Bowl, which challenges local companies to compete against Cityville High students in two fundraising events. Additionally, she served as Math Department head for the last three years. Thank you to Ms. Jenkins for her dedication and congratulations for an award well earned!</p>	<p>PTA Bake Sale</p> <p>The Parent Teacher Association is holding its annual bake sale on Saturday, February 16th from 10 a.m. to 4 p.m. at the Cityville Town Festival. If you're interested in participating, we still need people to work various shifts throughout the day and are always looking for more donations of baked goods. To ensure the freshness of all foods we sell, we're asking that all donations be delivered on Friday, February 15th from 8 a.m. to 5 p.m. in Room 355. Contact Ms. Drake at 555-555-5555 with any questions.</p>
<p>Cityville Students Win Award</p> <p>Susan Thompson and John Smith, two Cityville sophomores, have won the Town County Make the World a Better place award. The two 10th graders organized a recycling project that affects the entire school system. All schools and administrative buildings are now equipped with recycling containers that the students distributed. In addition, they arranged for a free collection program of the recycled items that will not defer any of the costs to the school system. The students were recognized in a January ceremony, presented with a plaque, and awarded \$1,000 each.</p>	<p>Valentine's Day Fundraiser</p> <p>The rose sale is well underway, but the PTA has not yet reached its fundraising goal of \$5,000. Please continue to sell the roses and try to help the PTA reach their goal. Remind potential buyers that \$25 a dozen is an excellent rate for roses this time of year and that delivery is only \$9. All profits go to support the Cityville High PTA in its efforts to fund school programs such as the drama club, environmental club, athletics, and more.</p>
	<p>Tutoring Available</p> <p>The tutoring center has availability for students that need help in any subject. The center is open during lunch break, and after school from 3 p.m. to 4:30 p.m. All tutoring is free of charge.</p>

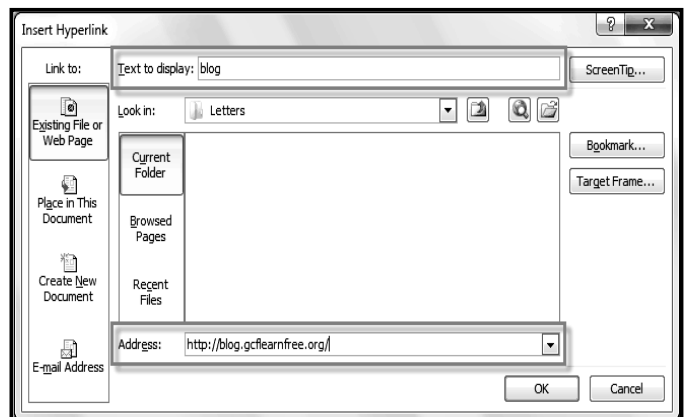
Working with Hyperlinks

Whenever you use the Web, you are using hyperlinks to navigate from one web page to another. Sometimes, a hyperlink will link to a different section of the same page. If you want to include a web address or email address in your Word document, you can format it as a hyperlink for a person to click on.

Hyperlinks have two basic parts: the address of the web page, email address, or other location that they are linking to, and the display text (or image). **For example**, the address could be <http://blog.gcflernfree.org>, and the display text could be "**blog**". In some cases, the display text might be the same as the address. When you're creating a hyperlink in Word, you'll be able to choose both the address and the display text or image. To follow a **hyperlink** in Word, hold down the **Control key** and click on the **hyperlink**.

To Insert a Hyperlink:

1. Select the text or image you would like to make a hyperlink.
2. Right-click the selected text or image and click **Hyperlink**. Or, if you would prefer, you can right-click in a blank area of the document and click **Hyperlink**.



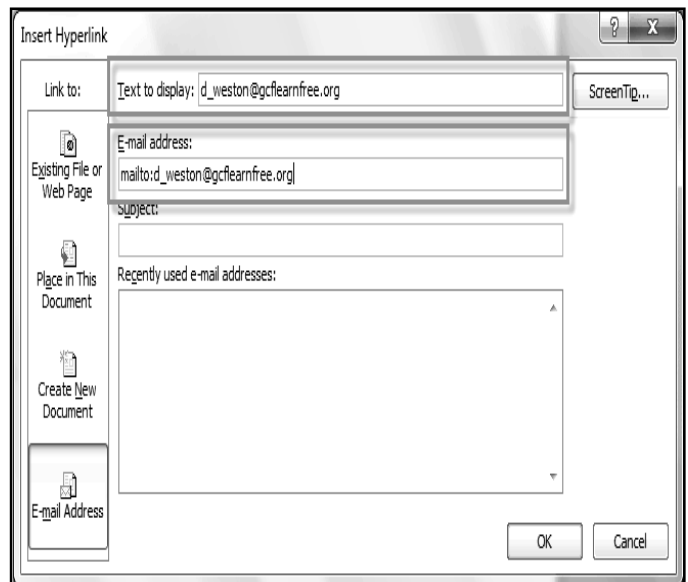
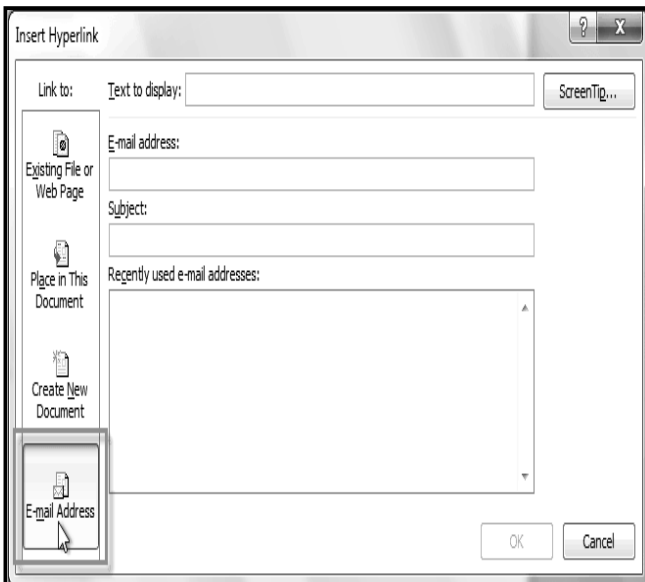
3. The **Insert Hyperlink** dialog box will open. You can also get to this dialog box from the **Insert tab** by clicking Hyperlink.
4. If you selected text, the words will appear in the **Text to display** field at the top. You can change this text if you want.
5. Type the address you would like to link to in the **Address** field.
6. Click **OK**. The text or image you selected will now be a hyperlink.

More on our [blog](#).

You can also insert a hyperlink that links to another portion of the same document by selecting Place in This Document from the Insert Hyperlink dialog box.

To Make an Email Address a Hyperlink:

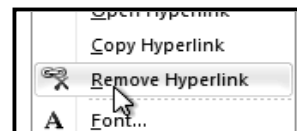
1. Right-click the selected text or image and click **Hyperlink**.
2. The **Insert Hyperlink** dialog box will open.
3. On the left side of the dialog box, click **Email Address**.
4. Type the email address you want to connect to in the **Email Address** box and click **OK**.



Word often recognizes **email** and **web addresses** as you type and will format them as **hyperlinks** automatically after you press the **Enter key** or **spacebar**.

To Remove a Hyperlink:

1. Right-click the **hyperlink**.
2. Click **Remove Hyperlink**.



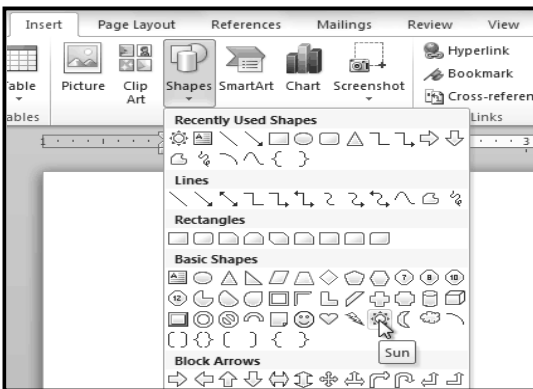
After you create a **hyperlink**, you should test it. If you have linked to a web site, your web browser should automatically open and display the site. If it doesn't work, check the hyperlink address for misspellings.

Lesson: 6

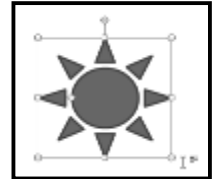
Working with Shapes, Text Boxes & Word Art

You can add a variety of shapes to your document including arrows, callouts, squares, stars, flowchart shapes and more. Want to set your name and address apart from the rest of your resume? Use a line. Need to create a diagram showing a timeline or process? Use the flowchart shapes. While you may not need shapes in every document you create, they can add visual appeal and clarity. In this lesson you will learn how to insert a shape and format it by changing its fill color, outline color, shape style, and shadow effects. Additionally, you will learn how to apply 3-D effects to shapes.

To Insert a Shape:

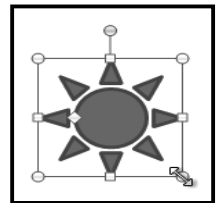


1. Select the **Insert** tab.
2. Click the **Shapes** command.
3. Select a shape from the **drop-down** menu.
4. **Click** and **drag** the mouse until the shape is the desired size.
5. Release the mouse button.

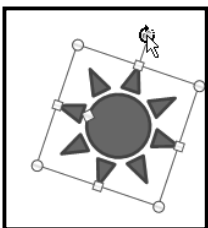


To Resize a Shape:

1. Click on the shape to select it.
2. **Click** and **drag** one of the sizing handles on the corners and sides of the text box until it is the desired size.

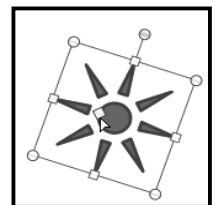


Resizing the shape



1. To rotate the shape, drag the green handle.
2. Some shapes also have one or more yellow handles that can be used to modify the shape. For example, with star shapes, you can adjust the length of the points.

If you drag the sizing handles on any of the four corners, you will be able to change the height and width at the same time. The sizing handles on the top or bottom of the shape will only allow you to resize vertically, while the handles on the left and right sides will resize the shape horizontally.



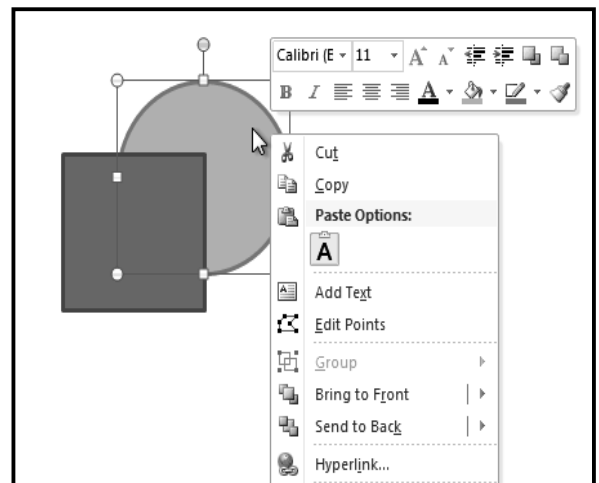
To Change the Order of Shapes:

If one shape overlaps another, you may need to change the ordering so that the correct shape appears in front. You can bring a shape to the front or send it to the back. If you have multiple images, you can use **Bring Forward** or **Send Backward** to fine-tune the ordering. You can also move a shape in **front of** or **behind text**.

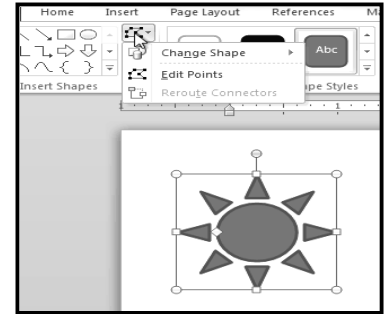
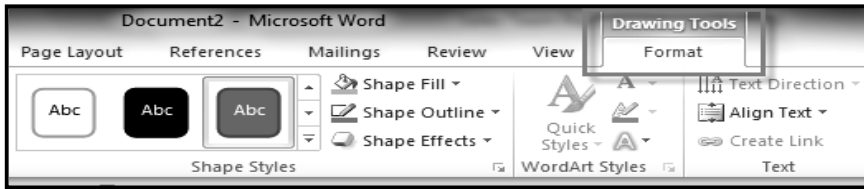
1. **Right-click** the shape you wish to move.
2. In the menu that appears, **hover over Bring to Front** or **Send to Back**. Several ordering options will appear.
3. Select the desired ordering option. The shapes will reorder themselves.

In some cases, the ordering option you select will not affect the ordering of the shapes. If that happens, select the same option again or try a different option.

To Change to a Different Shape:



1. Select the shape. A new **Format** tab appears with Drawing Tools.



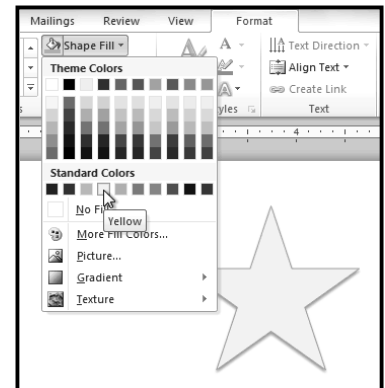
2. Click on the **Format** tab.
3. Click the **Edit Shape** command.
4. Click **Change Shape** to display a drop-down list.
5. Select the desired shape from the list.

To Change Shape Style:

1. Select the shape. The **Format** tab appears.
2. Click the **More** drop-down arrow in the Shape Styles group to display more style options.
3. Move your cursor over the styles to see a live preview of the style in your document.
4. Select the desired style.

To Change the Shape Fill Color:

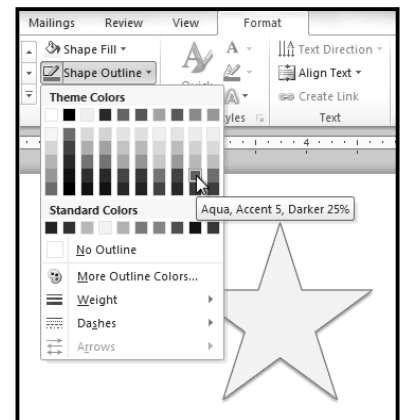
1. Select the shape. The **Format** tab appears.
2. Select the **Format** tab.
3. Click the **Shape Fill** command to display a drop-down list.



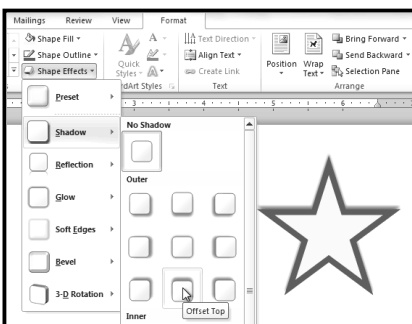
Select the desired **color** from the list, choose **No Fill**, or choose **More Fill Colors** to choose a custom color.

To Change the Shape Outline:

1. Select the shape. The **Format** tab appears.
2. Click the **Format** tab.
3. Click the **Shape Outline** command to display a drop-down menu.
4. From the drop-down menu, you can change the outline **color**, **weight** (thickness), and whether or not it is a **dashed** line.



To Change Shadow Effects:



1. Select the **Format** tab.
2. Click the **Shape Effects** command. A drop-down menu will appear.
3. **Hover** the mouse over **Shadow**. You will see a list of shadow presets.
4. Move your mouse over the menu options to see a live preview of the shadow effect in your document.
5. Click the desired shadow effect to add it to your shape.

You can select Shadow Options from the drop-down menu and click the Color button to select a different shadow color for your shape.

3-D Effects

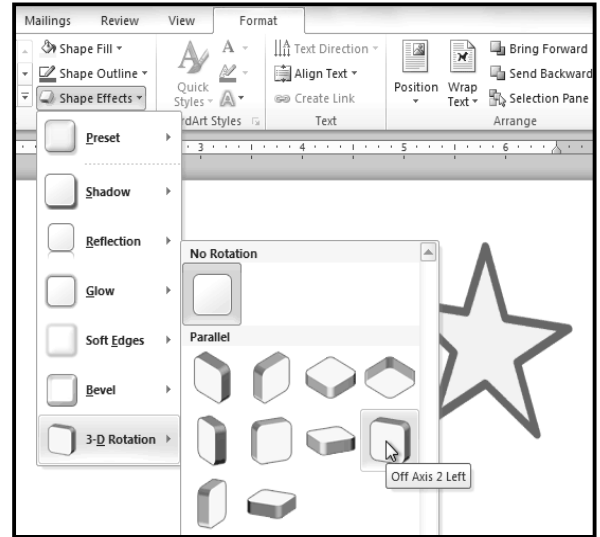
There are two kinds of effects that you can apply to your shapes to give them a 3-D appearance: 3-D Rotation and Bevel. 3-D Rotation gives the appearance that you are viewing the object from a different angle, and it can be applied to any shape. Bevel adds thickness and a rounded edge to shapes, but it doesn't work with every type of shape.

To Use 3-D Rotation:

1. Select the shape.
2. Click on the **Format** tab.
3. Click **Shape Effects** from the **Shape Styles** group.
4. Hover the mouse over **3-D Rotation**. A drop-down menu will appear.
5. Select the desired **rotation preset** from the drop-down menu. You can also click **3-D Rotation Options** if you would prefer to type in custom values.

To Use Bevel:

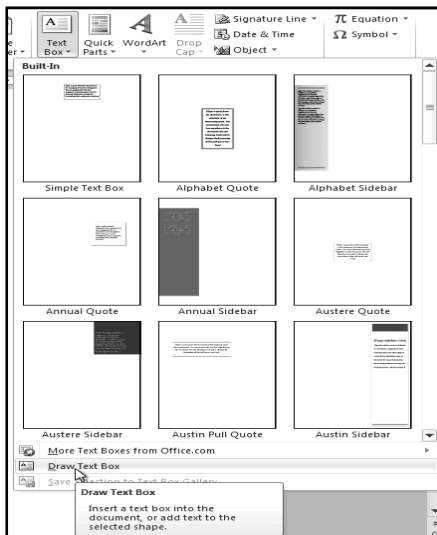
1. Select the shape.
2. Click on the **Format** tab.
3. Click **Shape Effects** from the **Shape Styles** group.
4. Hover the mouse over **Bevel**. A drop-down menu will appear.
5. Select the desired **bevel preset** from the drop-down menu. You can also click **3-D Options** if you would prefer to type in custom values.



If you click on **3-D Options**, you'll also be able to change the shape's material to give it a metal, plastic, or translucent appearance, and you can choose the lighting type to change how the shape is illuminated.

Text Boxes and WordArt

You may want to insert a text box into your document to draw attention to specific text or to have the ability to easily move text around within a document. Text boxes are basically treated the same as shapes, so you can add the same types of effects to them, and you can even change their shape. If you want, you can format the text inside the text box as WordArt, allowing you to apply 3-D effects and transformations to the text itself.

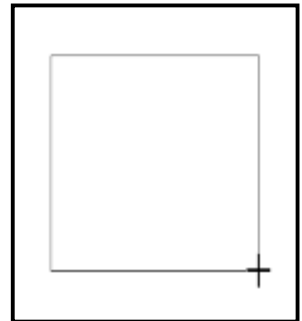
To Insert a Text box:

1. Select the **Insert** tab on the Ribbon.
2. Click the **Text Box** command in the **Text** group. A drop-down menu will appear.
3. Select **Draw Text Box**.

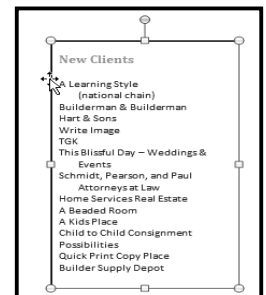
Creating a blank text box

1. Click and drag on the document to create the text box.
2. You can now start typing to create text inside the text box.

From the drop-down menu, you can also select one of the built-in text boxes that have pre-defined colors, fonts, positions and sizes. If you choose this option, the text box will appear automatically, so you will not need to click and drag to draw it.

**To Move a Text Box:**

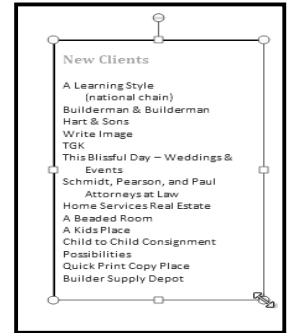
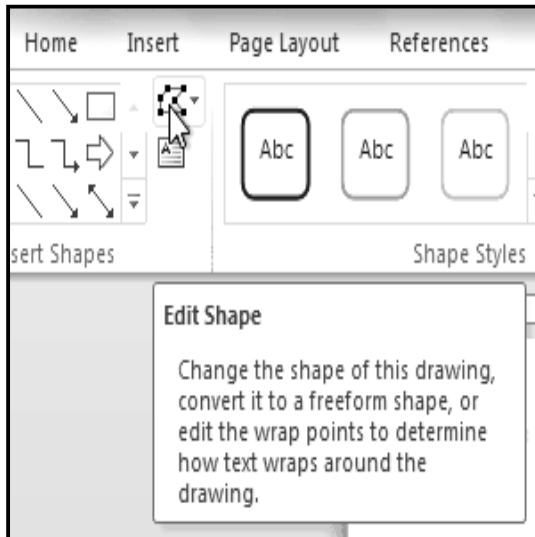
1. Click on the text box.
2. Hover the mouse over one of the edges of the text box. The mouse pointer becomes a **cross with arrows** on each end and looks like this:
3. **Click and drag** the text box to the desired location on the page.
4. **Moving a text box**



To Resize a Text Box:

1. Click the text box.
2. Click and drag one of the **sizing handles** on the corners or sides of the text box until it is the desired size.

If you drag the **sizing handles** on any of the four corners, you will be able to change the **height** and **width** at the same time. The sizing handles on the top or bottom of the text box will only allow you to resize **vertically**, while the handles on the left and right sides will resize the text box **horizontally**.

**To Change the Text Box Shape:**

1. Select the text box. A new **Format** tab appears with Drawing Tools.
2. Go to the **Format** tab.
3. Click the **Edit Shape** command
4. Click **Change Shape** to display a drop-down list.
5. Select the desired shape from the list.

To Choose a Shape Style:

Choosing a Shape Style allows you to apply a preset fill and outline color, and in some cases, other effects such as **beveling** and **shadow**. You don't have to pick a style for your text box, but it can help you save time or experiment with different appearances.

1. Select the text box. The **Format** tab appears.
2. Select the **Format** tab.
3. Click the **More** drop-down arrow in the Shape Styles group to display more style options.
4. Hover the mouse over the styles to see a live preview.
5. Select the desired style.

To Change Shape Fill:

1. Select the text box. The **Format** tab appears.
2. Click the **Format** tab.
3. Click the **Shape Fill** command to display a drop-down menu.
4. From the drop-down menu, you can select a **color** from the list, choose **No Fill**, or select **More Fill Colors** to use a color that's not on the list.

To Change the Shape Outline:

1. Select the text box. The **Format** tab appears.
2. Click the **Shape Outline** command to display a drop-down list.
3. Select a **color** from the list, choose **No Outline**, or select **More Outline Colors** to use a color that's not on the list.
4. From the drop-down menu, you can change the outline **color**, **weight** (thickness), and whether or not it is a **dashed** line.

To Change Shadow Effects:

1. Select the text box. The **Format** tab appears.
2. Select the **Format** tab.
3. Click the **Shape Effects** command.
4. Click **Shadow**.
5. Move your mouse over the menu options to see a live preview in your document.
6. Click the desired option to select the shadow effect.

To choose a different shadow color for your shape, select **Shadow Options** from the drop-down menu and click the **Color** button.

3-D Effects

Just like other types of shapes, text boxes can have **3-D Effects**. There are two kinds of effects that you can apply to your shapes to give them a 3-D appearance: **3-D Rotation** and **Bevel**. **3-D Rotation** gives the appearance that you are viewing the object from a different angle, and it can be applied to any shape. **Bevel** adds thickness and a rounded edge to shapes; however it doesn't work with every type of shape.

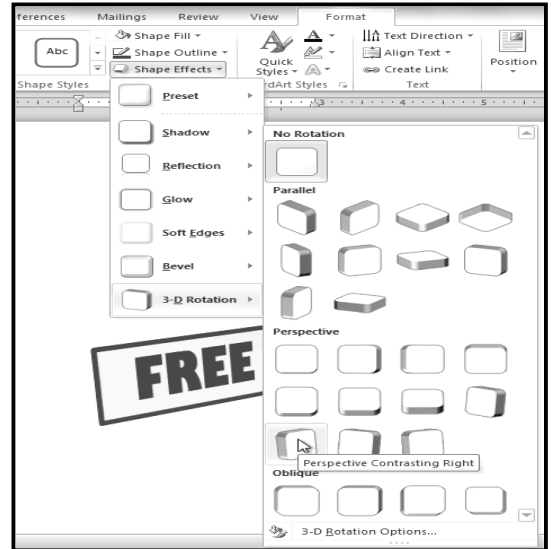
To Use 3-D Rotation:

1. Select the text box.
2. Click on the **Format** tab.
3. Click **Shape Effects** from the **Shape Styles** group.
4. Hover the mouse over **3-D Rotation**. A drop-down menu will appear.
5. Select the desired **rotation preset** from the drop-down menu. You can also click **3-D Rotation Options** if you would prefer to type in custom values.

To Use Bevel:

1. Select the text box.
2. Click on the **Format** tab.
3. Click **Shape Effects** from the **Shape Styles** group.
4. Hover the mouse over **Bevel**. A drop-down menu will appear.
5. Select the desired **bevel preset** from the drop-down menu. You can also click **3-D Options** if you would prefer to type in custom values.

If you click on **3-D Options**, you'll also be able to change the shape's **Material** to give it a metal, plastic, or translucent appearance, and you can choose the **Lighting** type to change how the shape is illuminated.



Creating WordArt

In addition to adding effects to a text box, you can also add effects to the **text inside the text box**, which is known as **WordArt**. For the most part, the types of effects you can add are the same as the ones you can add to shapes or text boxes (shadow, bevel, etc.). However, you can also **Transform** the text to give it a wavy, slanted, or inflated look.

To Apply a Quick Style to Text:

A Quick Style will automatically apply several effects to your text at once. You can then refine the look of your text by adding or modifying text effects.

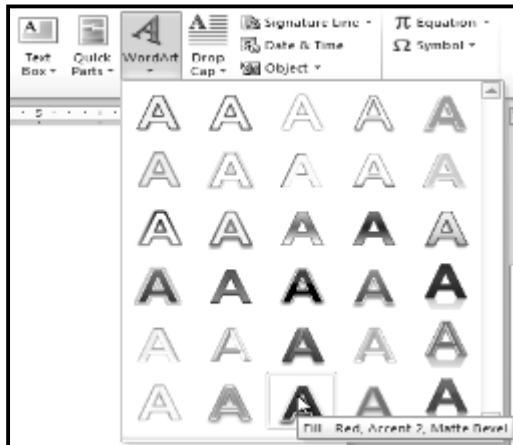
1. Select the text box, or select some text inside of the text box. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Quick Styles** command in the **WordArt Styles** group. A drop-down menu will appear.
4. Select the desired style preset to apply the style to your text.

After you have applied a Quick Style, you can still modify the **font** or **font color** from the **Home** tab if desired.

To Convert Regular Text into WordArt:

For text to be formatted as WordArt, it needs to be inside a text box. However, there is a shortcut that allows you to convert text into WordArt even if it's not in a text box.





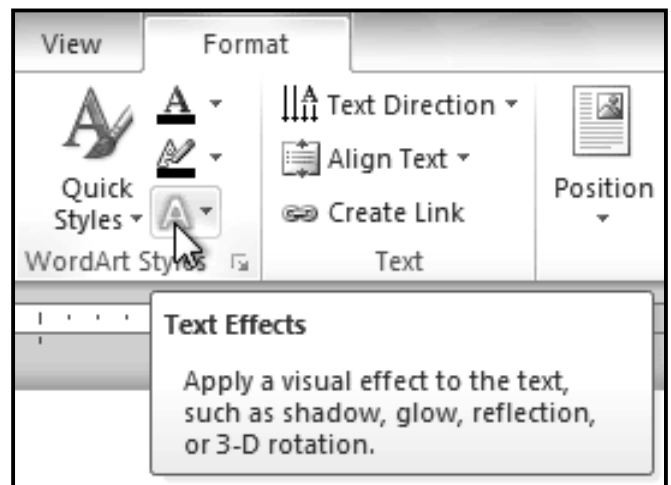
1. Select the text you wish to convert.
2. Click the **Insert** tab.
3. Click the **WordArt** command. The **Quick Styles** drop-down menu will appear.
4. Select the desired **Quick Style**.
5. Word will automatically create a text box for your text and apply the style to the text.



Some effects, such as **shadows**, can be added from the **Text Effects** menu in the **Home** tab. When you add effects in this way, it will not place the text in a text box.

To Add or Modify Text Effects:

1. Select the text box, or select some text inside of the text box. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Text Effects** command in the **WordArt Styles** group. A drop-down menu will appear showing the different **effect categories**.
4. Hover over an effect category. A drop-down menu will appear. You can hover the mouse over the different presets to see a live preview.
5. Select the desired effect preset. The effect will be applied to your text. If you want, you can combine several different effects.

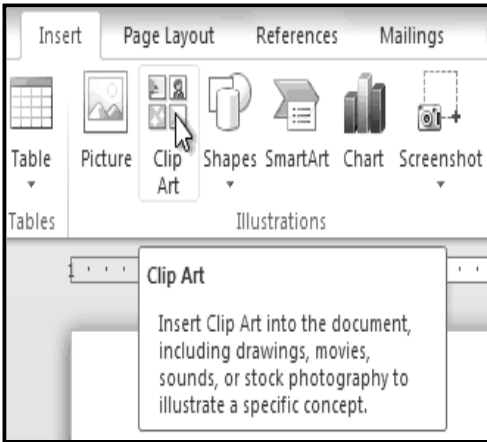


Lesson: 7

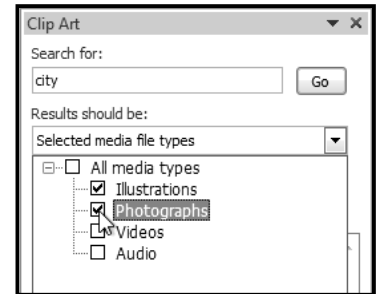
Working with ClipArt & Picture

Images are a great way to liven up a document, and Word offers a couple of ways of inserting images. There are built-in Clip Art images for just about every topic, so you may be able to find a perfect Clip Art image for your document. If you have a more specific image in mind, you can insert a picture from a file.

To Locate Clip Art:



1. Select the **Insert** tab.
2. Click the **Clip Art** command in the **Illustrations** group.
3. The Clip Art options appear in the **task pane** to the right of the document.
4. Enter keywords in the **Search for:** field that are related to the image you wish to insert.
5. Click the drop-down arrow in the **Results should be:** field.
6. Deselect any types of media you do not wish to see.
7. If you would like to also search for Clip Art on **Office.com**, place a checkmark next to **Include Office.com content**. Otherwise, it will just search for Clip Art on your computer.
8. Click **Go**.

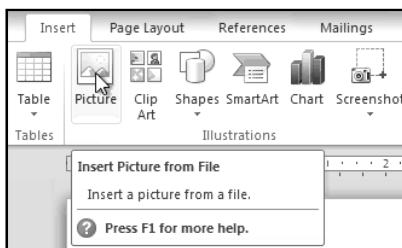


To Insert Clip Art:

1. Review the results from a clip art search.
2. Place your **insertion point** in the document where you wish to insert the clip art.
3. Click an image in the **Clip Art** pane. It will appear in the document. You can also click the **drop-down arrow** next to the image in the Clip Art pane to view more options.



To Insert a Picture From a File:



1. Place your **insertion point** where you want the image to appear.
2. Select the **Insert** tab.
3. Click the **Picture** command in the **Illustrations** group. The Insert Picture dialog box appears.
4. Select the desired image file and click **Insert** to add it to your document.

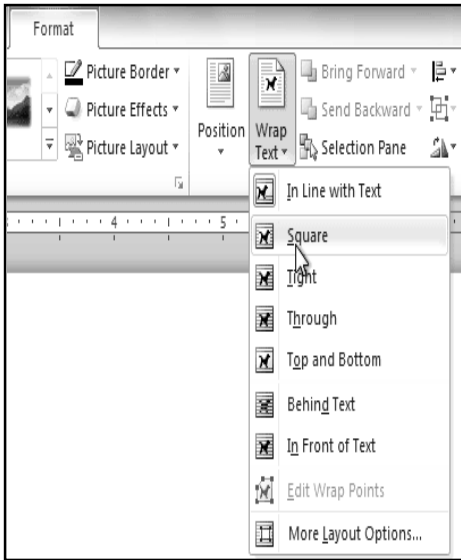
To resize an image, click and drag one of the **corner sizing handles**. The image will change size while keeping the same proportions. If you want to stretch it horizontally or vertically, you can use the **side sizing handles**.

Changing the Text Wrapping Settings

When you insert Clip Art or a picture from a file, you may notice that it's difficult to move it exactly where you want. That's because the **text wrapping** for that image is set to **In Line with Text**. You'll need to change the **text wrapping setting** if you want to move the image freely, or if you just want the text to wrap around the image in a more natural way.

To Wrap Text Around an Image:

1. Select the image. The **Format** tab will appear.
2. Click the **Format** tab.



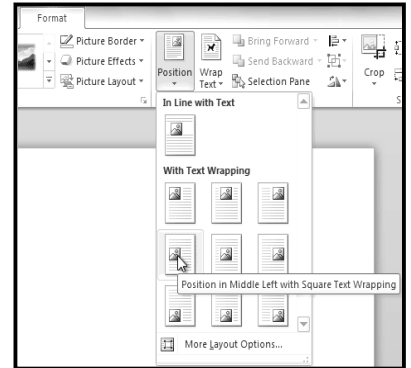
3. Click the **Wrap Text** command in the Arrange group.
4. Select the desired menu option. The text will adjust based on the option you have selected.
5. Move the image around to see how the text wraps for each setting.

If you can't get your text to wrap the way you wish, click the **Wrap Text** command and select **More Layout Options** from the menu. You can make more precise changes in the Advanced Layout dialog box that appears.

To Use a Pre-Defined Text Wrapping Setting:

1. Click the **Position** command, to the left of the **Wrap Text** command. A drop-down menu will appear.
2. From the drop-down menu, select the desired image position.

The image will move to the position that you have selected, and it will automatically have text wrapping applied to it.



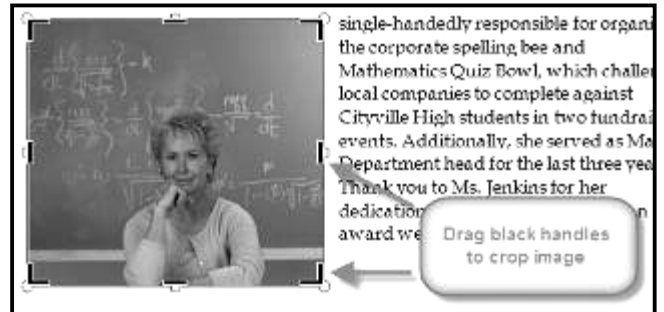
To Format Pictures

Once you've added pictures to your documents, you can format them in various ways. The picture tools in Word 2010 make it easy to incorporate images into your documents and modify those images in interesting ways.

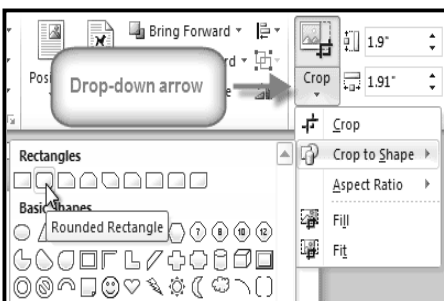
To Crop an Image:

1. Select an image. The **Format** tab will appear.
2. Select the **Format** tab.
3. Click the **Crop** command. The black cropping handles appear.
4. Click and drag a **handle** to crop an image.
5. Click the **Crop** command to deselect the crop tool.

Corner handles will allow you to simultaneously crop the image horizontally and vertically.



To Crop an Image to a Shape:



1. Select the image. The **Format** tab will appear.
2. Select the **Format** tab.
3. Click the **Crop** drop-down arrow (below the Crop command). A drop-down menu will appear.
4. Select a shape from the drop-down menu.
5. The image will take the shape that you have selected.



You may want to crop the image to the desired size before cropping it to a shape.

To Add a Border to a Picture:

1. Select the picture.
2. Select the **Format** tab.
3. Click the **Picture Border** command. A drop-down menu will appear.
4. From the drop-down menu, you can select a **color**, **weight** (thickness), and whether or not the line is **dashed**.

To Make Image Corrections:

1. Select the image. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Corrections** command. A drop-down menu will appear.
4. To sharpen or soften the image, hover over the **Sharpen and Soften** presets. You'll see a live preview of the preset in the document.
5. When you've found a preset you like, click on it to select it.
6. Click the **Corrections** command again.
7. Hover over the **Brightness and Contrast** presets to see a live preview.
8. When you've found one you like, click on it to select it.

You can also select Picture Corrections Options from the drop-down menu to refine the settings.

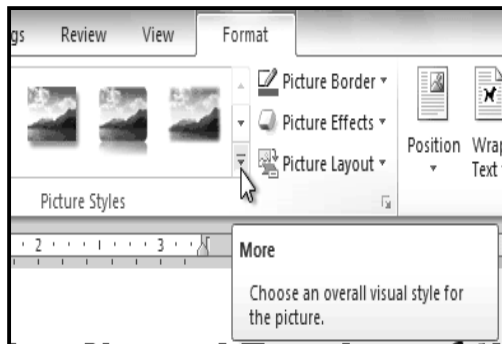
To Adjust the Color in an Image:

1. Select the image. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Color** command. A drop-down menu will appear.
4. From the drop-down menu, you can choose a preset from each of the three categories:
 - **Color Saturation:** Controls how vivid the colors are in the image.
 - **Color Tone:** Controls the "temperature" of the color, from **cool** to **warm**.
 - **Recolor:** Controls the overall color of the image. Use this option to make the image **black and white, grayscale, or to colorize** it with a different color.

You can also select Picture Color Options from the drop-down menu to refine the settings.

To Apply an Artistic Effect:

1. Select the picture. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Artistic Effects** command. A drop-down menu will appear.
4. Hover over the different presets to see a Live Preview of each one.
5. When you've found a preset you like, click on it to select it.
6. To adjust the settings for the effect, click **Artistic Effects** again and select **Artistic Effect Options**. Many **Clip Art** images do not allow you apply artistic effects. Generally speaking, the ones that look hand-drawn or painted do not work, while photographs do.

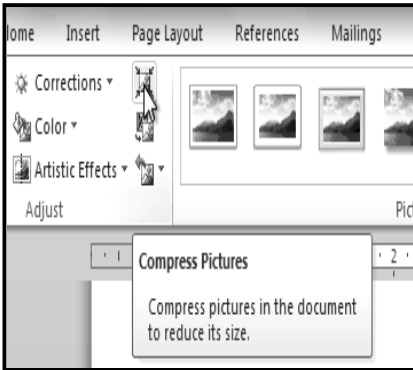
To Apply a Picture Style:

1. Select the picture.
The **Format** tab will appear.
2. Select the **Format** tab.
3. Click the **More** drop-down arrow to display all the picture styles.
4. Hover over a picture style to display a live preview of the style in the document.
5. Select the desired style.
6. To refine the picture style, click the **Picture Effects** command to see the **Effects** drop-down menu.

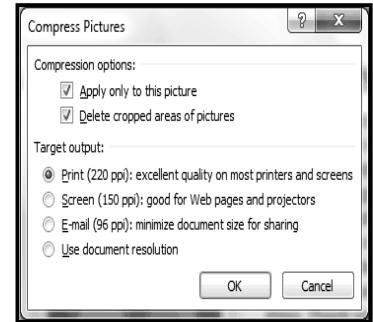
**Compressing Pictures**

You'll need to monitor the **file size** of your documents that include pictures, especially if you send them via email. Large, high-resolution pictures can quickly cause your document to become too large, which may make it difficult or impossible to attach to an email. In addition, **cropped areas** of pictures are saved with the document by default, which can add to the file size. Word can reduce the file size by **compressing** pictures, lowering their **resolution**, and **deleting cropped areas**.

To Compress a Picture:



1. Select the picture. The **Format** tab will appear.
2. Select the **Format** tab.
3. Click the **Compress Pictures** command in the Adjust group. A dialog box appears.
4. Place a checkmark next to **Delete cropped areas of pictures**. You can also choose whether to apply the settings to **this picture only** or to all pictures in the document.
5. Choose a **Target output**. If you are emailing your document, you may want to select **Email**, which produces the smallest file size.
6. Click **OK**.



About Background Removal

With **Background Removal**, Word uses special algorithms to determine which parts of the image are the background and then removes those areas from the image. This can give your images a cleaner appearance, and if you're printing your document, it can also save ink.

To Remove the Background From an Image:

1. Click on the image. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Remove Background** command.
4. Word will try to guess which part of the image is the background, and it will mark that area with a **magenta** fill. It will also place a box around the image with selection handles.
5. Drag the selection handles until all of the foreground is inside the box. After you do this, Word may re-adjust the background.
6. At this point, you may need to help Word decide which parts of the image are **foreground** and which parts are **backgrounds**. You can do this by using the **Mark Areas to Keep** and **Mark Areas to Remove** commands:
 - If Word has marked part of the foreground magenta, click **Mark Areas to Keep** and draw a line in that region of the image.
 - If part of the background has not been marked with magenta, click **Mark Areas to Remove** and draw a line in that region of the image.
7. After you add your marks, Word will readjust the image.
8. When you're satisfied with the image, click **Keep Changes**. All of the magenta areas will be removed from the image.
9. You can adjust the image at any time by clicking the **Remove Background** command again. As with **artistic effects**, Background Removal will not work with some **Clip Art** images.



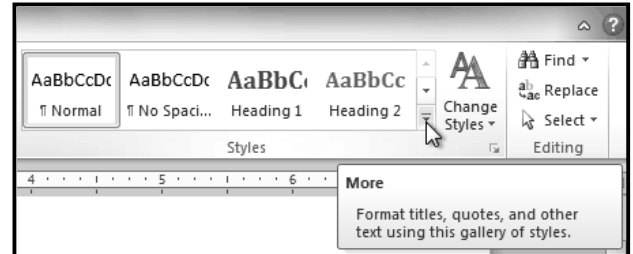
Lesson: 8

Working with Style, Themes, Header & Footer

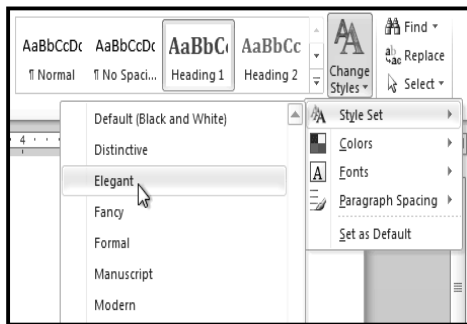
Styles and themes are powerful tools in Word that can help you easily create professional looking documents. A style is a predefined combination of font style, color, and size of text that can be applied to selected text. A theme is a set of formatting choices that can be applied to an entire document and includes theme colors, fonts, and effects.

To Select a Style:

1. Select the text that you want to format.
2. In the **Style** group on the **Home** tab, hover over each style to see a live preview in the document. Click the **More** drop-down arrow to see additional styles.
3. Select the style you desire. Now the **selected text appears formatted** in the style.



Apply a Style Set:

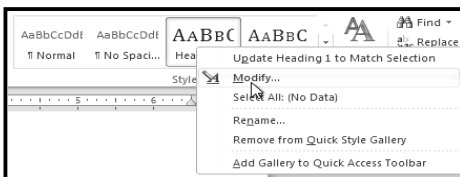


Style Sets include a combination of title, heading, and paragraph styles. Style sets allow you to **format all the elements of your document** at once, rather than formatting your title and headings separately.

1. Click the **Change Styles** command on the Ribbon. A drop-down menu will appear.
2. From the drop-down menu, select **Style Set**.
3. Select the **Style Set** you desire and the change will be reflected in the entire document.

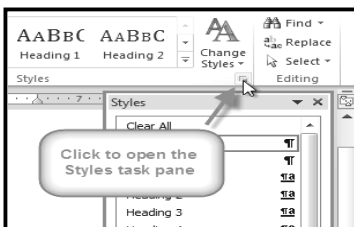


To Modify a Style:

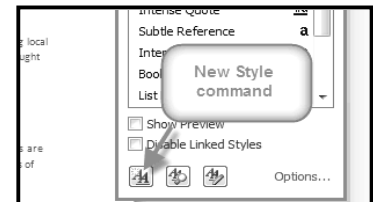


1. Locate the style you wish to change in the **Styles** group.
2. Right-click the style. A drop-down menu will appear.
3. Click **Modify** and the **Modify Style** dialog box appears.
4. Make the desired changes to the formatting. If you want, you can also change the name of the style.
5. **Click OK to apply the modifications to the style.**

To Create a New Style:



1. Click the **arrow** in the bottom-right corner of the Styles group. This opens the **Styles** task pane.
2. Select the **New Style** button at the bottom. A dialog box will appear.
3. Enter a name for the style, and set the text formatting the way you want.
4. Click **OK**, and the new style will appear in the task pane.



Themes

What is a Theme?

A theme is a set of colors, fonts and effects that applies to the **entire document** to give it a consistent, professional look.

You've already been using a theme, even if you didn't know it: the default Office theme. Every theme, including the Office theme, has its own theme elements:

- **Theme Colors** (available from every **Color** menu)
- **Theme Fonts** (available from the **Font** menu)
- **Shape Styles** (available in the **Format** tab when you click on a shape)

Why Should You Use Theme Elements?

If you're using theme elements, you'll probably find that your document looks pretty good and all of the colors work well together, which means you don't have to spend as much time tweaking the document. But there's another great reason to use theme elements: When you switch to a different theme, **all of those elements will update** to reflect the new theme. You can drastically change the look of the document in a couple of clicks, and it will usually still look good.

Remember, the colors and fonts will only update if you're using **Theme Fonts** or **Theme Colors**. If you choose one of the **Standard Colors** or any of the **Fonts** that are not **Theme Fonts**, then your text will not change when you change the theme. That can be useful if you're creating a logo or title that always needs to look the same.

If you're using built-in **styles**, you may notice that the fonts for those styles change when you select a different theme. That's because all of the built-in styles are based on the **Theme Fonts**. If you don't want the styles to change, you'll need to create **custom styles**.

To Change the Theme:

1. Select the **Page Layout** tab.
2. Click the **Themes** command. A drop-down menu will appear.
3. Hover the mouse over a theme to see a live preview of it.
4. Select the desired theme.

Customizing a Theme

Suppose you really like the **fonts** from one theme, but you'd like to experiment with different **color schemes**. That's not a problem: you can mix and match the **colors**, **fonts**, and **effects** from different themes to create a unique look for your document. If it still doesn't look exactly right, you can customize the **Theme Colors** and **Theme Fonts**.

To Change the Theme Colors:

1. From the **Page Layout** tab, click the **Theme Colors** command. A drop-down menu will appear.
2. Hover the mouse over the different sets of **Theme Colors** to see a live preview.
3. Select the set of **Theme Colors** you desire, or select **Create New Theme Colors** to customize each color individually.

When setting Theme Colors, try to find a part of your document that uses several colors, so that you get the best idea of what the color scheme looks like.

To Change the Theme Fonts:

1. From the **Page Layout** tab, click the **Theme Fonts** command. A drop-down menu will appear.
2. Hover the mouse over the different sets of **Theme Fonts** to see a live preview.
3. Select the set of **Theme Fonts** you desire, or select **Create New Theme Fonts** to customize each font individually.

To Change the Theme Effects:

1. From the **Page Layout** tab, click the **Theme Effects** command. A drop-down menu will appear.
2. Hover the mouse over the different sets of **Theme Effects** to see a live preview.
3. Select the set of **Theme Effects** you desire.

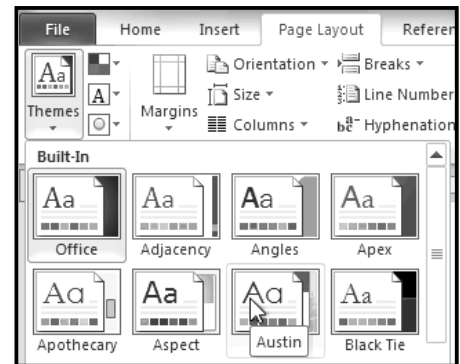
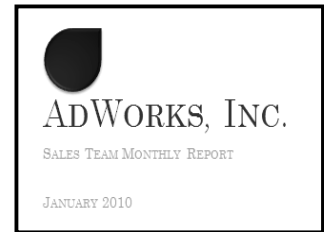
Some themes can add a **Picture Fill** to shapes, depending on which **Shape Styles** are used. For example, the **Paper** theme can add a paper-like texture to shapes. Try exploring some of the different Shape Styles after changing the theme.

To Save Your Theme:

Once you've found settings that you like, you may want to save the theme so that you can use it in other documents.

1. From the **Page Layout** tab, click the **Themes** command. A drop-down menu will appear.
2. Select **Save Current Theme**.
3. Type a **file name** for your theme and the click **Save**.

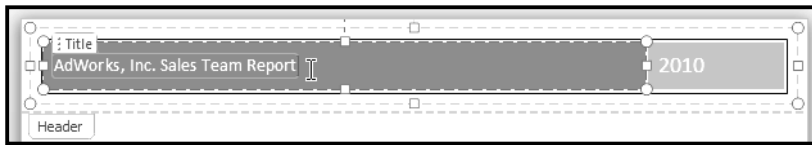
Headers and Footers



You can make your document look professional and polished by utilizing the header and footer sections. The header is a section of the document that appears in the **top margin**, while the footer is a section of the document that appears in the **bottom margin**. Headers and footers generally contain information such as *page number*, *date*, *document name*, etc.

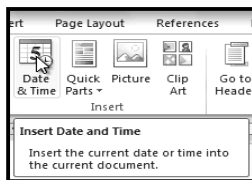
To Insert a Header or Footer:

1. Select the **Insert** tab.
2. Click either the **Header** or **Footer** command. A drop-down menu will appear.
3. From the drop-down menu, select **Blank** to insert a blank header or footer, or choose one of the **built-in options**.
4. The **Design** tab will appear on the Ribbon, and the header or footer will appear in the document.
5. Type the desired information into the header or footer.



6. When you're finished, click **Close Header and Footer** in the **Design** tab, or hit the **Esc** key. After you close the header or footer, it will still be visible, but it will be **locked**. To edit it again, just double-click anywhere on the header or footer, and it will become unlocked.

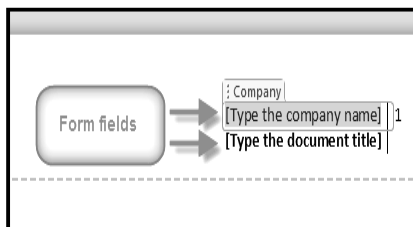
To Insert the Date or Time into a Header or Footer:



1. **Double-click** anywhere on the header or footer to **unlock** it. The **Design** tab will appear.
2. From the **Design** tab, click the **Date & Time** command.
3. Select a **date format** in the dialog box that appears.
4. Place a checkmark in the **Update Automatically** box if you would like it to always reflect the current date. Otherwise, it will not change when the document is opened at a later date.
5. Click **OK**. The date/time now appears in the document.

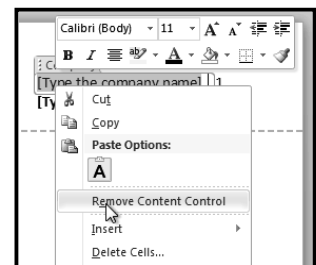
To Remove Content Controls:

By default, some of the built-in headers and footers have snippets of text that are called Content Controls. Content Controls can contain information such as the document title or company name, and they allow you to enter that information into a form field.



However, you'll often just want to type a "normal" header, without any Content Controls. To do this, you'll need to remove any Content Control fields from the header or footer.

1. With the header or footer section active, right-click the **Content Control** field you wish to remove. A drop-down menu will appear.
2. Click **Remove Content Control**. The Content Control field will disappear.



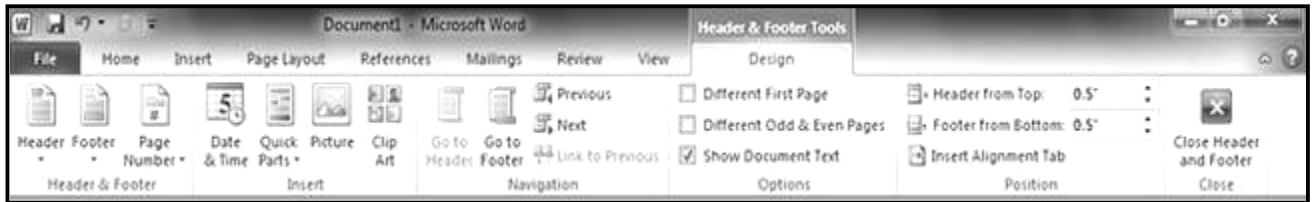
Other Header and Footer Options

There are many other **header and footer options** that you can use to design these sections of your document. You can review the Header and Footer Tools **Design** tab, to view and explore the design options.

To Add Page Numbers to an Existing Header or Footer:

1. Select the **header** or **footer**. The **Design** tab will appear.
2. Place the **insertion point** where you want the page number to be. You can place it anywhere **except** inside a **Content Control field**.

3. From the Design tab, select the **Page Number** command.
4. Click **Current Position** and select the desired style. The page number will appear in the document.



If you've already typed information into your header or footer, it's important to place the page number at the **Current Position** to avoid losing anything. If you select a page number from **Top of Page** or **Bottom of Page**, it will **delete anything that you have already added** to the header or footer.

To Insert Page Numbers into a New Header or Footer:

1. From the **Insert** tab, click **Page Number**. A drop-down menu will appear.
2. Select the desired **page number style** and it will appear in your document.

To Hide the Page Number on the First Page:

In some documents, you may not want the first page to show the page number. You can hide the first page number without affecting the rest of the pages.

1. Select the **header** or **footer** that contains the page number.
2. From the **Design** tab, place a checkmark next to **Different First Page**. The header and footer will disappear from the first page. If you want, you can **type something new** in the header or footer, and it will only affect the **first page**.

If you're unable to select **Different First Page**, it may be because an object within the header or footer is selected. Click in an **empty area** within the header or footer to make sure nothing is selected.

To Format the Page Numbers:

1. Select the **header** or **footer** that contains the page number.
2. From the **Design** tab, select the Page Number command.
3. Click **Format Page Numbers**.
4. From the dialog box, Select the desired **Number format**.
5. Next to **Start at**, enter the number that you want the page numbers to start with.

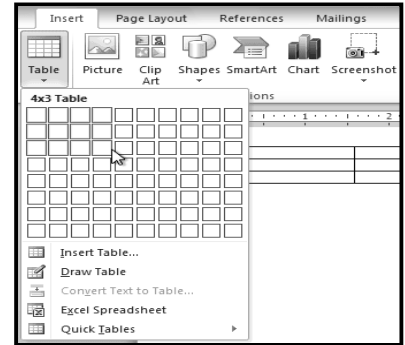
If you've created a page number in the **side margin**, it's still considered part of the header or footer. You won't be able to select the page number unless the **header or footer is selected**.

Lesson: 9

Working with Tables, SmartArt Graphics & Templates

Working with Tables

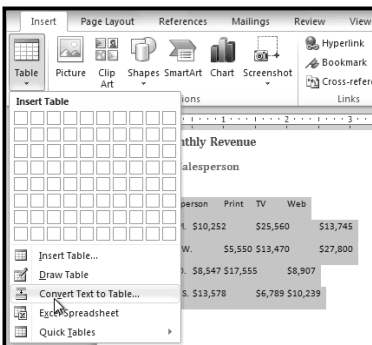
A table is a grid of cells arranged in **rows** and **columns**. Tables can be customized and are useful for various tasks such as presenting text information and numerical data.



To Insert a Blank Table:

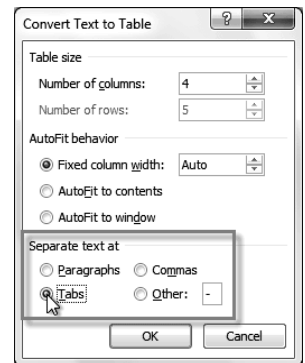
1. Place your insertion point in the document where you want the table to appear.
2. Select the **Insert** tab.
3. Click the **Table** command.
4. Hover your mouse over the diagram squares to select the number of **columns** and **rows** in the table.
5. Click your mouse, and the table appears in the document.
6. You can now place the insertion point anywhere in the table to add text.

To Convert Existing Text to a Table:



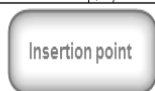
1. Select the text you wish to convert.
2. Select the **Insert** tab.
3. Click the **Table** command.
4. Select **Convert Text to Table** from the menu. A dialog box will appear.
5. Choose one of the options in the **Separate text at:** section. This is how Word knows what text to put in each column.
6. Click **OK**. The text appears in a table.

Salesperson	Print	TV	Web
Jim M.	\$10,252	\$25,560	\$13,745
Beth W.	\$5,550	\$13,470	\$27,800
Luiz D.	\$8,547	\$17,555	\$8,907
Alice S.	\$13,578	\$6,789	\$10,239



To Add a Row Above an Existing Row:

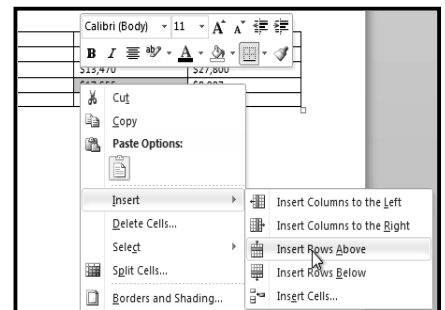
Salesperson	Print	TV	Web
Jim M.	\$10,252	\$25,560	\$13,745
Beth W.	\$5,550	\$13,470	\$27,800
Luiz D.	\$8,547	\$17,555	\$8,907
Alice S.	\$13,578	\$6,789	\$10,239



4. A new row appears **above** the insertion point.

Salesperson	Print	TV	Web
Jim M.	\$10,252	\$25,560	\$13,745
Beth W.	\$5,550	\$13,470	\$27,800
Luiz D.	\$8,547	\$17,555	\$8,907
Alice S.	\$13,578	\$6,789	\$10,239

1. Place the insertion point in a row **below** the location where you wish to add a row.
2. Right-click the mouse. A menu appears.
3. Select **Insert - Insert Rows Above**.



You can also add rows below the insertion point. Follow the same steps, but select **Insert Rows Below** from the menu.

To Add a Column:

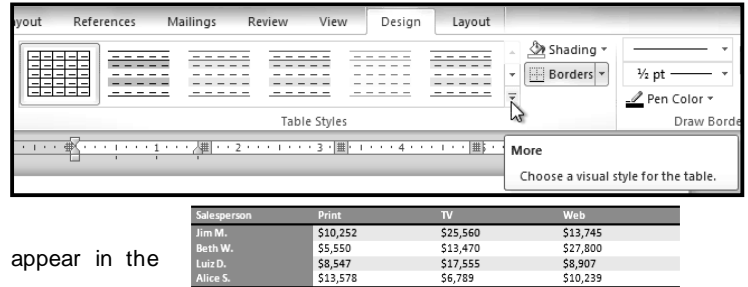
1. Place the **insertion point** in a **column adjacent** to the location you wish the new column to appear.
2. Right-click the mouse. A menu will appear.
3. Select **Insert - Insert Columns to the Left** or **Insert Columns to the Right**. A new column appears.

To Delete a Row or Column:

1. Select the row or column.
2. Right-click your mouse. A menu will appear.
3. Select **Delete Cells**.
4. Select **Delete entire row** or **Delete entire column** and click **OK**.

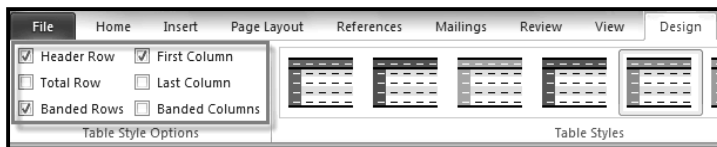
To Apply a Table Style:

1. Click anywhere on the table. The **Design** tab will appear on the Ribbon.
2. Select the **Design** tab and locate the **Table Styles**.
3. Click the **More** drop-down arrow to see all of the table styles.
4. Hover the mouse over the various styles to see a live preview.
5. Select the desired style. The table style will appear in the document.

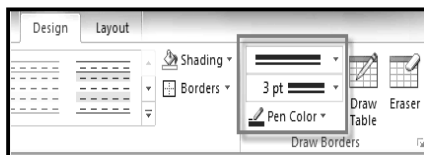
**To Change the Table Style Options:**

Once you've chosen a table style, you can turn various options **on** or **off** to change the appearance of the table. There are six options: **Header Row**, **Total Row**, **Banded Rows**, **First Column**, **Last Column**, and **Banded Columns**.

1. Click anywhere on the table. The **Design** tab will appear.
2. From the **Design** tab, **check** or **uncheck** the desired options in the **Table Style Options** group.



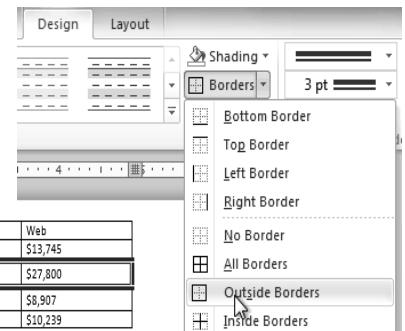
Depending on which **Table Style** you're using, certain **Table Style Options** may have a somewhat different effect. You may need to **experiment** to get the exact look you want.

To Add Borders to a Table:

1. Highlight the cells you wish to add a border to.
2. From the **Design** tab, select the desired **Line Style**, **Line Weight**, and **Pen Color**.

3. Click the **Borders** drop-down arrow.
4. From the drop-down menu, select the desired **border type**.
5. The border will be added to the selected cells.

Salesperson	Print	TV	Web
Jim M.	\$10,252	\$25,560	\$13,745
Beth W.	\$5,550	\$13,470	\$27,800
Luiz D.	\$8,547	\$17,555	\$8,907
Alice S.	\$13,578	\$6,789	\$10,239

**Modifying a Table Using the Layout Tab**

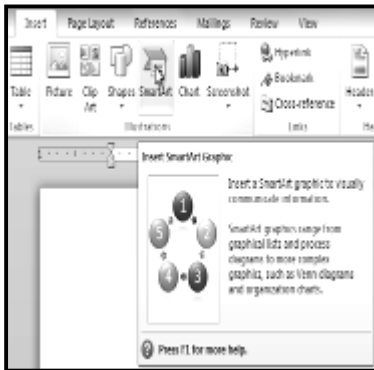
When you select a table in Word 2010, **Design** and **Layout** tabs appear under **Table Tools** on the ribbon. Using commands on the **Layout** tab, you can make a variety of modifications to the table.

SmartArt Graphics

SmartArt allows you to visually communicate information rather than simply using text. Illustrations can really enhance your document, and SmartArt makes using graphics especially easy. You will learn how to insert a SmartArt graphic, modify the color and effects, and change the organization of the graphic.

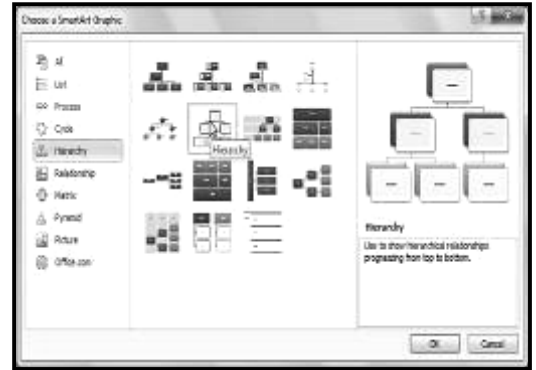
To Insert a SmartArt Illustration:

1. Place the insertion point in the document where you want the graphic to appear.

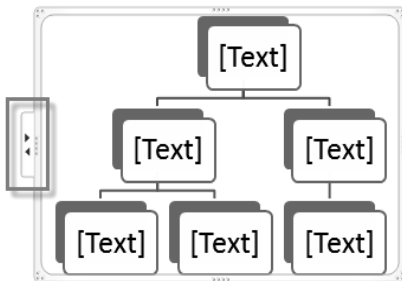


2. Select the **Insert** tab.
3. Select the **SmartArt** command in the Illustrations group. A dialog box appears.
4. Select a **category** on the left of the dialog box and review the SmartArt graphics that appear in the **center**.
5. Select the desired SmartArt graphic and click **OK**.

To see more details about a graphic, click on any image, and a larger preview of the graphic with **additional text details** will appear on the **right side** of the dialog box.



To Add Text to a SmartArt Graphic:



1. Select the graphic. A border will appear around it with an **arrow** on the left side.
2. Click the **arrow** on the left side of the graphic to open the task pane.
3. Enter text next to each bullet in the task pane. The information will appear in the graphic, and will resize to fit inside the shape.
4. To add a new shape, press **Enter**. A new bullet will appear in the task pane, and a new shape will appear in the graphic.

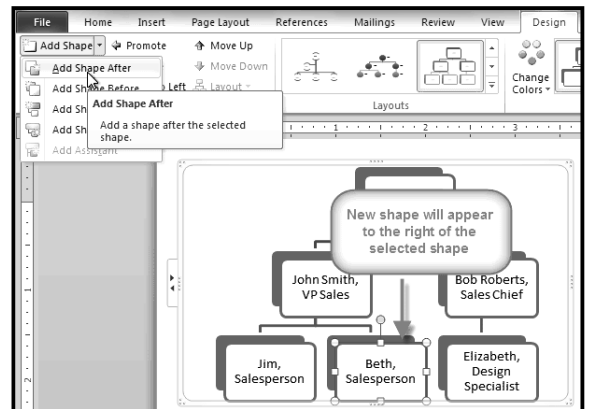
You can also add text by clicking on the desired shape and then typing your text. This works well if you only need to add text to a **few shapes**. However, for more complex SmartArt graphics, working in the **task pane** is often faster.

You can change the layout of a SmartArt graphic even after you've added text. However, if the new layout is very different from the old one, some of your text may not show up. Experiment with different layouts to see how they display your text differently.

To Add a Shape to a Graphic:

1. Select the graphic. The **Design** and **Format** tabs appear on the Ribbon.
2. Select the **Design** tab.
3. Click the **Add Shape** command in the Graphics group.
4. Decide where you want the **new shape** to appear and select one of the shapes nearby the desired location.
5. Select **Add Shape Before** or **Add Shape After**. If we wanted to add a superior or a subordinate, we could select the **Add Shape Above** or **Add Shape Below** options.

You can change the layout of a SmartArt graphic even after you've added text. However, if the new layout is very different from the old one, some of your text may not show up. Experiment with different layouts to see how they display your text differently.



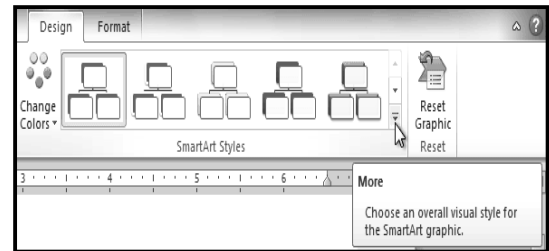
To Move Shapes Using the Promote or Demote Commands:

1. Select the graphic. The **Design** and **Format** tabs appear on the Ribbon.
2. Select the **Design** tab.
3. Select the **shape** you would like to move.
4. Click the **Promote** or **Demote** commands in the Create Graphic group.
5. The shape will move up one level.

You can also demote and promote shapes from within the **task pane**. With the **insertion point** in the task pane, press the **Tab** key to demote a shape. Press the **Backspace** key (or **Shift-Tab**) to promote a shape. It's a lot like creating an outline with a **multilevel list**.

To Change the SmartArt Style:

1. Select the graphic. The **Design** and **Format** tabs appear on the Ribbon.
2. Click the **Design** tab.
3. In the **SmartArt Styles** group, click the **More** drop-down arrow to view all of the styles.
4. Hover the mouse over each style to see a live preview.
5. Select the desired style.



To Change the Color Scheme:

Word provides a variety of **color schemes** to use with SmartArt. The color schemes use **Theme Colors**, so they will vary depending on which **Theme** you are using.

1. Select the graphic. The **Design** and **Format** tabs appear on the Ribbon.
2. Select the **Design** tab.
3. Click the **Change Colors** command. A drop-down menu appears showing various color schemes.
4. Select the desired color scheme.

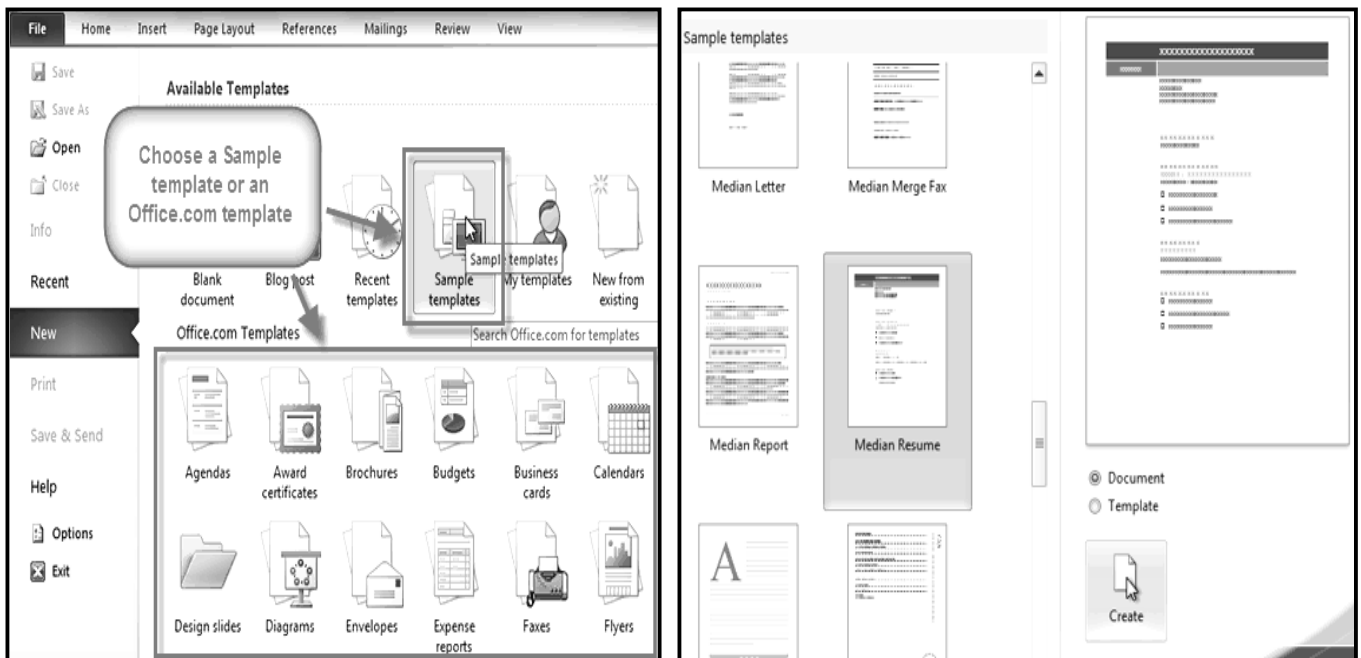
If you want to change the appearance of a **single shape** within the SmartArt graphic, select the shape and click the **Format** tab. You can then modify the **Shape Style**, **color**, **effects** or other settings for that shape.

Using a Template

A template is a pre-designed document that you can use to create documents quickly without having to think about formatting. With a template, many of the big document design decisions such as margin size, font style and size, and spacing are predetermined. You will learn how to create a new document with a template and insert text into it.

To Insert a Template:

1. Click the **File** tab to go to **Backstage view**.
2. Select **New**. The **New Document** pane appears.
3. Click **Sample templates** to choose a built-in template, or select an **Office.com template** category to download a template.
4. Select the desired template and click **Create**. A new document will appear using the template you have selected.

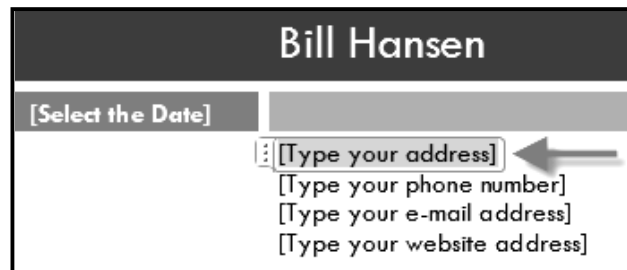


To Insert Text into a Template:

Templates include placeholder text that is surrounded by brackets. To personalize your document, you'll need to replace the placeholder text with your own text.

Some templates simply use regular text as the placeholder text, rather than the "traditional" placeholder text with brackets. In those cases, just delete the text and type in your own text.

1. Click on the text you want to replace. The text will appear **highlighted** and a template **tag** will appear.



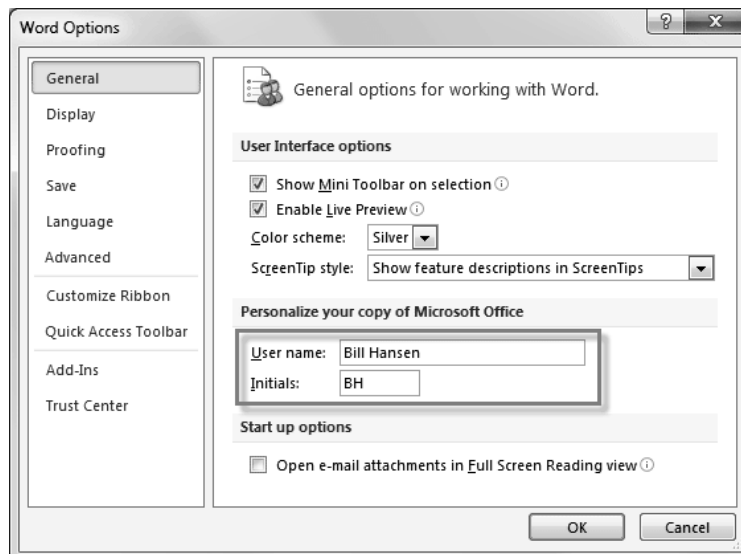
2. Enter some text. It will replace the placeholder text.

For some fields, there is a drop-down arrow that you can use to select the information, rather than typing it. For example, a **date** field will show a calendar so that you can choose the date more easily.

To Change Prefilled Information:

In some templates, your name or initials will be automatically added. This is known as **Prefilled information**. If your name or initials are incorrect, you'll need to change them in Word Options.

1. Click the **File** tab to go to **Backstage view**.
2. Click the **Options** button. The **Word Options** dialog box appears.
3. Enter the **user name and/or initials** in the **General** section, then click **OK**.



If you are using a public computer, such as one at a library, you may not want to change these settings.

Lesson: 10

Mail Merge

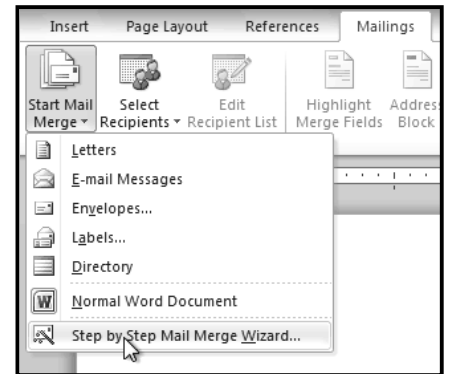
Mail merge is a useful tool that will allow you to easily produce multiple letters, labels, envelopes, name tags and more using information stored in a list, database, or spreadsheet. You will learn how to use the mail merge wizard to create a data source and a form letter, and explore other wizard features.

When you are performing a **Mail Merge**, you will need a **Word document** (you can start with an existing one or create a new one), and a **recipient list**, which is typically an **Excel workbook**.

To Use Mail Merge:

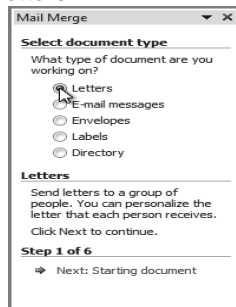
1. Open an **existing** Word document, or create a **new** one.
2. Click the **Mailings** tab.
3. Click the **Start Mail Merge** command.
4. Select **Step by Step Mail Merge Wizard**.

The Mail Merge task pane appears and will guide you through the six main steps to complete a mail merge. The following is an example of how to create a form letter and merge the letter with a recipient list.



Step 1:

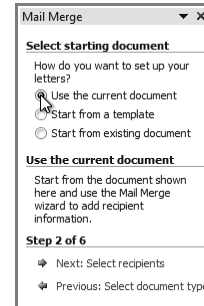
1. Choose the type of document you wish to create. In this example, select **Letters**.



2. Click **Next: Starting document** to move to **Step 2**.

Step 2:

1. Select **Use the current document**.

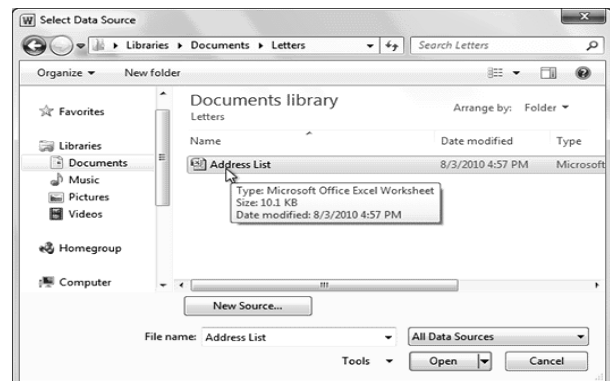


2. Click **Next: Select recipients** to move to **Step 3**.

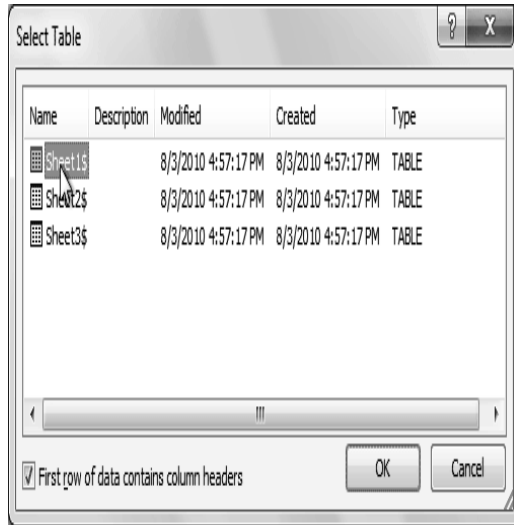
Step 3:

Now you'll need an address list so that Word can automatically place each address into the document. The list can be in an existing file, such as an **Excel workbook**, or you can **type a new address list** from within the Mail Merge Wizard.

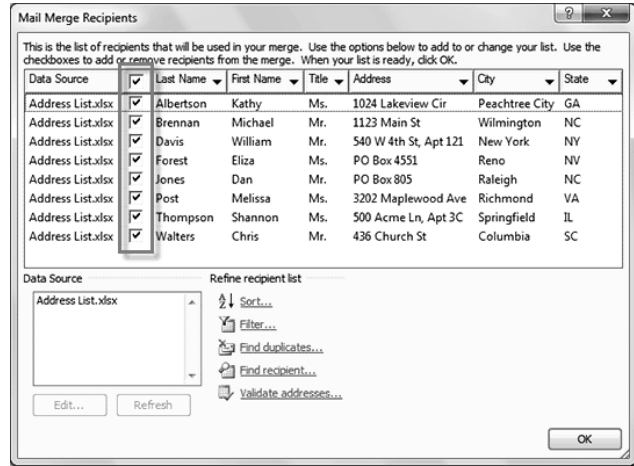
1. From the **Mail Merge** task pane, select **Use an existing list** and then click **Browse**.
2. Locate your file in the dialog box (you may have to navigate to a different folder) and click **Open**.



- If the address list is in an Excel workbook, select the **worksheet** that contains the list and click **OK**.



- In the **Mail Merge Recipients** dialog box, you can **check** or **uncheck** each recipient to control which ones are used in the mail merge. When you're done, click **OK** to close the dialog box.



- From the **Mail Merge** task pane, click **Next: Select recipients** to move to Step 4.

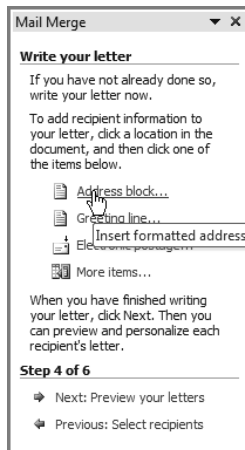
Step 4:

Now you're ready to write your letter. When it's printed, each copy of the letter will basically be the same, except the recipient data (such as the name and address) will be different on each one. You'll need to add placeholders for the recipient data, so that mail merge knows exactly where to add the data. If you're using mail merge with an existing letter, make sure that the file is open now.

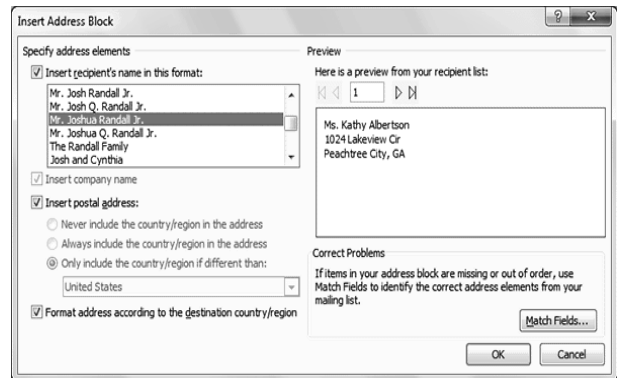
To Insert Recipient Data:

- Place the insertion point in the document where you wish the information to appear.
- Select **Address block**, **Greeting line**, **Electronic postage**, or **More items** from the task pane.

- A placeholder appears in your document. For example: « **Address Block** ».



- Depending on your selection, a dialog box may appear with various options. Select the desired options and click **OK**.



- Repeat these steps each time you need to enter information from your data record.
- From the **Mail Merge** task pane, click **Next: Preview your letters** to move to **Step 5**

For some letters, you'll only need to add an **Address block** and **Greeting line**. Sometimes, however, you may wish to place **recipient data** within the body of the letter to **personalize it** even further.

Step 5:

1. Preview the letters to make sure the information from the recipient list appears correctly in the letter. You can use the left and right scroll arrows to view each document.

Use arrows to preview each letter

Ms. Kathy Albertson
1024 Lakeview Cir
Peachtree City, GA

Dear Ms. Albertson,

As you may know, 2010 marks our growth from a tiny startup into a company that would not have been possible without the support of our customers and investors. We are excited to continue growing and serving you in the future.

The preview allows you to see how recipient data will look in each letter.

Mail Merge

Preview your letters

One of the merged letters is previewed here. To preview another letter, click one of the following:

<< Recipient: 1 >>

Find a recipient...

Make changes

You can also change your recipient list:

Edit recipient list...

Exclude this recipient

When you have finished previewing your letters, click Next. Then you can print the merged letters or edit individual letters to add personal comments.

Step 5 of 6

Next: Complete the merge

Previous: Write your letter

2. Click **Next: Complete the merge** to move to **Step 6**.

Step 6:

1. Click **Print** to print the letters.

Mail Merge

Complete the merge

Mail Merge is ready to produce your letters.

To personalize your letters, click "Edit Individual Letters." This will open a new document with your merged letters. To make changes to all the letters, switch back to the original document.

Merge

Print...

Edit individual letters...

Merge to printer

Step 6 of 6

Previous: Preview your letters

2. The **Merge to Printer** dialog box opens. Click **All**, and then click **OK**.

Merge to Printer

Print records

All

Current record

From: [] To: []

OK Cancel

3. The **Print** dialog box will appear. Adjust the print settings if needed, and then click **OK**.

Lesson: 11

Reviewing & Printing of Documents

Suppose someone asks you to proofread a report for them. If you have a hard copy of the report, you might use a red pen to cross out sentences, mark misspellings, or add comments in the margins. However, you could also do all of these things in Word using the **Track Changes** and **Comments** features.

When you've finished reviewing the document, the other person can choose to automatically **Accept** all of your changes, or decide whether to **Accept** or **Reject** each change one-by-one.

About Track Changes

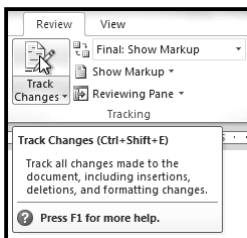
When you turn on the Track Changes option, every change you make to the document shows up as colored markups. If you delete some text, it won't disappear, but instead will have a visible strike through it. If you add text, it will be underlined. This allows another person to see which changes have been made before making the changes permanent. The color of the markups will vary depending on who is reviewing the document, so if there are multiple reviewers, you'll be able to tell at a glance who made each change.

To Whom it May ConcernDear Mr. Powell:

Thank you for taking the time to meet with me last Thursday about the Sales Associate position. I enjoyed meeting with you and touring the facility. I was very impressed with the layout of the showroom and with the competence of the staff at ~~your company~~ Quality Furnishings. I would love the chance to work in such a productive and ~~very~~ supportive atmosphere.

As we talked about in our meeting, my ~~many~~ years of sales experience, both in commissioned floor sales and in the role of Sales Supervisor, would greatly benefit Quality Furnishings. In that time, I have learned many techniques that would drive increase sales and drive customer satisfaction ratings at Quality Furnishings.

To Turn on Track Changes:



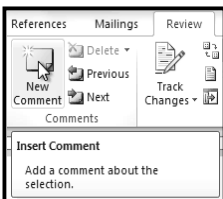
1. Click the **Review** tab.
2. Click the **Track Changes** command. It should now be highlighted in gold to show that it is active.
3. Any changes you make to the document will be shown as colored markups.
4. Click the **Track Changes** command again to turn it off.

g the facility. I was very impressed with the layout of the of the staff at ~~your company~~ Quality Furnishings. I would love

Adding and Deleting Comments

Sometimes, instead of changing something, you may want to make a comment about part of the document. Comments show up in "balloons" in the right margin and can be read by the original author or by any other reviewers.

To Add a Comment:



1. **Highlight some text** or place the **insertion point** where you want the comment to appear.
2. From the **Review** tab, click the **New Comment** command.
3. Type your comment.

my ~~many~~ years of sales experience, both in commissioned floor
visor, would greatly benefit Quality Furnishings. In that time, I

Comment [BH1]: How many years?

To Delete a Comment:

1. Select the **balloon** containing the comment you wish to delete.
2. From the **Review** tab, click the **Delete** command.

To Delete All Comments:

1. From the **Review** tab, click the **Delete** drop-down arrow.
2. Click **Delete All Comments in Document**.

Accepting or Rejecting Changes

Tracked changes are really just "suggested" changes. To become permanent, they have to be **Accepted**. On the other hand, the original author may disagree with some of the tracked changes and choose to **Reject** them.

To Accept or Reject Changes:

1. Select the change you want to accept or reject.
2. From the **Review** tab, click the **Accept** or **Reject** command.
3. If you accepted the change, the markup will disappear, and the text will look "normal."

For some tracked changes, you can "reject" the changes by simply deleting them as if they were normal text. For example, if a reviewer adds a word to a sentence, you can just delete the word.

To Accept All Changes:

1. From the **Review** tab, click the **Accept** drop-down arrow. A drop-down menu will appear.
2. Select **Accept All Changes in Document**.

To Reject All Changes:

1. From the **Review** tab, click the **Reject** drop-down arrow. A drop-down menu will appear.
2. Select **Reject All Changes in Document**.

Accepting or Rejecting all changes does not affect **comments**, so if you want to delete them, you'll have to do it separately.

Changing How Markups Appear

If there are a lot of tracked changes in a document, they may become distracting if you're trying to read through the document. There are a couple of settings that you can use to **hide the markups** or **change how they appear**.

To Hide Tracked Changes:

1. From the **Review** tab, click the **Display for Review** command. The Display for Review command is located to the right of the Track Changes command, and it may not be labeled. It will probably say **Final: Show Markup**.
2. In the drop-down menu, there are four options:
 - **Final: Show Markup:** Shows the final version along with the markup.
 - **Final:** Shows the final version and hides all markups.
 - **Original: Show Markup:** Shows the original version along with the markup.
 - **Original:** Shows the original version and hides all markups.
3. Choose **Final** or **Original** from the drop-down menu to hide the markups.

Setting **Display for Review** to **Final** is not the same as **accepting all changes**. You will still need to **Accept or Reject** the changes before sending out the final version of your document.

To Show Revisions in Balloons:

By default, most revisions show up **inline**, meaning the text itself is marked. You can choose to **show the revisions in balloons**, which moves many of the revisions (such as **deletions**) to balloons in the right margin. This may make the document easier to read, as there are fewer inline markups. The balloons also give you more detailed information about some markups.

1. From the **Review** tab, click **Show Markup - Balloons - Show Revisions in Balloons**.
2. Some of the revisions will move to the right margin.

To go back to **inline** markups, you can select either **Show All Revisions Inline** or **Show Only Comments and Formatting in Balloons**.

Comparing Two Documents

If you edit a document without tracking changes, it's still possible to use reviewing features such as **Accept** and **Reject**. You can do this by **comparing** two versions of the document. All you need is the **original** document and the **revised** document, and they need to have different file names.

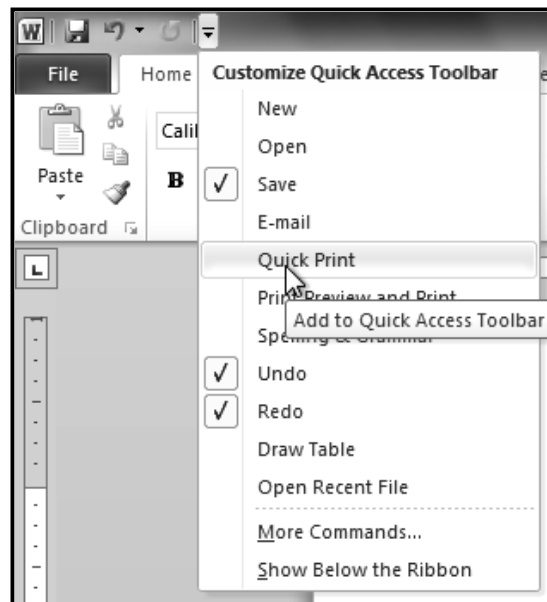
3. Select the **number of copies**.
4. Check the **Collate** box if you are printing multiple copies of a multi-page document.
5. Select a **printer** from the drop-down list.
6. Click the **Print** button.

Quick Print

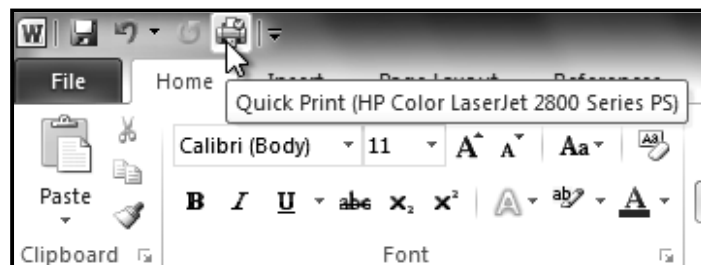
There may be times when you want to print something with a single click, using **Quick Print**. This feature prints the document using the **default settings** and the **default printer**. In Word 2010, you'll need to add it to the **Quick Access Toolbar** in order to use it. Quick Print always prints the **whole document**, so if you only want to print part of your document you'll have to use the Print pane.

To Access the Quick Print Button:

1. Click the **drop-down arrow** on the right side of the **Quick Access Toolbar**.
2. Select **Quick Print** if it is not already checked.



3. To print, just click the **Quick Print** command.



Unit-III MS-Excel 2010

Lesson: 1

Introduction to M.S Excel 2010

Excel is a Microsoft office application. Excel is mainly used for making calculations and mathematical works. Microsoft excel is a spread sheet application in which number of sheets we can add as per our requirements. In a single sheet, it consists of rows and columns and cells. Every cell has different address. In excel sum, product, subtraction, division and many mathematical, logical functions are available with this application. Other features tables, charts, clip art etc. you can find with Excel. It basically used for payroll, accounts, mathematical and for other business purposes.

Or

Microsoft Excel is a commercial spreadsheet application written and distributed by Microsoft for Microsoft Windows and Mac OS X. It features calculation, graphing tools, pivot tables and a macro programming language called Visual Basic for Applications.

Or

Microsoft Excel is a spreadsheet application used to create and manage business transactions that deal with accounting. To make this possible, it can assist you with creating lists of transactions, then using those lists to create charts and other analysis tools.

Or

Excel is a **spreadsheet program** that allows you to store, organize, and analyze information.

In this lesson, you will learn your way around the Excel 2010 environment, including the new **Backstage view**, which replaces the Microsoft Button menu from Excel 2007. We will show you how to use and modify the Ribbon and the Quick Access Toolbar, and how to create new workbooks and open existing ones.

Basic Features of Excel:-

1. **Hyperlink:** -We can link one file to another file or page with the use of Excel.
2. **Clip art:** - In this we can add images and also audio, video clips can be added here.
3. **Charts:** - With charts, we can clearly shown products evaluation to the clients. For example which product sale is more or less in this month.
4. **Tables:** - Tables are created with different fields eg -name, age, address, roll no so we add a table to fill these values.
5. **Functions:** - *MATHEMATICAL:* Add, subtract, div, multiply, *LOGICAL:* average, sum, mod, product.
6. **Images and Backgrounds:-** In this we add images and backgrounds in sheet.
7. **Macros:** - Macros are used for recording events for further use.
8. **Database:** - We can add database from other sources with data feature.
9. **Sorting and Filter:** - In sorting we can sort our data and also filter our data so that repetitions will be removed.
10. **Data Validations:** - In data tools there are data validations consolidate etc are used.
11. **Grouping:** - In this we can use group, ungroup subtotal etc.
12. **Page layout:** - In this themes, colors, sheets, margins, size, backgrounds, breaks, print, titles, sheets height, width, scaling, gridness, headings, views, bring to front of font or back alignment etc will be used.

Usages of M.S Excel 2010:

1. Manage data records like name list

The commonly usage of Excel is to manage data records and name lists. You don't have to plan in advance on how the table should look like, as the preset layout allows you to create the tables on the fly, just fill in the information; the table is developed on the go. Another more attractive point is that you have the ability to sort the list and filter the listing like a database tool.

2. Used as an analytical tool

Besides the good use on managing data, Excel is a great analytical tool for business. With the pivot table contained within Excel, you can easily analyses a large number of data, as the pivot table can automatically sort, count, and total the data stored in one table or spreadsheet and create a second table displaying the summarized data. It has gone through much revision. In each revision, we see its power being enhanced. In the latest version of Excel 2010, there are many new features added: It added almost six new calculations, a '**Show Value As**' function and some great visual tools.

3. Create forms and consolidate results

You can use Excel to create not only a simple form that contains boxes, but also professional forms which include option buttons that allow you to select answers, dropdown list to select a particular answer from list of items. Together with charts, you can use Excel to compile answers to tests or quizzes and analyze the profile of the class (If you are a teacher) or your team (If you are a supervisor).

4. Corporate Budgeting

A major business application of Excel is in corporate budgeting. Many companies, from big corporations to small companies use Excel for their budgeting. Despite numerous calls by suppliers of Business Performance Management Systems (BPM) to move away from Excel as a budgeting tool, 70% to 80% of all corporations still use Excel as their primary budgeting tool.

5. Inventory Management

Excel provides many functions and formulas that will not only help you manage your data records efficiently but will also allow you to analyze your data based on your constantly changing business environment. Through the use of Microsoft® Excel formulas, you can create comprehensive drop down boxes to facilitate data inputs and reduce erroneous entries. And through the use of pivot tables, you could get a good detailed analysis of your stock movement and also your inventory level at any point in time.

6. Finding Profit Breakeven

Finding breakeven is never easy without using Excel. To manually find out the breakeven for a project, you have to perform many calculations using different numbers as it's inputs. And the calculation becomes even more complex if the components include fixed cost and step up cost. But with the goal seek function in Excel, this task can be completed in a few seconds.

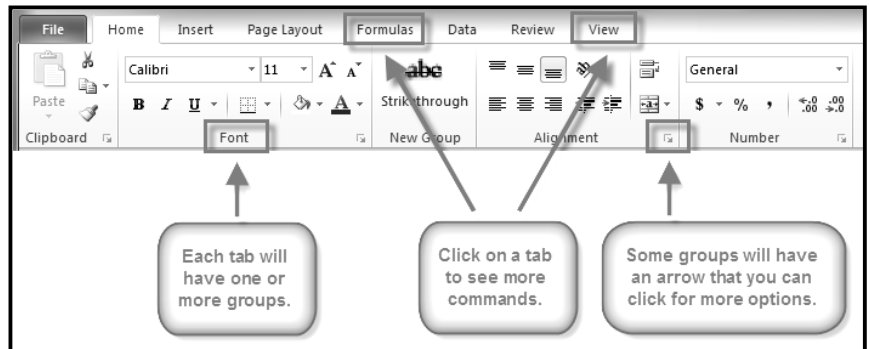
The Ribbon

The Ribbon contains multiple **tabs**, each with several **groups** of commands. You can add your own tabs that contain your favorite commands.

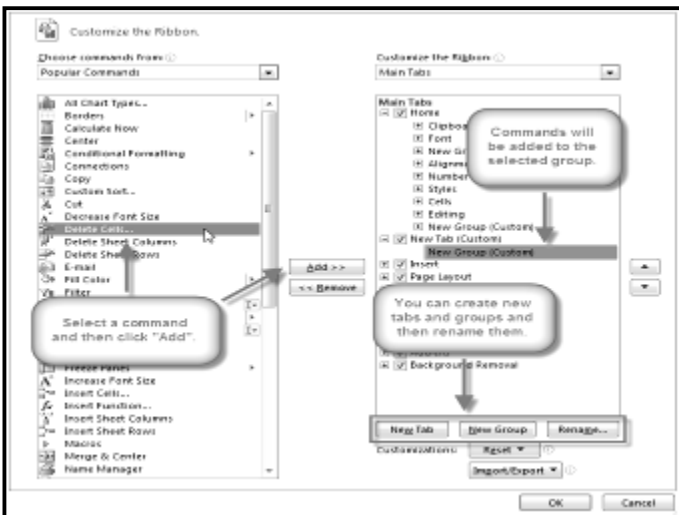
Certain programs, such as **Adobe Acrobat Reader**, may install additional tabs to the ribbon. These tabs are called **Add-ins**.

To Customize the Ribbon:

You can customize the ribbon by creating your own **tabs** that house your desired commands. Commands are always housed within a **group**, and you can create as many groups as you need to keep your tabs organized. In addition, you can even add commands to any of the default tabs, as long as you create a custom group within the tab.



1. Right-click the Ribbon and select **customize the Ribbon**. A **dialog box** will appear.
2. Click **New Tab**. A new tab created with a new group inside it.
3. Make sure the new group is selected.
4. Select a command from the list on the left, then click **Add**. You can also drag commands directly into a group.
5. When you are done adding commands, click **OK**.

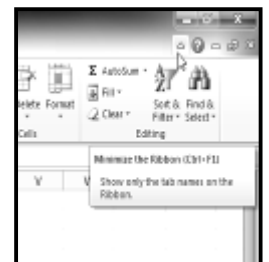


If you do not see the command you want, click on the **Choose commands** drop-down box and select **All Commands**.

To Minimize and Maximize the Ribbon:

The Ribbon is designed to be responsive to your current task and easy to use, but if you find it is taking up too much of your screen space, you can **minimize** it.

1. Click the **arrow** in the upper-right corner of the Ribbon to minimize it.
2. To maximize the Ribbon, click the arrow again.



When the Ribbon is minimized, you can make it reappear by clicking on a tab. However, the Ribbon will disappear again when you are not using it.

The Quick Access Toolbar

The **Quick Access Toolbar** is located above the Ribbon, and it lets you access common commands no matter which tab you are on. By default, it shows the **Save**, **Undo**, and **Repeat** commands. You can add other commands to make it more convenient for you.

To Add Commands to the Quick Access Toolbar:

1. Click the **drop-down arrow** to the right of the **Quick Access Toolbar**.
2. Select the **command** you wish to add from the drop-down menu. To choose from more commands, select **more commands**.

Backstage View

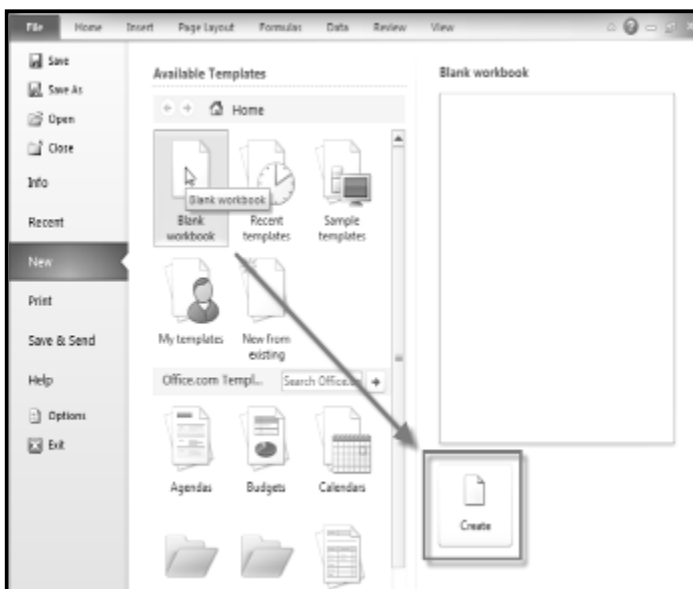
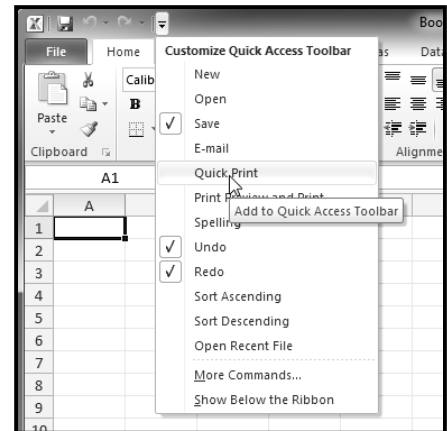
Backstage view gives you various options for saving, opening a file, printing, or sharing your document. It is similar to the **Office Button menu** from Excel 2007 or the **File menu** from earlier versions of Excel. However, instead of just a menu, it is a full-page view which makes it easier to work with.

To Get to Backstage View:

1. On the Ribbon, click the **File** tab.
2. Choose your desired option, or return to your workbook by clicking on any tab on the Ribbon.

To Create a New, Blank Workbook:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **New**.
3. Select **Blank workbook** under **Available Templates**. It will be highlighted by default.
4. Click **Create**. A new, blank workbook appears in the Excel window.



To save time, you can create your document from a **template**, which you can select under Available Templates. We will talk more about this in a later lesson.

To Open an Existing Workbook:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **Open**. The Open dialog box appears.
3. Select your desired workbook and then click **Open**.

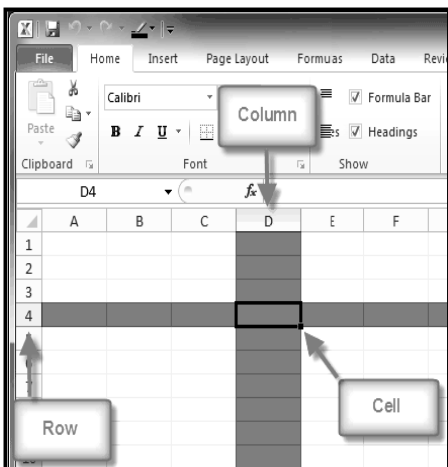
If you have opened the existing workbook recently, it may be easier to choose **Recent** from the **File tab** instead of **Open** to search for your workbook.

Lesson: 2

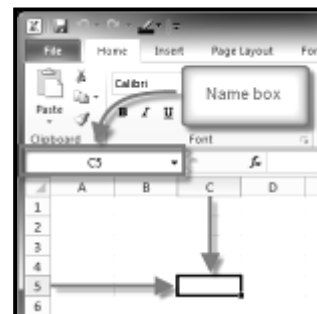
Cell Basic

You will need to know the basic ways you can work with **cells** and cell content in Excel to be able to use it to calculate, analyze, and organize data. In this lesson, you will learn how to select cells; insert content; and delete cells and cell content. You will also learn how to cut, copy and paste cells; drag and drop cells; and fill cells using the fill handle.

The Cell



Each rectangle in a worksheet is called a **cell**. A cell is the intersection of a **row** and a **column**. Each cell has a name, or a **cell address** based on which **column and row** it intersects. The **cell address** of a selected cell appears in the **Name box**. Here you can see that **C5** is selected.



To Select a Cell:

1. **Click on a cell** to select it. When a cell is selected you will notice that the **borders** of the cell appear bold and the **column heading** and **row heading** of the cell are highlighted.
2. Release your mouse. The cell will stay selected until you click on another cell in the worksheet.

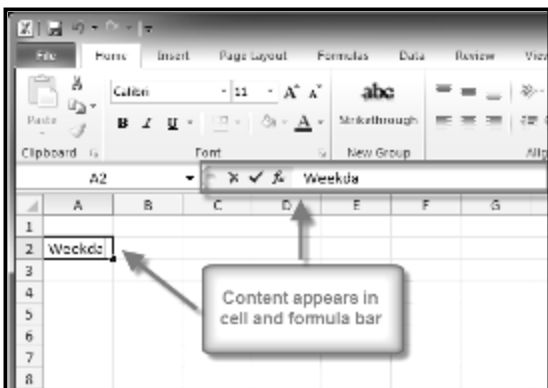
You can also navigate through your worksheet and select a cell by using the **arrow keys** on your keyboard.

To Select Multiple Cells:



1. **Click and drag your mouse** until all of the adjoining cells you want are highlighted.
2. Release your mouse. The cells will stay selected until you click on another cell in the worksheet.

Cell Content

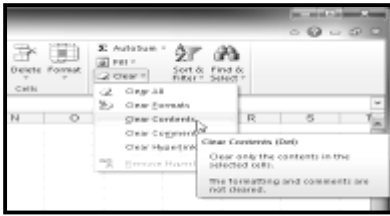


Each cell can contain its own text, formatting, comments, formulas, and functions.

- **Text**
Cells can contain letters, numbers, and dates.
- **Formatting attributes**
Cells can contain formatting attributes that change the way letters, numbers, and dates are displayed. For example, dates can be formatted as MM/DD/YYYY or Month/D/YYYY.
- **Comments**
Cells can contain comments from multiple reviewers.
- **Formulas and Functions**
Cells can contain formulas and functions that calculate cell values. For example, $SUM(\text{cell 1}, \text{cell 2}...)$ is a formula that can add the values in multiple cells.

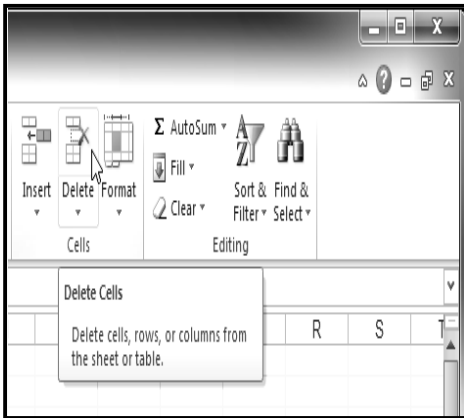
To Insert Content:

1. Click on a cell to select it.
2. Enter content into the selected cell using your keyboard. The content appears in the **cell** and in the **formula bar**. You also can enter or edit cell content from the formula bar.

To Delete Content Within Cells:

1. Select the cells which contain content you want to delete.
2. Click the **Clear** command on the ribbon. A **dialog box** will appear.
3. Select **Clear Contents**.

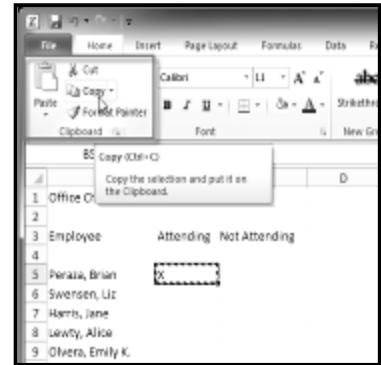
You can also use your keyboard's **Backspace** key to delete content from a **single cell** or **Delete** key to delete content from **multiple cells**.

To Delete Cells:

1. Select the cells that you want to delete.
2. Choose the **Delete** command from the **ribbon**.

To Copy and Paste Cell Content:

1. Select the cells you wish to copy.
2. Click the **Copy** command. The border of the selected cells will change appearance.
3. Select the cell or cells where you want to paste the content.
4. Click the **Paste** command. The copied content will be entered into the highlighted cells.

**To Cut and Paste Cell Content:**

1. Select the cells you wish to cut.
2. Click the Cut command. The border of the selected cells will change appearance.
3. Select the cells where you want to paste the content.
4. Click the **Paste** command. The cut content will be removed from the original cells and entered into the highlighted cells.



To Access More Paste Options:

There are more Paste options that you can access from the drop-down menu on the **Paste** command. These options may be convenient to advanced users who are working with **cells that contain formulas or formatting**.



To Access Formatting Commands by Right-Clicking:

1. Select the cells you want to format.
2. **Right-click** on the selected cells. A **dialog box** will appear where you can easily access many commands that are on the ribbon.

To Drag and Drop Cells:

1. Select the cells that you wish to move.
2. Position your mouse on one of the outside edges of the selected cells. The mouse changes from a white cross  to a black cross with 4 arrows .
3. **Click and drag the cells** to the new location.
4. Release your mouse and the cells will be dropped there.
- 5.

To Use the Fill Handle to Fill Cells:

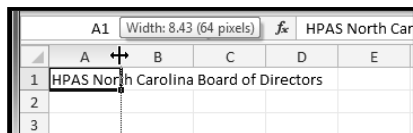
1. Select the cell or cells containing the content you want to use. You can fill cell content either vertically or horizontally.
2. Position your mouse over the **fill handle** so that the white cross  becomes a black cross .
3. **Click and drag the fill handle** until all the cells you want to fill are highlighted.
4. **Release** the mouse and your cells will be filled.

Lesson: 3

Modifying Rows, Columns & Cells

When you open a new, blank workbook, the cells are set to a default size. You do have the ability to modify cells, and to insert and delete columns, rows, and cells, as needed. In this lesson, you will learn how to change row height and column width; insert and delete rows and columns; wrap text in a cell; and merge cells.

To Modify Column Width:



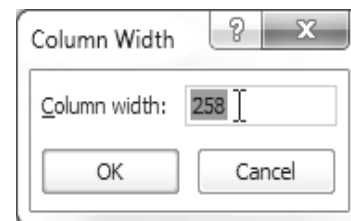
1. Position your mouse over the **column line** in the **column heading** so that the **white cross** becomes a **double arrow**.
2. **Click and drag the column** to the right to increase the column width or to the left to decrease the column width.
3. Release the mouse. The column width will be changed in your spreadsheet.

To Set Column Width with a Specific Measurement:

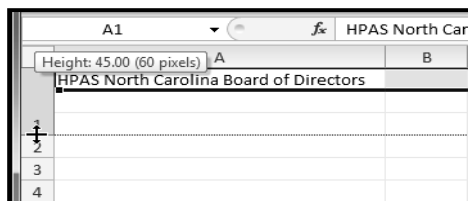


1. Select the columns you want to modify.
2. Click the **Format** command on the **Home** tab. The format drop-down menu appears.
3. Select **Column Width**.
4. The **Column Width** dialog box appears. Enter a specific measurement.
5. Click **OK**. The width of each selected column will be changed in your worksheet.

Select **AutoFit Column Width** from the format drop-down menu and Excel will automatically adjust each selected column so that all the text will fit.

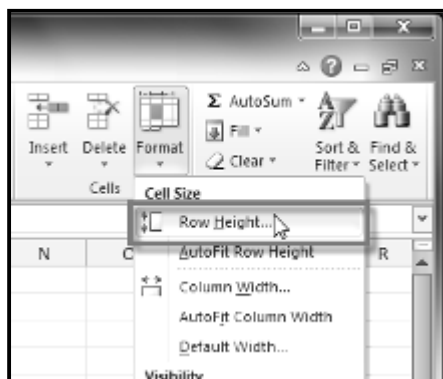


To Modify the Row Height:



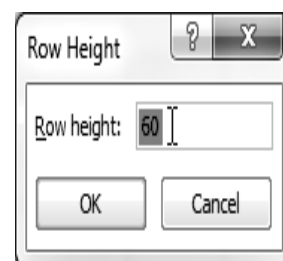
1. Position the **cursor** over the **row line** so that the **white cross** becomes a **double arrow**.
2. **Click and drag the row** downward to increase the row height or upward decrease the row height.
3. Release the mouse. The height of each selected row will be changed in your worksheet.

To Set Row Height with a Specific Measurement:



1. Select the rows you want to modify.
2. Click the **Format** command on the **Home** tab. The format drop-down menu appears.
3. Select **Row Height**.
4. The **Row Height** dialog box appears. Enter a specific measurement.
5. Click **OK**. The selected rows heights will be changed in your spreadsheet

Select **AutoFit Row Height** from the format drop-down menu and Excel will automatically adjust each selected row so that all the text will fit.



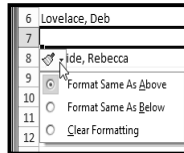
To Insert Rows:



1. Select the **row** *below* where you want the new row to appear.
2. Click the **Insert** command on the **Home** tab.
3. The new row appears in your worksheet.

When inserting new rows, columns, or cells, you will see the **Insert Options** button

by the



inserted cells. This button allows you to choose how Excel formats them. By default, Excel formats inserted rows with the same formatting as the cells in the row above them. To access more options, hover your mouse over the Insert Options button and click on the drop-down arrow that appears.

	A	B	C
1	Ashberry, Jane	919-882-6561	ashberryj@hpasnc.org
2	Davis, Garrett	919-576-4562	davisg@hpasnc.org
3	Eberhardt, Elizabeth	252-985-3558	eberhardte@hpasnc.org
4	Everett, Carol	919-503-9560	everettc@hpasnc.org
5	Hepburn, Katie H.	704-882-5559	hepburnk@hpasnc.org
6	Lovelace, Deb	919-785-9656	lovelaced@hpasnc.org
7			
8	Bride, Rebecca	828-357-0072	mcbrider@hpasnc.org
9	Mixon, Daniel	919-821-7425	mixon@hpasnc.org
10	Stevens, Kevin	919-783-8564	stevensk@hpasnc.org

To Insert Columns:

1. Select the **column** to the *right* of where you want the new column to appear. For example, if you want to insert a column between A and B, select column B.
2. Click the **Insert** command on the **Home** tab.
3. The new column appears in your worksheet.

By default, Excel formats inserted columns with the same formatting as the column to the left of them. To access more options, hover your mouse over the **Insert Options** button and click on the drop-down arrow that appears. When inserting rows and columns, make sure you select the row or column by clicking on its heading so that all the cells in that row or column are selected. If you select just a cell in the row or column then only a new cell will be inserted.

To Delete Rows:

1. Select the rows you want to delete.
2. Click the **Delete** command on the **Home** tab.
3. The rows are deleted from your worksheet.

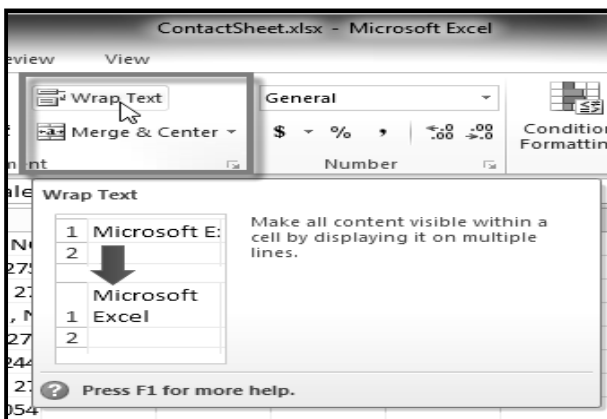
To Delete Columns:

1. Select the columns you want to delete.
2. Click the **Delete** command on the **Home** tab.
3. The columns are deleted from your worksheet.

Wrapping Text and Merging Cells

If a cell contains more text than can be displayed, you can choose to wrap the text within the cell or merge the cell with empty, adjoining cells. **Wrap text** to make it display on multiple lines of the cell. **Merge cells** to combine adjoining cells into one larger cell.

To Wrap Text:



1. Select the cells with text you want to wrap.
2. Select the **Wrap Text** command on the **Home** tab.
3. The text in the selected cells will be wrapped in your worksheet.

If you change your mind, re-click the **Wrap Text** command to unwrap the text.

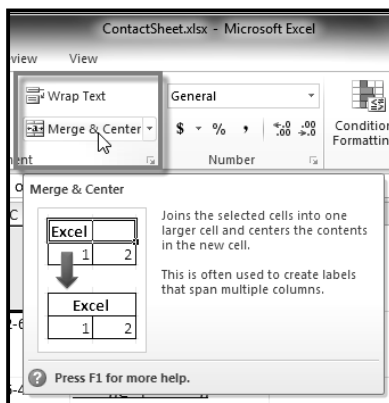
To Merge Cells Using the Merge & Center Command:

1. Select the cells you want to merge together.

	A	B	C	D
1	HPAS North Carolina Board of Directors			
2	Ashberry, Jane	78-A Meadowview Lane Raleigh, NC 27589	919-882-6561	ashberry@hpasnc.org
3	Davis, Garrett	29 North Luke Court Raleigh, NC 27576	919-576-4562	davisg@hpasnc.org
4	Eberhardt, Elizabeth	63-C Chapel Court Louisberg, NC 27079	252-985-3558	eberhardte@hpasnc.org

(Selecting A1:D1 (A1, B1, C1, D1))

2. Select the **Merge & Center** command on the **Home** tab.



(Selecting the Merge & Center command)

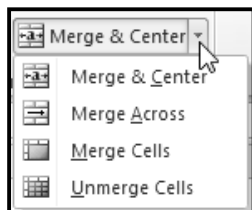
3. The selected cells will be merged and the text will be centered.

	A	B	C	D
1	HPAS North Carolina Board of Directors			
2	Ashberry, Jane	78-A Meadowview Lane Raleigh, NC 27589	919-882-6561	ashberry@hpasnc.org
3	Davis, Garrett	29 North Luke Court Raleigh, NC 27576	919-576-4562	davisg@hpasnc.org
4	Eberhardt, Elizabeth	63-C Chapel Court Louisberg, NC 27079	252-985-3558	eberhardte@hpasnc.org

(A1 after merging with B1:D1)

If you change your mind, re-click the **Merge & Center** command to unmerge the cells.

To Access More Merge Options:



Click the drop-down arrow next to the **Merge & Center** command on the Home tab. The **merge** drop-down menu appears.

- **Merge & Center:** Merges selected cells into one cell and centers the text.
- **Merge Across:** Merges each *row* of selected cells into larger cells. This command is useful if you are merging content across multiple rows of cells and do not want to create one large cell.
- **Merge Cells:** Merges selected cells into one cell.
- **Unmerge Cells:** Unmerges the selected cells.

Lesson: 4

Formatting Text & Cells

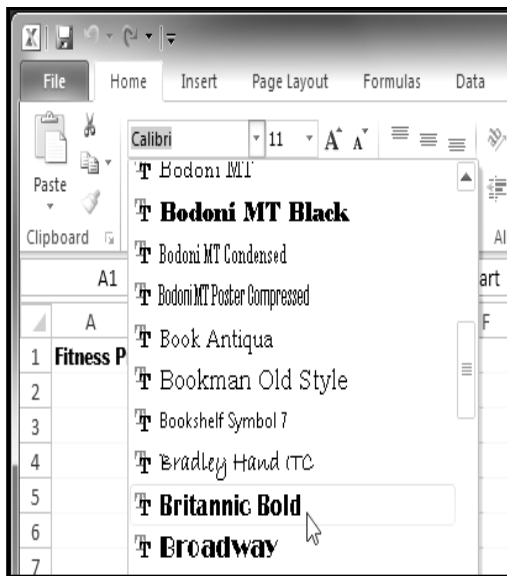
Spreadsheets that have not been formatted can be difficult to read. Formatted text and cells can draw attention to specific parts of the spreadsheet and make the spreadsheet more visually appealing and easier to understand.

In Excel, there are many tools you can use to format text and cells. In this lesson, you will learn how to change the **color and style of text and cells**; **align text**; and apply special formatting to **numbers and dates**.

Formatting Text

Many of the commands you will use to format text can be found in the Font, Alignment, and Number groups on the ribbon. **Font** commands let you change the style, size, and color of text. You can also use them to add borders and fill colors to cells. **Alignment** commands let you format how text is displayed across cells both horizontally and vertically. **Number** commands let you change how selected cells display numbers and dates.

To Change the Font:



1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **font** command on the Home tab. The font drop-down menu appears.
3. Move your mouse over the various fonts. A live preview of the font will appear in the worksheet.
4. Select the font you want to use.

To Change the Font Size:

1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **font size** command on the Home tab. The font size drop-down menu appears.
3. Move your mouse over the various font sizes. A live preview of the font size will appear in the worksheet.
4. Select the font size you want to use.



You can also use the **Grow Font** and **Shrink Font** commands to change the size.

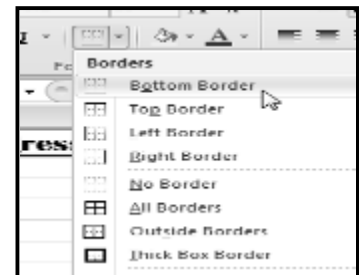
To Use the Bold, Italic, and Underline Commands:

1. Select the cells you want to modify.
2. Click the Bold (**B**), Italic (*I*), or Underline (U) command on the Home tab.

To Add a Border:

1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **Borders** command on the Home tab. The border drop-down menu appears.
3. Select the border style you want to use.

You can draw borders and change the line style and color of borders with the Draw Borders tools at the bottom of the Borders drop-down menu.



To Change the Font Color:

1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **font color** command on the Home tab. The **color** menu appears.

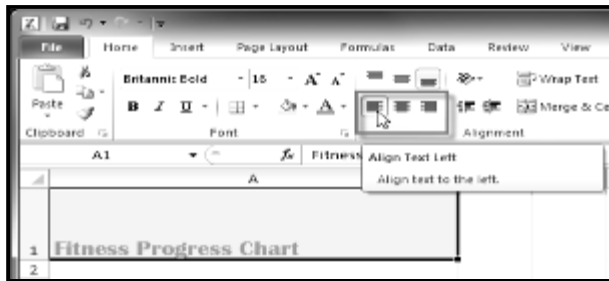
3. Move your mouse over the various font colors. A live preview of the color will appear in the worksheet.
4. Select the font color you want to use.

Your color choices are not limited to the drop-down menu that appears. Select **More Colors** at the bottom of the menu to access additional color options.

To Add a Fill Color:

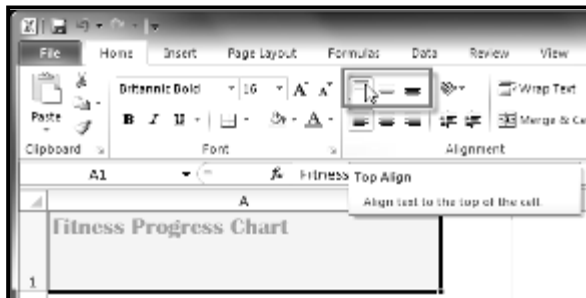
1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **fill color** command on the Home tab. The **color** menu appears.
3. Move your cursor over the various fill colors. A live preview of the color will appear in the worksheet.
4. Select the fill color you want to use.

To Change Horizontal Text Alignment:



1. Select the cells you want to modify.
2. Select one of the three horizontal **Alignment** commands on the Home tab.
 - **Align Text Left:** Aligns text to the left of the cell.
 - **Center:** Aligns text to the center of the cell.
 - **Align Text Right:** Aligns text to the right of the cell.

To Change Vertical Text Alignment:



1. Select the cells you want to modify.
2. Select one of the three vertical **Alignment** commands on the Home tab.
 - **Top Align:** Aligns text to the top of the cell.
 - **Middle Align:** Aligns text to the middle of the cell.
 - **Bottom Align:** Aligns text to the bottom of the cell.

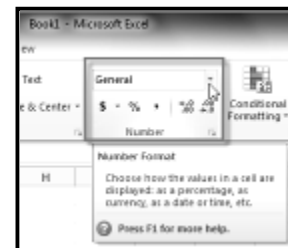
By default, numbers align to the bottom-right of cells and words or letters align to the bottom-left of cells.

Formatting Numbers and Dates

One of the most useful features of Excel is its ability to format numbers and dates in a variety of ways. For example, you might need to format numbers with decimal places, currency symbols (\$), percent symbols (%), etc.

To Format Numbers and Dates:

1. Select the cells you want to modify.
2. Click the **drop-down arrow** next to the **Number Format** command on the Home tab.
3. Select the number format you want.



Lesson: 5

Workbook & Worksheet

A workbook is a file that stores the entered related data; a worksheet is a page of the workbook on which all the data is held.

In Microsoft Excel, a workbook is simply an Excel file that stores entered related data. Workbooks are capable of holding an almost infinite number of worksheets, depending on the size and the relevance of the data. It is, essentially, a book filled with the data from multiple worksheets. Workbooks are usually labeled by the data which is on each worksheet – if all the pages of the workbook hold the same type of data, that workbook will be named for the relevant data that it holds.

In Excel, a worksheet is an amalgamation of a number of cells that hold data pertaining to a certain piece of information. It is also known as a spreadsheet. A user is able to enter, modify, and manipulate the data that is entered in the spreadsheet. With a spreadsheet, a user is essentially entering information onto a page of a workbook.

By default, **each workbook** automatically contains **three worksheets**. When a user opens Excel initially, the project on which they are going to begin work is entitled '**Book 1**' until later renamed to fit the type of data being entered into each respective sheet. Essentially, when a user opens Excel, they are beginning creation on **a workbook** – a book that contains multiple pages of entered data. These pages fill the book and are, therefore, a part of the overall summation of information that the book is attempting to convey.

A worksheet, then, is nothing more than a page in the workbook. Each page is filled with a specific amount of data. Within a worksheet, the data can be manipulated to create charts, graphs, or arrays that visually project the main purpose of the data that was initially entered. The worksheet is what defines what the workbook is – without the worksheets the workbook would be without form or purpose. The worksheets are what make the workbook what it is, and holds all the data for the workbook.

Worksheet and workbook specifications

FEATURE	MAXIMUM LIMIT
Open workbooks	Limited by available memory and system resources
Worksheet size	65,536 rows by 256 columns
Column width	255 characters
Row height	409 points
Page breaks	1000 horizontal and vertical
Length of cell contents (text)	32,767 characters. Only 1,024 display in a cell; all 32,767 display in the formula bar.
Sheets in a workbook	Limited by available memory (default is 3 sheets)
Colors in a workbook	56
Cell styles in a workbook	4,000
Named views in a workbook	Limited by available memory
Custom number formats	Between 200 and 250, depending on the language version of Excel you have installed.
Names in a workbook	Limited by available memory
Windows in a workbook	Limited by system resources
Panes in a window	4
Linked sheets	Limited by available memory
Scenarios	Limited by available memory; a summary report shows only the first 251 scenarios
Changing cells in a scenario	32
Adjustable cells in Solver	200
Custom functions	Limited by available memory
Zoom range	10 percent to 400 percent
Reports	Limited by available memory
Sort references	3 in a single sort; unlimited when using sequential sorts
Undo levels	16
Fields in a data form	32
Custom toolbars in a workbook	Limited by available memory
Custom toolbar buttons	Limited by available memory

Opening a workbook when running Excel 2010 on Windows 7 or Vista

Follow these steps to open a workbook when you're running **Excel 2010** on **Windows 7** or **Vista**:

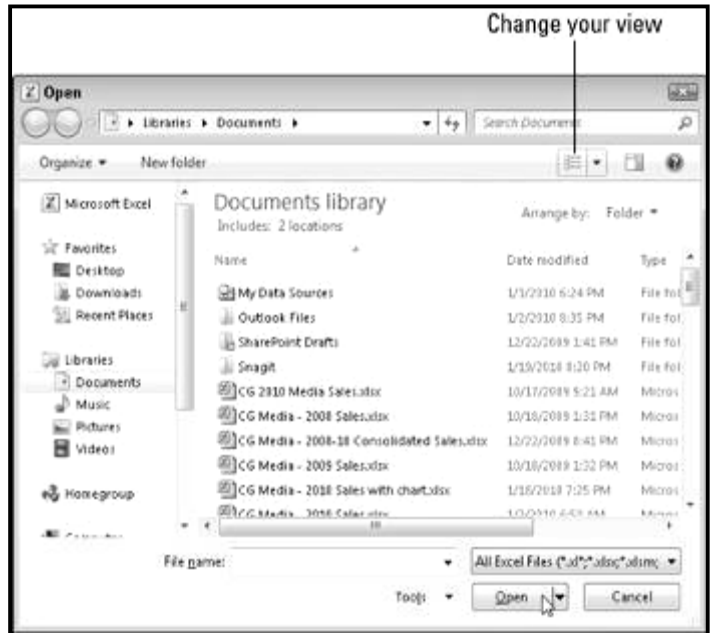
1. Click the File tab and choose Open.

The Open dialog box appears. This dialog box is divided into panes: the Navigation pane on the left, where you can select a new folder to open, and the main pane on the right, showing the icons for all the subfolders in the current folder as well as the documents that Excel can open.

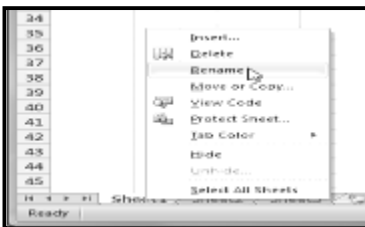
2. If you want to open a workbook in another folder, select the folder in the Navigation pane.

If you're running Excel 2010 on Windows Vista, the Navigation pane in the Open dialog box contains a Folders item instead of Libraries under your list of Favorites. Additionally, the Views button appears between the Organize and New Folder buttons and not to their right above the Navigation and main panes.

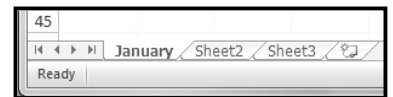
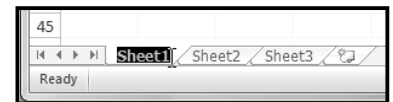
3. Click the file you want to open and then click the Open button, or double-click the file's icon.



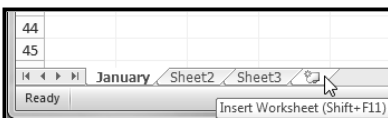
To Rename Worksheets:



1. Right-click the **worksheet tab** you want to rename. The **worksheet** menu appears.
2. Select **Rename**.
3. The text is now highlighted by a black box. Type the name of your worksheet.
4. Click anywhere outside of the tab. The worksheet is renamed.



To Insert New Worksheets:



Click on the **Insert Worksheet** icon. A new worksheet will appear. You can change the setting for the default number of worksheets that appear in Excel workbooks. To access this setting, go into **Backstage view** and click on **Options**.

To Delete Worksheets:

Worksheets can be deleted from a workbook, including those that contain data.

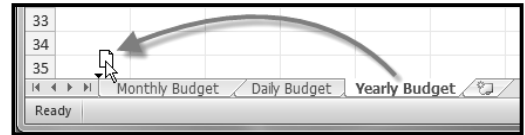
1. Select the worksheets you want to delete.
2. Right-click one of the selected worksheets. The worksheet menu appears.
3. Select **Delete**. The selected worksheets will be deleted from your workbook.

To Copy a Worksheet:

1. Right-click the worksheet you want to copy. The **worksheet** menu appears.
2. Select **Move or Copy**.
3. The **Move or Copy** dialog box appears. Check the **Create a copy** box.
4. Click **OK**. Your worksheet is copied. It will have the same title as your original worksheet, but the title will include a version number, such as "January (2)".

To Move a Worksheet:

1. Click on the worksheet you want to move. The mouse will change to show a small worksheet icon.
2. Drag the worksheet icon until a small black arrow appears where you want the worksheet to be moved.
3. Release your mouse and the worksheet will be moved.



To Color-Code Worksheet Tabs:

You can color worksheet tabs to help organize your worksheets and make your workbook easier to navigate.

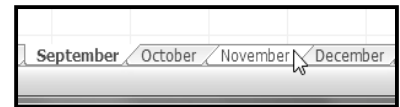
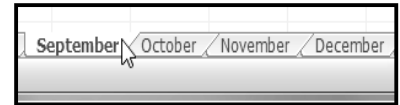
1. Right-click the worksheet tab you want to color. The **worksheet** menu appears.
2. Select **Tab Color**. The **color** menu appears.
3. Select the color you want to change your tab.
4. The tab color will change in the workbook. If your tab still appears white, that is because the worksheet is still selected. Select any other worksheet tab to see the color change.

Grouping and Ungrouping Worksheets

You can work with each worksheet in a workbook individually, or you can work with multiple worksheets at the same time. Worksheets can be combined together into a group. Any changes made to one worksheet in a group will be made to every worksheet in the group.

To Group Worksheets:

1. Select the **first worksheet** you want in the group.
 2. **Press and hold the Ctrl key** on your keyboard.
 3. Select the **next worksheet** you want in the group. Continue to select worksheets until all of the worksheets you want to group are selected.
 4. **Release the Ctrl key**. The worksheets are now grouped. The worksheet tabs appear white for the grouped worksheets.
- While worksheets are grouped, you can navigate to any worksheet *in* the group and make changes that will appear on every worksheet in the group. If you click on a worksheet tab that is not in the group, however, all of your worksheets will become ungrouped. You will have to regroup them.



To Ungroup All Worksheets:

1. Right-click one of the worksheets. The **worksheet** menu appears.
2. Select **Ungroup**. The worksheets will be ungrouped.

Freezing Worksheet Panes

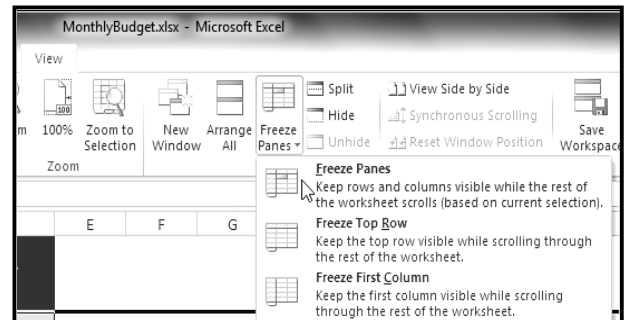
The ability to freeze specific rows or columns in your worksheet can be a very useful feature in Excel. It is called **freezing panes**. When you freeze panes, you select rows or columns that will remain visible all the time, even as you are scrolling. This is particularly helpful when working with large spreadsheets.

To Freeze Rows:

	A	B	C	D
1	Monthly Budget - January			
2	Bills	Payment	Date Due	Paid
3	Fixed Expenses			
4	Cable / Internet	\$ 89.99	15-Jan	Visa

1. Select the row *below* the rows that you want frozen. For example, if you want rows 1 & 2 to always appear at the top of the worksheet even as you scroll, then select row 3.

2. Click the **View** tab.
3. Click the **Freeze Panes** command. A drop-down menu appears.



4. Select **Freeze Panes**.
5. A black line appears *below* the rows that are frozen in place. Scroll down in the worksheet to see the rows below the frozen rows.

	A	B	C	D	E	F	G
1	Monthly Budget - January						
2	Bills	Payment	Date Due	Paid			
12	Gas	\$ 160.00	6-Jan	Discover			
13	Pets	\$ 65.00	10-Jan	Visa			
14	Water	\$ 28.23	21-Jan	Visa			
15	Other						
16	Clothes	\$ 18.54	8-Jan	Store Credit Card			
17	Misc.	\$ 98.06	6-Jan	Discover			
18	Restaurants	\$ 156.71	6-Jan	Discover			
19							
20	Credit Payment						
21	Discover	\$ 1,108.31	6-Jan	Yes			

Rows 1 and 2 are frozen above this black line

To Freeze Columns:

1. Select the column to the *right* of the columns you want frozen. For example, if you want columns A & B to always appear to the left of the worksheet even as you scroll, then select column C.
2. Click the **View** tab.
3. Click the **Freeze Panes** command. A drop-down menu appears.
4. Select **Freeze Panes**.
5. A black line appears to the *right* of the frozen area. Scroll across the worksheet to see the columns to the right of the frozen columns.

To Unfreeze Panes:

1. Click the **View** tab.
2. Click the **Freeze Panes** command. A drop-down menu appears.
3. Select **Unfreeze Panes**. The panes will be unfrozen and the black line will disappear.

Lesson: 6

Working with Formulas

Excel can be used to calculate numerical information. In this lesson you will learn how to create simple formulas in Excel to add, subtract, multiply, and divide values in a workbook. Also, you will learn the various ways you can use cell references to make working with formulas easier and more efficient.

Simple Formulas

A formula is an equation that performs a calculation. Like a calculator, Excel can execute formulas that add, subtract, multiply, and divide. One of the most useful features of Excel is its ability to calculate using a cell address to represent the value in a cell. This is called using a cell reference. In order to maximize the capabilities of Excel, it is important to understand how to create simple formulas and use cell references.

Creating Simple Formulas

Excel uses standard operators for equations, such as a **plus sign** for addition (+), a **minus sign** for subtraction (-), an **asterisk** for multiplication (*), a **forward slash** for division (/), and a **carat** (^) for exponents.

The key thing to remember when writing formulas for Excel is that all formulas must begin with an **equal sign (=)**. This is because the cell contains, or is equal to, the formula and its value.

Addition	+	=5+5
Subtraction	-	=5-5
Multiplication	*	=5*5
Division	/	=5/5
Exponents	^	=5^5

To Create a Simple Formula in Excel:

	A	B	C
1	Estimated painting cost per square foot		
2	Total cost	\$75.00	
3	Square Feet	250	
4	Total/Sq Ft		
5			

1. Select the cell where the answer will appear (B4, for example).
2. Type the **equal sign (=)**.
3. Type in the formula you want Excel to calculate. For example, "75/250".

	A	B	C
1	Estimated painting cost per square foot		
2	Total cost	\$75.00	
3	Square Feet	250	
4	Total/Sq Ft	=75/250	
5			

4. Press **Enter**. The formula will be calculated and the value will be displayed in the cell.

	A	B	C
1	Estimated painting cost per square foot		
2	Total cost	\$75.00	
3	Square Feet	250	
4	Total/Sq Ft	\$0.30	
5			

Creating Formulas with Cell References

When a formula contains a cell address, it is called a **cell reference**. Creating a formula with cell references is useful because you can update data in your worksheet without having to rewrite the values in the formula.

To Create a Formula Using Cell References:

1. Select the cell where the answer will appear (B3, for example).
2. Type the **equal sign (=)**.
3. Type the cell address that contains the first number in the equation (B1, for example).
4. Type the operator you need for your formula. For example, type the **addition sign (+)**.
5. Type the cell address that contains the second number in the equation (B2, for example).
6. Press **Enter**. The formula will be calculated and the value will be displayed in the cell.

	A	B	C	D
1	Budget for June	\$400.00		
2	Budget for July	\$300.00		
3	Total Budget			
4				

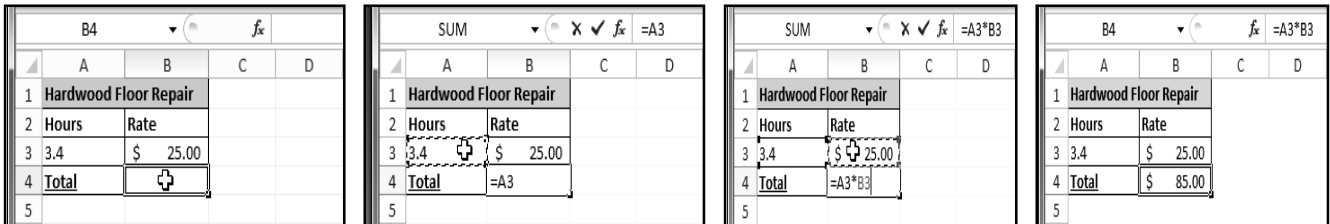
	A	B	C	D
1	Budget for June	\$400.00		
2	Budget for July	\$300.00		
3	Total Budget	=B1+B2		
4				

	A	B	C	D
1	Budget for June	\$400.00		
2	Budget for July	\$300.00		
3	Total Budget	\$700.00		
4				

If you change a value in either B1 or B2, the total will automatically recalculate.

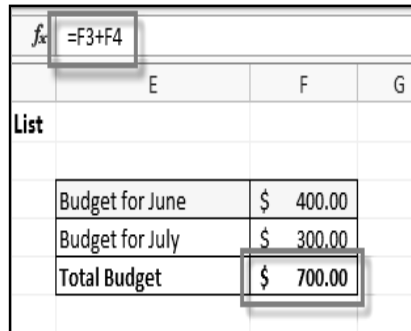
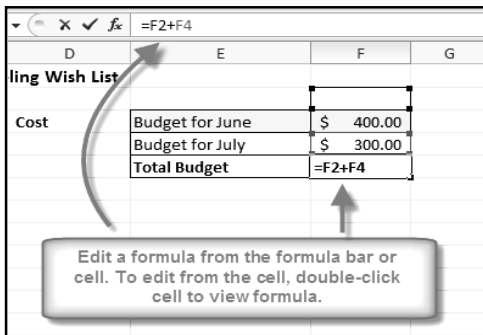
To Create a Formula using the Point and Click Method:

1. Select the cell where the answer will appear (B4, for example).
2. Type the **equal sign (=)**.
3. Click on the **first cell** to be included in the formula (A3, for example).
4. Type the operator you need for your formula. For example, type the **multiplication sign (*)**.
5. Click on the **next cell** in the formula (B3, for example).
6. Press **Enter**. The formula will be calculated and the value will be displayed in the cell.



To Edit a Formula:

1. Click on the cell you want to edit.
2. Insert the cursor in the **formula bar** and edit the formula as desired. You can also **double-click the cell to view and edit the formula directly** from the cell.
3. When finished, press **Enter** or select the **Enter** command .
4. The new value will be displayed in the cell.



If you change your mind, use the **Cancel** command in the formula bar to avoid accidentally making changes to your formula.

Creating Complex Formulas

Excel is a spreadsheet application that can help you calculate and analyze numerical information for household budgets, company finances, inventory, and more. To do this, you need to understand **complex formulas**.

Simple formulas have one mathematical operation, such as 5+5. Complex formulas have more than one mathematical operation, such as 5+5-2. When there is more than one operation in a formula, the order of operations tells us which operation to calculate first. In order to use Excel to calculate complex formulas, you will need to understand the order of operations.

Order of Operations

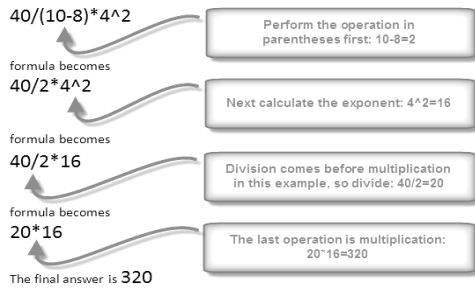
Excel calculates formulas based on the following **order of operations**:

1. Operations enclosed in **parentheses**
2. **Exponential** calculations (to the power of)
3. **Multiplication** and **division**, whichever comes first
4. **Addition** and **subtraction**, whichever comes first

A mnemonic that can help you remember the order is **Please Excuse My Dear Aunt Sally**.

Example 1

The following example demonstrates how to use the order of operations to calculate a formula:



Example 2

In this example, we will review how Excel will calculate a complex formula using the order of operations. The selected cell will display the percent of total Pete Lily seeds sold that were white.

Seed Inventory	Packets Sold	Price	Percent of Total Sold
Pete Lily - Blue	14	\$1.99	42.42
Pete Lily - White	19	\$1.99	$=(19*1.99)/(33*1.99)*100$
Total Pete Lily	33	\$1.99	

Order of Operations Excel example

1. First, Excel will calculate the amount sold in parentheses: $(19*1.99)=37.81$ White Lily seeds and $(33*1.99)=65.67$ Total Lily seeds.
2. Second, it will divide the White Lily seeds amount by the Total Lily seeds amount: $37.81/65.67=.5758$.
3. Last, it will multiply the result by 100 to obtain the value as a percent: $.5758*100=57.58$.
Based on this complex formula, the result will show that **57.58%** of the total Pete Lily seeds sold were white. You can see from this example, that it is important to enter complex formulas with the correct order of operations. Otherwise, Excel will not calculate the results accurately.

To Create a Complex Formula Using the Order of Operations:

In this example, we will use **cell references** in addition to actual values, to create a complex formula that will add tax to the nursery order.

1. Click the cell where you want the formula result to appear (for example, **F11**).
2. Type the **equal sign (=)**.
3. Type an **open parenthesis**, then click on the cell that contains the first **value** you want in the formula (for example, F4).
4. Type the first **mathematical operator** (for example, the addition sign).
5. Click on the cell that contains the second **value** you want in the formula (for example, F5), and then type a **closed parenthesis**.
6. Type the next **mathematical operator** (for example, the multiplication sign).
7. Type the next **value** in the formula (for example, 0.055 for 5.5% tax).
8. Click **Enter** to calculate your formula. The results show that **\$2.12** is the tax for the nursery order.

ITEM	ITEM #	Price	Quantity	Total
LE Tomato Planter Bags	SG324	\$18.99	2	\$37.98
M - Cord	AU396	\$0.12	5	\$0.60
Tax				$=(F4+ F5)*0.055$
Total				\$40.70

\$2.12

Working with Cell References

In order to maintain accurate formulas, it is necessary to understand how cell references respond when you copy or fill them to new cells in the worksheet. Excel will interpret cell references as either **relative** or **absolute**. By default, cell references are **relative references**. When copied or filled, they change based on the relative position of rows and columns. If you copy formula (=A1+B1) into row 2, the formula will change to become (=A2+B2).

Absolute references, on the other hand, do not change when they are copied or filled and are used when you want the values to stay the same.

Relative References

Relative references can save you time when you are repeating the same kind of calculation across multiple rows or columns. In the following example, we are creating a formula with cell references in row 4 to calculate the total cost of the electric bill and water bill for each month (B4=B2+B3). For the upcoming months we want to use the same formula with relative references (C2+C3, D2+D3, E2+E3, etc.) For convenience, we can copy the formula in B4 into the rest of row 4 and Excel will calculate the value of the bills for those months using relative references.

To Create and Copy a Formula Using Relative References:

1. Select the first cell where you want to enter the formula (for example, B4).

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2	Electric	\$ 116.45	\$ 125.15	\$ 132.04	\$ 114.78	\$ 98.45	\$ 101.98	\$ 120.41	\$ 139.42	\$ 99.56	\$ 106.24	\$ 110.12	\$ 114.21
3	Water	\$ 50.15	\$ 48.75	\$ 45.87	\$ 49.57	\$ 50.42	\$ 64.45	\$ 66.42	\$ 63.24	\$ 56.54	\$ 46.24	\$ 43.24	\$ 50.24
4	Total												

2. Enter the formula to calculate the value you want (for example, add B2+B3).

	A	B	C
1		JAN	FEB
2	Electric	\$ 116.45	\$ 125.15
3	Water	\$ 50.15	\$ 48.75
4	Total	=B2+B3	

\$ 166.60

3. Press **Enter**. The formula will be calculated.
4. Select the cell you want to copy (for example, B4) and click on the **Copy** command from the **Home** tab.
5. Select the cells where you want to paste the formula and click on the **Paste** command from the **Home** tab. (You may also drag the fill handle to fill cells.)

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2	Electric	\$ 116.45	\$ 125.15	\$ 132.04	\$ 114.78	\$ 98.45	\$ 101.98	\$ 120.41	\$ 139.42	\$ 99.56	\$ 106.24	\$ 110.12	\$ 114.21
3	Water	\$ 50.15	\$ 48.75	\$ 45.87	\$ 49.57	\$ 50.42	\$ 64.45	\$ 66.42	\$ 63.24	\$ 56.54	\$ 46.24	\$ 43.24	\$ 50.24
4	Total	\$ 166.60	\$ 173.90	\$ 177.91	\$ 164.35	\$ 148.87	\$ 166.43	\$ 186.83	\$ 202.66	\$ 156.10	\$ 152.48	\$ 153.36	\$ 164.45

6. Your formula is copied to the selected cells as a relative reference (C4=C2+C3, D4=D2+D3, E4=E2+E3, etc.) and the values are calculated.

Absolute References

There may be times when you do not want a cell reference to change when copying or filling cells. You can use an absolute reference to keep a row and/or column constant in the formula.

An absolute reference is designated in the formula by the addition of a dollar sign (\$). It can precede the column reference, the row reference, or both.

In the below example, we want to calculate the sales tax for a list of products with varying prices. We will use an absolute reference for the **sales tax (\$B\$1)** because we do not want it to change as we are copying the formula down the column of varying prices.

\$A\$2:	The column and the row do not change when copied.
A\$2:	The row does not change when copied.
\$A2:	The column does not change when copied.

To Create and Copy a Formula Using an Absolute Reference:

1. Select the first cell where you want to enter the formula (for example, C4)
2. Click on the cell that contains the first **value** you want in the formula (for example, B4).
3. Type the first **mathematical operator** (for example, the multiplication sign).
4. Type the **dollar sign (\$)** and enter the **column letter** of the cell you are making an absolute reference to (for example, B).

	A	B	C
1	5.5% Sales Tax	0.055	
2			
3	ITEM	Price	Sales Tax
4	7" Spanish Pot -	\$9.95	
5	LightWorks Garde	\$24.50	
6	Coneflower - Sur	\$9.99	
7	Four Way Soil An	\$49.99	
8	Ferti-Again	\$8.25	

	A	B	C
1	5.5% Sales Tax	0.055	
2			
3	ITEM	Price	Sales Tax
4	7" Spanish Pot - BLU	\$9.95	=B4*\$B
5	LightWorks Garden Kit	\$24.50	
6	Coneflower - Sundown	\$9.99	
7	Four Way Soil Analyzer	\$49.99	
8	Ferti-Again	\$8.25	

6. Press **Enter** to calculate the formula.

\$0.55

- Select the cell you want to copy (for example, C4) and click on the **Copy** command from the **Home** tab.
- Select the cells where you want to paste the formula and click on the **Paste** command from the **Home** tab. (You may also drag the fill handle to fill cells.)
- Your formula is copied to the selected cells using the absolute reference (C5=B5*\$B\$1, C6=B6*\$B\$1, etc.) and your values are calculated.

	A	B	C
1	5.5% Sales Tax	0.055	
2			
3	ITEM	Price	Sales Tax
4	7" Spanish Pot - BLU	\$9.95	=B4*\$B\$1
5	LightWorks Garden Kit	\$24.50	
6	Coneflower - Sundown	\$9.99	
7	Four Way Soil Analyzer	\$49.99	
8	Ferti-Again	\$8.25	

	A	B	C
1	5.5% Sales Tax	0.055	
2			
3	ITEM	Price	Sales Tax
4	7" Spanish Pot - BLU	\$9.95	\$0.55
5	LightWorks Garden Kit	\$24.50	\$1.35
6	Coneflower - Sundown	\$9.99	\$0.55
7	Four Way Soil Analyzer	\$49.99	\$2.75
8	Ferti-Again	\$8.25	\$0.45

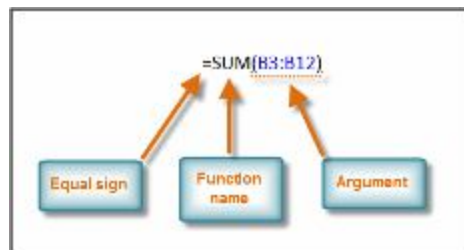
Working with Basic Functions

Figuring out formulas for calculations you want to make in Excel can be tedious and complicated. Fortunately, Excel has an entire library of **functions** or **predefined formulas** that you can take advantage of. You may be familiar with common functions like **sum**, **average**, **product** or **count**, but there are hundreds of functions in Excel, even for things like formatting text, referencing cells, calculating financial rates, analyzing statistics, and more.

A **function** is a **predefined formula** that performs calculations using specific values in a particular order. One of the key benefits of functions is that they can save you time since you do not have to write the formula yourself. Excel has hundreds of different functions to assist with your calculations. In order to use these functions correctly, you need to understand the different **parts of a function** and how to create **arguments** in functions to calculate values and cell references.

The Parts of a Function

The order in which you insert a function is important. Each function has a specific order, called **syntax**, which must be followed for the function to work correctly. The basic syntax to create a formula with a function is to insert an **equal sign (=)**, a **function name** (SUM, for example, is the function name for addition), and an **argument**. Arguments contain the information you want the formula to calculate, such as a range of cell references. **Types of Functions:-**



Financial functions

FUNCTION	DESCRIPTION
ACCRINT	Returns the accrued interest for a security that pays periodic interest
ACCRINTM	Returns the accrued interest for a security that pays interest at maturity
AMORDEGRC	Returns the depreciation for each accounting period by using a depreciation coefficient
AMORLINC	Returns the depreciation for each accounting period
COUPDAYBS	Returns the number of days from the beginning of the coupon period to the settlement date
COUPDAYS	Returns the number of days in the coupon period that contains the settlement date
COUPDAYSNC	Returns the number of days from the settlement date to the next coupon date
COUPNCD	Returns the next coupon date after the settlement date
COUPPCD	Returns the previous coupon date before the settlement date
FV	Returns the future value of an investment

Engineering functions

IMLOG2	Returns the base-2 logarithm of a complex number
IMPOWER	Returns a complex number raised to an integer power
IMPRODUCT	Returns the product of from 2 to 29 complex numbers
IMREAL	Returns the real coefficient of a complex number
IMSIN	Returns the sine of a complex number
IMSQRT	Returns the square root of a complex number
IMSUB	Returns the difference between two complex numbers
IMSUM	Returns the sum of complex numbers
OCT2BIN	Converts an octal number to binary
OCT2DEC	Converts an octal number to decimal
OCT2HEX	Converts an octal number to hexadecimal

Math and trigonometry functions

FUNCTION	DESCRIPTION
ABS	Returns the absolute value of a number
ACOS	Returns the arccosine of a number
ACOSH	Returns the inverse hyperbolic cosine of a number
ASIN	Returns the arcsine of a number
ASINH	Returns the inverse hyperbolic sine of a number
ATAN	Returns the arctangent of a number
ATAN2	Returns the arctangent from x- and y-coordinates
ATANH	Returns the inverse hyperbolic tangent of a number
CEILING	Rounds a number to the nearest integer or to the nearest multiple of significance
COMBIN	Returns the number of combinations for a given number of objects
COS	Returns the cosine of a number
COSH	Returns the hyperbolic cosine of a number
DEGREES	Converts radians to degrees
EVEN	Rounds a number up to the nearest even integer
EXP	Returns e raised to the power of a given number
FACT	Returns the factorial of a number
FACTDOUBLE	Returns the double factorial of a number
FLOOR	Rounds a number down, toward zero
GCD	Returns the greatest common divisor
INT	Rounds a number down to the nearest integer
LCM	Returns the least common multiple
LN	Returns the natural logarithm of a number
LOG	Returns the logarithm of a number to a specified base
LOG10	Returns the base-10 logarithm of a number

Statistical functions

FUNCTION	DESCRIPTION
AVEDEV	Returns the average of the absolute deviations of data points from their mean
AVERAGE	Returns the average of its arguments
AVERAGEA	Returns the average of its arguments, including numbers, text, and logical values
BETADIST	Returns the beta cumulative distribution function
BETAINV	Returns the inverse of the cumulative distribution function for a specified beta distribution
BINOMDIST	Returns the individual term binomial distribution probability
CHIDIST	Returns the one-tailed probability of the chi-squared distribution
CHIINV	Returns the inverse of the one-tailed probability of the chi-squared distribution
CHITEST	Returns the test for independence
CONFIDENCE	Returns the confidence interval for a population mean
CORREL	Returns the correlation coefficient between two data sets
COUNT	Counts how many numbers are in the list of arguments
COUNTA	Counts how many values are in the list of arguments
COUNTBLANK	Counts the number of blank cells within a range
COUNTIF	Counts the number of nonblank cells within a range that meet the given criteria

Logical functions

FUNCTION	DESCRIPTION
AND	Returns TRUE if all of its arguments are TRUE
FALSE	Returns the logical value FALSE
IF	Specifies a logical test to perform
NOT	Reverses the logic of its argument
OR	Returns TRUE if any argument is TRUE
TRUE	Returns the logical value TRUE

Lookup and reference functions

FUNCTION	DESCRIPTION
ADDRESS	Returns a reference as text to a single cell in a worksheet
AREAS	Returns the number of areas in a reference
CHOOSE	Chooses a value from a list of values
COLUMN	Returns the column number of a reference
COLUMNS	Returns the number of columns in a reference
GETPIVOTDATA	Returns data stored in a PivotTable
HLOOKUP	Looks in the top row of an array and returns the value of the indicated cell
HYPERLINK	Creates a shortcut or jump that opens a document stored on a network server, an intranet, or the Internet
INDEX	Uses an index to choose a value from a reference or array
INDIRECT	Returns a reference indicated by a text value
LOOKUP	Looks up values in a vector or array
MATCH	Looks up values in a reference or array
OFFSET	Returns a reference offset from a given reference
ROW	Returns the row number of a reference
ROWS	Returns the number of rows in a reference
RTD	Retrieves real-time data from a program that supports COM automation
TRANSPOSE	Returns the transpose of an array
VLOOKUP	Looks in the first column of an array and moves across the row to return the value of a cell

Text functions

FUNCTION	DESCRIPTION
ASC	Changes full-width (double-byte) English letters or katakana within a character string to half-width (single-byte) characters
BAHTTEXT	Converts a number to text, using the ฿ (baht) currency format
CHAR	Returns the character specified by the code number
CLEAN	Removes all nonprintable characters from text
CODE	Returns a numeric code for the first character in a text string
CONCATENATE	Joins several text items into one text item
DOLLAR	Converts a number to text, using the \$ (dollar) currency format
EXACT	Checks to see if two text values are identical

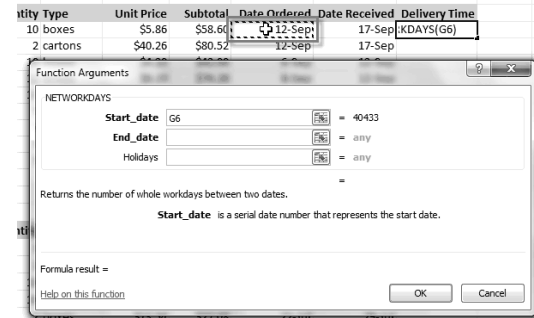
If you want detailed Explanation on Various Function used in Excel, 2010 then please Visit following website:

There are hundreds of functions in Excel, but only some will be useful for the kind of data you are working with. There is no need to learn every single function, but you may want to explore some of the different kinds to get ideas about which ones might be helpful to you as you create new spreadsheets.

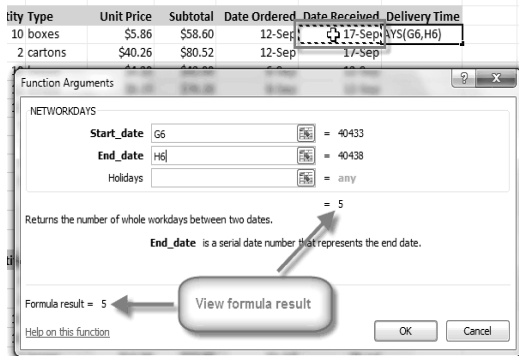
To Insert a Function from the Function Library:

1. Select the cell where the answer will appear (I6, for example)
2. Click on the **Formulas** tab.
3. From the **Function Library** group, select the **function category** you desire. In this example, we will choose Date & Time.
4. Select the desired **function** from the Date & Time drop-down menu. We will choose the NETWORKDAYS function to count the days between the order date and receive date in our worksheet.

5. The **Function Arguments** dialog box will appear. Insert the cursor in the **first field** and then enter or select the cell(s) you desire (G6, for example).



6. Insert the cursor in the **next field** and then enter or select the cell(s) you desire (H6, for example).



7. Click **OK** and the result will appear. Our results show that it took 5 days to receive the order.

Date Ordered	Date Received	
12-Sep	17-Sep	5

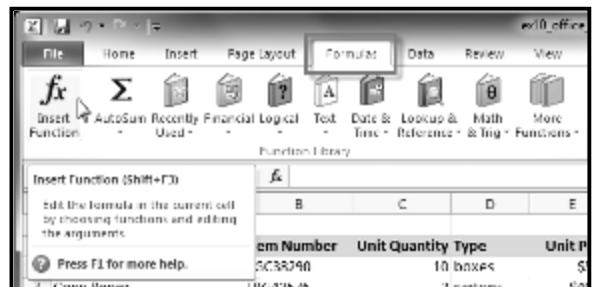
Insert Function Command

The **Insert Function** command is convenient because it allows you to search for a function by typing a description of what you are looking for or by selecting a category to peruse. The Insert Function command can also be used to easily enter or select more than one argument for a function.

Using the Insert Function command:

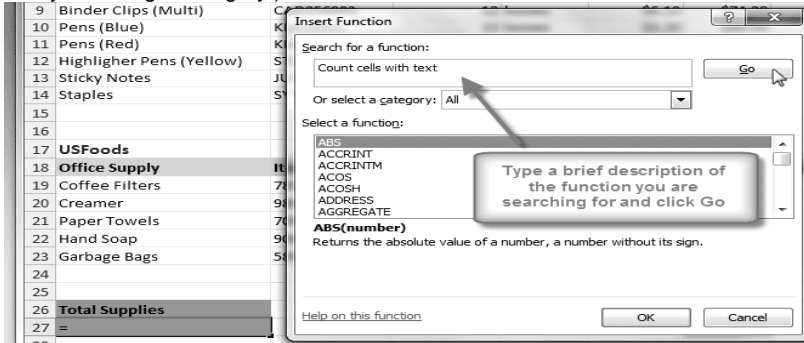
In this example, we want to find a function that will count the total number of supplies listed in the Office Supply Order Log. The basic COUNT function only counts cells with numbers; we want to count the cells in the Office Supply column, which uses text. Therefore, we will need to find a formula that counts cells with text.

1. Select the cell where the answer will appear (A27, for example)
2. Click on the **Formulas** tab and select the **Insert**

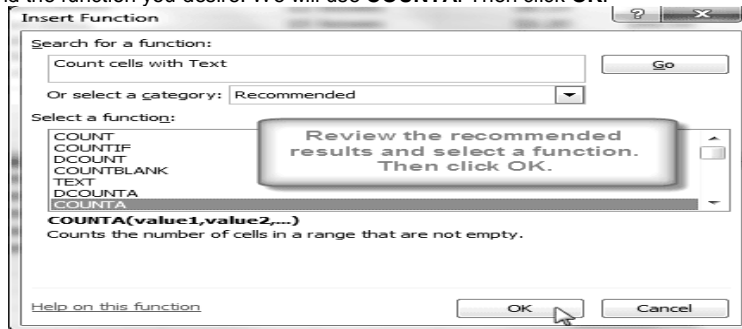


Function command.

- The **Insert Function** dialog box will appear.
- Type a **description** of the function you are searching for and click **Go**. For our example, we will type: *Count cells with text*. (You may also search by selecting a category.)



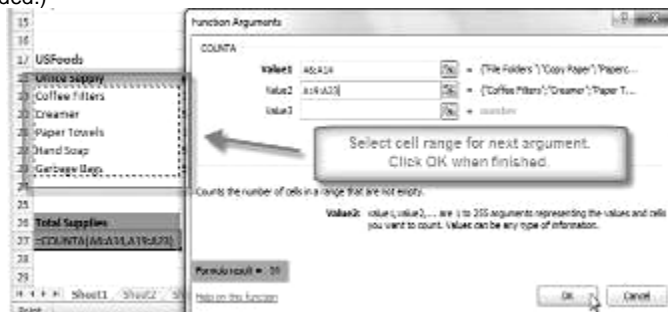
- Review the results to find the function you desire. We will use **COUNTA**. Then click **OK**.



- The **Function Arguments** dialog box will appear. Insert the cursor in the **first field** and then enter or select the cell(s) you desire (A6:A14, for example).



- Insert the cursor in the **next field** and then enter or select the cell(s) you desire (A19:A23, for example). (You may continue to add additional arguments if needed.)



8. Click **OK** and the result will appear. Our results show that **14** Total Supplies were ordered from our log.

VLOOKUP Function

Excel VLOOKUP function can be used when you need to look up the values in the specific table and check it against the other data fields for comparison purpose. VLOOKUP stands for Vertical lookup, used to find specific data from the datasheet. By creating a sample table generally referred as lookup table you can extract info from it and compare it with the desired field to yield required results. This post elaborates where you can use **VLOOKUP** function. Launch Excel 2010, and open a datasheet on which you want to apply VLOOKUP function. **For instance, we have included a student grading datasheet, containing fields; Name, Course, and Marks.**

	A	B	C	D	E
1	ID	Name	Course	Marks	
2	1	Jack	Software Engineering	80	
3	2	Billy	Requirement Engineering	68	
4	3	Mcfaden	Multivariate Calculus	62	
5	4	Steven Swimmer	Software Architecture	65	
6	5	Ruby Jason	Relational DBMS	71	
7	6	Mark Dyne	PHP development	89	
8	7	Philip namdaf	Microsoft Dot Net Platform	52	
9	8	Erik Bawn	HTML & Scripting	52	
10	9	Ricky ben	Data communication	76	
11	10	Miecky	Software Architecture	66	
12	11	Erik Bawn	Relational DBMS	67	
13	12	Ricky ben	Computer Networks	72	
14	13	Miecky	Computer Networks	62	
15	14	Erik Bawn	Software Engineering	72	
16	15	Ricky ben	Requirement Engineering	59	
17	16	Miecky	Computer Networks	81	
18	17	Erik Bawn	Software Engineering	63	
19	18	Ricky ben	Requirement Engineering	74	
20	19	Billy	Relational DBMS	74	
21	20	Mcfaden	PHP development	86	
22	21	Steven Swimmer	Computer Networks	50	
23	22	Jason Grant	Data Structure	99	
24					

Now we will add new column Grade, which will contain grades secured by the students. Now for this, we will be using VLOOKUP function for looking up values from other table that contains sample data for grades. Create two new columns containing marks range (sorted in any order) and corresponding grades. you don't need to create them in a new worksheet, you can place anywhere in the existing datasheet as we just want to get values from it.

	C	D	E	F	G
	Marks	Grade			
	80				
	68			0	D
	62			60	C
	65			65	C+
	71			70	B
	89			75	B+
	52			80	A
	52				
	76				
	66				
	67				

Now in the *Grade* first row, we will write VLOOKUP function. The syntax of this function is

VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

The first parameter of the formula *lookup_value* defines the value of the number which we will be looking in the newly created table. We need to lookup the value 80 (*Marks* field) in the newly created table. The next parameter, *table_array* defines the table we will be referring to in our case it will be newly created table, containing ranges of marks and grades. *col_index_num* defines data from which column we want to extract values to show, in our case it is the second column that contain grades range. *[range_lookup]* lets you to choose an option either **TRUE** (approximately matching of values) or **FALSE** (Exact matching of values).

We will write this function in *Grade* first row, it will go like this;

=VLOOKUP(C2,\$F\$3:\$G\$8,2,TRUE)

In the formula parameters, **C2** is cell of column *Marks* which contain marks secured by students, **F3:G8** is the location of the newly created table, containing ranges of marks and grades (use absolute referencing with \$ sign), 2 in the formula means that values from second column will appear, and **TRUE** defines that we need approximately match as we have included ranges not exact values. After evaluating formula, it will show grade **A** in *Grade* column as shown in the screen shot below.

	B	C	D	E	F	G
	Course	Marks	Grade			
	Software Engineering	80	A			
	Requirement Engineering	68			0	D
	Multivariate Calculus	62			60	C
	Software Architecture	65			65	C+
	Relational DBMS	71			70	B
	PHP development	89			75	B+
	Microsoft Dot Net Platform	52			80	A
	HTML & Scripting	52				
	Data communication	76				

Now apply this function over the whole *Grade* column, drag the plus sign towards the end of *Grade* column to apply it over, as show in the screen shot below.

	Marks	Grade
	80	A
ng	68	C+
	62	C
	65	C+
	71	B
	89	A
rm	52	D
	52	D
	76	B+
	66	C+
	67	C+
	72	B
	62	C
	72	B
ng	59	D
	81	A
	63	C
ng	74	B
	74	B
	86	A
	50	D
	99	A

Now we also want to calculate the prize money for each student. **for instance**, we assume the following criteria.

For grade A \$1000

For grade B+ \$700

For grade B &600

For grade C+ \$250

For grade D N/A

The criteria defined contains the exact value, so we will be making a small change in the parameters of the function. we will be choosing FALSE from [range_lookup] instead of TRUE as we want to show the exact match.

D2 contains the grade secured by students, so it will check the value in *Grade* column against the newly created columns, containing prize money criteria, as shown in the screenshot below.

D	E	F	G	H	I
Grade	Prize Money				
A	1000				
C+					
C					
C+					
B					
A					
D					
D					
B+					

A	1000
B	600
B+	700
C	100
C+	250
D	N/A

Now apply the function in *Prize Money* column to view the prize money won by each student. Now as you can see in the screenshot below that by using **VLOOKUP** function it is easier to look up specific values for populating new fields by connecting different columns.

	A	B	C	D	E	F
1	ID	Name	Course	Marks	Grade	Prize Money
2	1	Jack	Software Engineering	80	A	1000
3	2	Billy	Requirement Engineering	68	C+	250
4	3	McFaden	Multivariate Calculus	62	C	100
5	4	Steven Schwimmer	Software Architecture	65	C+	250
6	5	Ruby Jason	Relational DBMS	71	B	600
7	6	Mark Dyne	PHP development	89	A	1000
8	7	Philip namdal	Microsoft Dot Net Platform	52	D	N/A
9	8	Erik Bawn	HTML & Scripting	52	D	N/A
10	9	Ricky ben	Data communication	76	B+	700
11	10	Mickey	Software Architecture	66	C+	250
12	11	Erik Bawn	Relational DBMS	87	C+	250
13	12	Ricky ben	Computer Networks	72	B	600
14	13	Mickey	Computer Networks	62	C	100
15	14	Erik Bawn	Software Engineering	72	B	600
16	15	Ricky ben	Requirement Engineering	59	D	N/A
17	16	Mickey	Computer Networks	81	A	1000
18	17	Erik Bawn	Software Engineering	65	C	100
19	18	Ricky ben	Requirement Engineering	74	B	600
20	19	Rolly	Relational DBMS	74	B	600
21	20	McFaden	PHP development	86	A	1000
22	21	Steven Schwimmer	Computer Networks	50	D	N/A
23	22	Jason Grant	Data Structure	99	A	1000

Lesson: 7

Data Sorting, Outlining & Filtering



Sorting Data

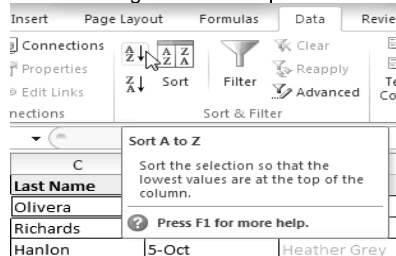
With over 17 billion cells in a single worksheet, Excel 2010 gives you the ability to work with an enormous amount of data. Arranging your data alphabetically, from smallest to largest, or other criteria, can help you find the information you're looking for more quickly. **Sorting** is a common task that allows you to change or customize the order of your spreadsheet data. For example, you could organize an office birthday list by employee, birthdates, or department, making it easier to find what you're looking for. Custom sorting takes it a step further, giving you the ability to sort multiple levels (such as department first, then birthdate, to group birthdates by department), and more.

To Sort in Alphabetical Order:

1. Select a cell in the column you want to sort by. In this example, we will sort by Last Name.

	C	D	E
1	Last Name	Payment	T-Shirt Color
2	Olivera	1-Oct	White
3	Richards	4-Oct	Dark Red
4	Hanlon	5-Oct	Heather Grey
5	Means	5-Oct	Dark Red

2. Select the **Data** tab, and locate the **Sort and Filter** group.
3. Click the ascending command  to **Sort A to Z**, or the descending command  to **Sort Z to A**.



4. The data in the spreadsheet will be organized alphabetically.

	C	D	E
1	Last Name	Payment	T-Shirt Color
2	Ackerman	1-Oct	Heather Grey
3	Albee	13-Oct	Heather Grey
4	Bell	11-Oct	Dark Red
5	Benson	11-Oct	White
6	Chen	5-Oct	Dark Red
7	Del Toro	13-Oct	White
8	Ellison	Pending	Dark Red
9	Flores	6-Oct	White
10	Hanlon	5-Oct	Heather Grey
11	Kelly	11-Oct	Dark Red
12	Kelly	11-Oct	Heather Grey
13	Lazar	14-Oct	White
14	MacDonald	Pending	Dark Red
15	Means	5-Oct	Dark Red
16	Naser	14-Oct	Dark Red
17	Nichols	6-Oct	Dark Red

Sorting options can also be found on the Home tab, condensed into the **Sort & Filter** command

To Sort in Numerical Order:

1. Select a cell in the column you want to sort by.

	A	B	C
1	Homerom #	First Name	Last Name
2	110	Kris	Ackerman
3	105	Nathan	Albee
4	220-B	Samantha	Bell
5	110	Matt	Benson

2. From the **Data** tab, click the ascending command to **Sort Smallest to Largest**, or the descending command to **Sort Largest to Smallest**.
3. The data in the spreadsheet will be organized numerically.

	A	B	C
1	Homerom #	First Name	Last Name
2	105	Nathan	Albee
3	105	Christiana	Chen
4	105	Sidney	Kelly
5	105	Derek	MacDonald
6	105	Melissa	White
7	105	Esther	Yaron
8	110	Kris	Ackerman
9	110	Matt	Benson
10	110	Gabriel	Del Toro
11	110	Regina	Olivera
12	135	Anisa	Naser
13	135	James	Panarello
14	135	Lia	Richards
15	135	Jordan	Weller
16	135	Chantal	Weller
17	135	Alex	Yuen

To Sort by Date or Time:

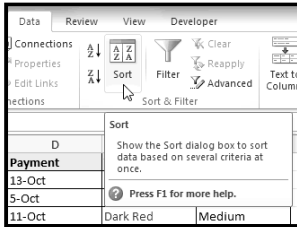
1. Select a cell in the column you want to sort by.

	D	E	F
1	Payment	T-Shirt Color	T-Shirt Size
2	13-Oct	Heather Grey	Medium
3	5-Oct	Dark Red	Medium
4	11-Oct	Dark Red	Medium
5	Pending	Dark Red	Large

2. From the **Data** tab, click the ascending command to **Sort Oldest to Newest**, or the descending command to **Sort Newest to Oldest**.
3. The data in the spreadsheet will be organized by date or time.

Custom Sorting

To Sort in the Order of Your Choosing:



You can use a **Custom List** to identify your own sorting order, such as days of the week, or, in this example, t-shirt sizes from smallest to largest (Small, Medium, Large, and X-Large).

1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
2. Identify the column you want to **Sort by** by clicking the drop-down arrow in the **Column** field.
3. Make sure **Values** is selected in the **Sort On** field.
4. Click the drop-down arrow in the **Order** field, and choose **Custom List...**
5. Select **NEW LIST**, and enter how you want your data sorted in the **List entries** box. We will sort t-shirt sizes from smallest to largest.
6. Click **Add** to save the list, then click **OK**.
7. Click **OK** to close the Sort dialog box and sort your data.
8. The spreadsheet will be sorted in order of Small, Medium, Large, and X-Large.

To Sort by Cell Color, Font Color, or Cell Icon:

1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
2. Identify the column you want to **Sort by** by clicking the drop-down arrow in the **Column** field.
3. Choose whether you want to sort by Cell Color, Font Color, or Cell Icon in the **Sort On** field. In this example, will sort on **Font Color**.
4. In the **Order** field, click the drop-down arrow to choose a color, then decide whether you want it ordered **On Top** or **On Bottom**.
5. Click **OK**. The data is now sorted by attribute rather than text.

Sorting Multiple Levels

Another feature of custom sorting, sorting multiple levels allows you to identify which columns to sort by and when, giving you more control over the organization of your data. For example, you could sort by more than one cell color (such as red, then yellow, then green, to indicate different levels of priority); or, as seen here, sort students by homeroom number, then by last name.

To Add a Level:

1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
2. Identify the first item you want to **Sort by**.
3. Click **Add Level** to add another item.
4. Identify the item you want to sort by next. We will sort Last Name from **A to Z**.
5. Click **OK**.
6. The spreadsheet will be sorted so that homeroom numbers are in order, and within each homeroom, students are listed alphabetically by last name.

Copy Level will add a level by duplicating the one you have selected, and allowing you to modify the sorting criteria. This is useful if you need to sort multiple levels that share some criteria, such as the same Column, Sort On, or Order.

To Change the Sorting Priority:

1. From the **Data** tab, click the **Sort** command to open the **Custom Sort** dialog box.
2. Select the **level** you want to re-order.
3. Use the **Move Up** or **Move Down** arrows. The higher the level is on the list, the higher its priority.
4. Click **OK**.

Outlining Data

If the amount of data in your worksheet becomes overwhelming, creating an outline can help. Not only does this allow you to organize your data into groups, and then show or hide them from view; you can also summarize data for quick analysis using the Subtotal command (for example, subtotaling the cost of office supplies depending on the type of product).

Outlines give you the ability to group data that you may want to show or hide from view, and create a quick summary using the Subtotal command. Because outlines rely on grouping data that is related, you must **sort before you can outline**.

To Outline Data Using Subtotal:

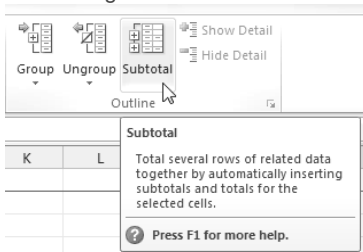
The **Subtotal** command can be used to outline your worksheet in many different ways. It uses common functions like SUM, COUNT, AVG, and more, to **summarize** your data, and place it in a **group**.

In this example, we will use the Subtotal command to count the number of t-shirt sizes that were ordered at a local high school. This will also place each t-shirt size in a group, making it possible to show the count, but hide the details that are not crucial to the placing of the order (such as the student's homeroom number and payment date).

1. **Sort** according to the data you want to outline. Outlines rely on grouping data that is related. In this example, we will outline the worksheet by T-Shirt Size, which has been sorted from smallest to largest.

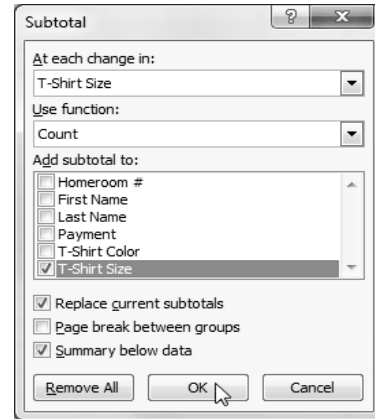
	C	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
4	Ellison	Pending	Dark Red	Small
5	White	7-Oct	Heather Grey	Small
6	Reynolds	7-Oct	Heather Grey	Small
7	Shaw	7-Oct	Heather Grey	Small
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10	Chen	5-Oct	Dark Red	Medium
11	Kelly	11-Oct	Dark Red	Medium
12	Means	5-Oct	Dark Red	Medium
13	Bell	11-Oct	Dark Red	Medium
14	Albee	13-Oct	Heather Grey	Medium
15	Kelly	11-Oct	Heather Grey	Medium
16	Benson	11-Oct	White	Medium
17	Del Toro	13-Oct	White	Medium
18	Panarello	15-Oct	White	Medium
19	Weller	15-Oct	White	Medium
20	MacDonald	Pending	Dark Red	Large
21	Ackerman	1-Oct	Heather Grey	Large
22	Weller	5-Oct	Heather Grey	Large
23	Olivera	1-Oct	White	Large
24	Yuen	5-Oct	White	Large
25	Richards	4-Oct	Dark Red	X-Large

2. Select the **Data** tab, and locate the **Outline** group.
3. Click the **Subtotal** command to open the Subtotal dialog box.



4. In the **At each change in** field, select the column you want to use to outline your worksheet. In this example, we will choose T-Shirt Size.
5. In the **Use function** field, choose from the list of functions that are available for subtotaling. We will use the COUNT function to tally the number of each size.

6. Select the **column** you want the subtotal to appear in. We will choose the T-Shirt Size column.
7. Click **OK**.



8. The contents of your worksheet will be outlined. Each t-shirt size will be placed in its own group, and the subtotal (in this case, count) will be listed below each group.

	C	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
2	Yaron	7-Oct	Dark Red	Small
3	Naser	14-Oct	Dark Red	Small
4	Ellison	Pending	Dark Red	Small
5	White	7-Oct	Heather Grey	Small
6	Reynolds	7-Oct	Heather Grey	Small
7	Shaw	7-Oct	Heather Grey	Small
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10			Small Count	8
11	Chen	5-Oct	Dark Red	Medium
12	Kelly	11-Oct	Dark Red	Medium
13	Means	5-Oct	Dark Red	Medium
14	Bell	11-Oct	Dark Red	Medium
15	Albee	13-Oct	Heather Grey	Medium
16	Kelly	11-Oct	Heather Grey	Medium
17	Benson	11-Oct	White	Medium
18	Del Toro	13-Oct	White	Medium
19	Panarello	15-Oct	White	Medium
20	Weller	15-Oct	White	Medium
21			Medium Count	10

To Ungroup Data:

1. Select the rows or columns that you want to ungroup..
2. From the Data tab, click the Ungroup command. The range of cells will be ungrouped.
3. To ungroup all the groups in your outline, open the drop-down menu under the **Ungroup** command, and choose **Clear Outline**.

Ungroup and Clear Outline will not remove subtotaling from your worksheet. Summary or subtotal data will stay in place and continue to function until you remove it.

To Ungroup Data and Remove Subtotaling:

1. From the **Data** tab, click the **Subtotal** command to open the Subtotal dialog box.
2. Click **Remove All**.
3. All data will be ungrouped, and subtotals will be removed.

Creating Your Own Groups

The **Group** command allows you to group any range of cells - either columns or rows. It does not calculate a subtotal, or rely on your data being sorted. This gives you the ability to show or hide any part of your worksheet, and display only the information you need.

To Create and Control Your Own Group:

In this example, we will prepare a list of t-shirt colors and sizes that need to be distributed to each homeroom. Some of the data in the worksheet is not relevant to the distribution of the t-shirts; however, instead of deleting it, we will group it, then temporarily hide it from view.

1. Select the range of cells that you want to group. In this example, we will group the First Name, Last Name, and Payment columns.

	B	C	D	E
1	First Name	Last Name	Payment	T-Shirt Color
2	Esther	Yaron	7-Oct	Dark Red
3	Anisa	Naser	14-Oct	Dark Red
4	Brigid	Ellison	Pending	Dark Red
5	Melissa	White	7-Oct	Heather Grey
6	Malik	Reynolds	7-Oct	Heather Grey
7	Windy	Shaw	7-Oct	Heather Grey
8	Christopher	Peyton-Gomez	Pending	White
9	Michael	Lazar	14-Oct	White
10	Christiana	Chen	5-Oct	Dark Red
11	Sidney	Kelly	11-Oct	Dark Red

2. From the **Data** tab, click the **Group** command.
3. Excel will group the selected columns or rows.
4. Click the minus sign, also known as the **Hide Detail** symbol, to hide the group.
5. The group will be hidden from view.

Click the plus sign, also known as the Show Detail symbol, to show the group again.

To Show or Hide a Group:

1. Click the minus sign, also known as the **Hide Detail** symbol, to collapse the group.

	C	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10			Small Count	8
11	Chen	5-Oct	Dark Red	Medium
12	Kelly	11-Oct	Dark Red	Medium
13	Means	5-Oct	Dark Red	Medium
14	Bell	11-Oct	Dark Red	Medium
15	Albee	13-Oct	Heather Grey	Medium
16	Kelly	11-Oct	Heather Grey	Medium
17	Benson	11-Oct	White	Medium
18	Del Toro	13-Oct	White	Medium
19	Panarello	15-Oct	White	Medium
20	Weller	15-Oct	White	Medium
21			Medium Count	10
22	MacDonald	Pending	Dark Red	Large
23	Ackerman	1-Oct	Heather Grey	Large
24	Weller	5-Oct	Heather Grey	Large
25	Olivera	1-Oct	White	Large
26	Yuen	5-Oct	White	Large
27			Large Count	5

2. Click the plus sign, also known as the **Show Detail** symbol, to expand the group again.

	C	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10			Small Count	8
21			Medium Count	10
22	MacDonald	Pending	Dark Red	Large
23	Ackerman	1-Oct	Heather Grey	Large
24	Weller	5-Oct	Heather Grey	Large
25	Olivera	1-Oct	White	Large
26	Yuen	5-Oct	White	Large
27			Large Count	5
28	Richards	4-Oct	Dark Red	X-Large
29	Nichols	6-Oct	Dark Red	X-Large
30	Hanlon	4-Oct	Heather Grey	X-Large
31	Flores	6-Oct	White	X-Large
32			X-Large Count	4
33			Grand Count	27

You can also use the or commands on the **Data** tab in the Outline group. First select a cell in the group you want to show or hide, then click the appropriate command.

To View Groups by Level:

The groups in your outline, based on their hierarchy, are placed on different levels. You can quickly display as little or as much information as you want by clicking the level symbols to the left of your worksheet. In this example, we will view levels in descending order, starting with the entire worksheet on display, then finishing with the grand total. While this example contains only 3 levels, Excel can accommodate up to 8.

1. Click the **highest level** (in this example, level 3) to view and expand all of your groups. Viewing groups at the highest level will display the entirety of your worksheet.
2. Click the **next level** (in this example, level 2) to hide the detail of the previous level. In this example, level 2 contains each subtotal.
3. Click the **lowest level** (level 1) to display the lowest level of detail. In this example, level 1 contains only the grand total.

Filtering Data

Filters can be used to narrow down the data in your worksheet and hide parts of it from view. While it may sound a little like grouping, filtering is different in the way that it allows you to qualify and display only the data that interests you. For example, you could filter a list of survey participants to view only those who are between the ages of 25-34. You could also filter an inventory of paint colors to view anything that contains the word "blue," such as "bluebell" or "robin's egg blue."

Filters can be applied in many different ways to improve the performance of your worksheet. You can filter text, dates, and numbers. You can even use more than one filter to further narrow down your results.

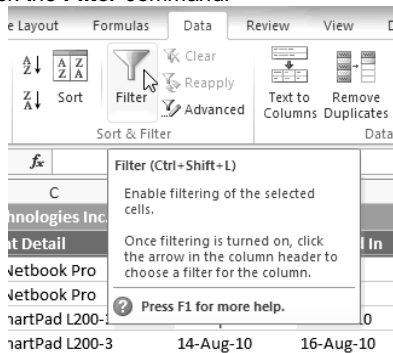
To Filter Data:

In this example, we will filter the contents of an equipment log at a technology company. We will display only the laptops and projectors that are available for check-out.

1. Begin with a worksheet that identifies each column using a header row.

	A	B	C	D
1	Equipment Log — Ragnar Technologies Inc.			
2	ID #	Type	Equipment Detail	Checked Out
3	1011	Laptop	10" Saris Netbook Pro	04-Oct-10
4	1012	Laptop	10" Saris Netbook Pro	29-Sep-10
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-10
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-10
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-10
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-10
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-10
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-10
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-10
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-10
13	2050	Other	EDI SmartBoard L500-1	05-Oct-10
14	2051	Other	EDI SmartBoard L500-1	01-Oct-10
15	3000	Other	Saris Lumina Digital Camera	12-May-10

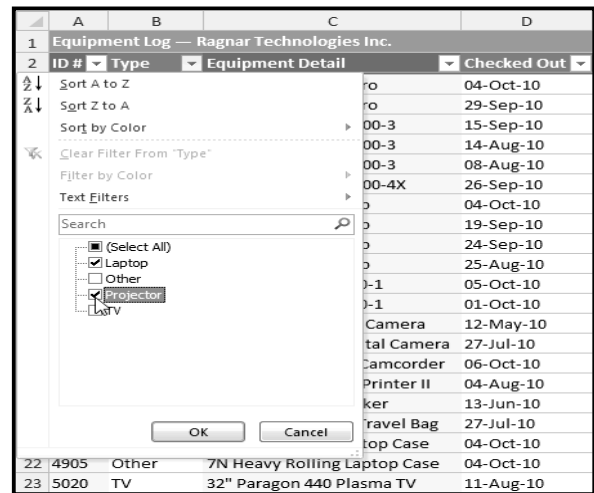
2. Select the **Data** tab, and locate the **Sort & Filter** group.
3. Click the **Filter** command.



4. Drop-down arrows will appear in the header of each column.
5. Click the **drop-down arrow** for the column you would like to filter. In this example, we will filter the Type column to view only certain types equipment.

	A	B	C	D
1	Equipment Log — Ragnar Technologies Inc.			
2	ID #	Type	Equipment Detail	Checked Out
3	1011	Laptop	10" Saris Netbook Pro	04-Oct-10
4	1012	Laptop	10" Saris Netbook Pro	29-Sep-10
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-10
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-10
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-10

6. The **Filter** menu appears.
7. **Uncheck** the boxes next to the data you don't want to view. (You can uncheck the box next to **Select All** to quickly uncheck all.)
8. **Check** the boxes next to the data you do want to view. In this example, we will check Laptop and Projector to view only those types of equipment.



9. Click **OK**. All other data will be filtered, or temporarily hidden. Only laptops and projectors will be visible.

	A	B	C	D
1	Equipment Log — Ragnar Technologies Inc.			
2	ID #	Type	Equipment Detail	Checked Out
3	1011	Laptop	10" Saris Netbook Pro	04-Oct-10
4	1012	Laptop	10" Saris Netbook Pro	29-Sep-10
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-10
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-10
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-10
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-10
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-10
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-10
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-10
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-10
26	6100	Projector	Omega VisX 1.0	28-Sep-10
27	6101	Projector	Omega VisX 1.0	26-Sep-10
28	6102	Projector	Omega VisX 1.0	22-Aug-10

Filtering options can also be found on the Home tab, condensed into the Sort & Filter command.

To Add Another Filter:

Filters are additive, meaning you can use as many as you need to narrow down your results. In this example, we will work with a spreadsheet that has already been filtered to display only laptops and projectors. Now we will display only laptops and projectors that were checked out during the month of August.

1. Click the **drop-down arrow** where you would like to add a filter.
2. **Uncheck** the boxes next to the data you don't want to view. **Check** the boxes next to the data you do want to view.
3. Click **OK**. In addition to the original filter, the new filter will be applied. The worksheet will be narrowed down even further.

To Clear a Filter:

1. Click the **drop-down arrow** in the column from which you want to clear the filter.
2. Choose **Clear Filter From...**
3. The filter will be cleared from the column. The data that was previously hidden will be on display once again.

To instantly clear all filters from your worksheet, click the **Filter** command on the Data tab.

Advanced Filtering

To Filter Using Search:

	A	B	C	D
1	Equipment Log — Ragnar Technologies Inc.			
2	ID #	Type	Equipment Detail	Checked Out
3	1011	Laptop	10" Saris Netbook Pro	04-Oct-10
4	1012	Laptop	10" Saris Netbook Pro	29-Sep-10
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-10
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-10
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-10
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-10
15	3000	Other	Saris Lumina Digital Camera	12-May-10
16	3005	Other	Saris Zoom Z-60 Digital Camera	27-Jul-10
18	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-10
19	3900	Other	U-Go Saris Label Maker	13-Jun-10
29	6200	Projector	Saris Lux T-80	01-Sep-10
30	6301	Projector	Saris Lux T-81 Lite	10-Sep-10
31	6302	Projector	Saris Lux T-81 Lite	08-Sep-10
32				

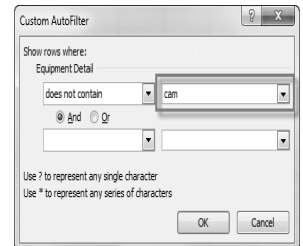
Searching for data is a convenient alternative to checking or unchecking data from the list. You can search for data that contains an exact phrase, number, or date, or a simple fragment. **For example**, searching for the exact phrase "Saris X-10 Laptop" will display only Saris X-10 Laptops. Searching for the word "Saris," however, will display Saris X-10 Laptops, and any other Saris equipment, including projectors, digital cameras, and more.

1. From the **Data** tab, click the **Filter** command.
2. Click the **drop-down arrow** in the column you would like to filter. In this example, we will filter the Equipment Detail column to view only a specific brand.
3. Enter the data you would like to view in the **Search** box. We will enter the word "Saris" to find all Saris brand equipment. The search results will appear automatically.
4. **Check** the boxes next to the data you want to display. We will display all the data that includes the brand name Saris.
5. Click **OK**. The worksheet will be filtered according to your search term.

To Use Advanced Text Filters:

Advanced text filters can be used to display more specific information, such as cells that contain a certain number of characters, or data that does not contain a word you specify. In this example, we will use advanced text filters to hide any equipment that is related to cameras, including digital cameras, camcorders, and more.

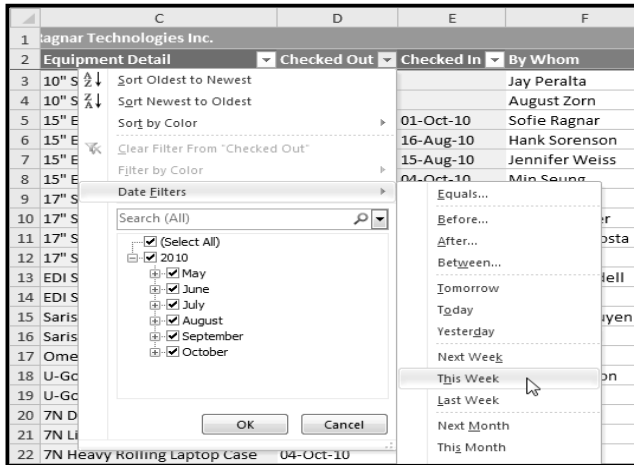
1. From the **Data** tab, click the **Filter** command.
2. Click the **drop-down arrow** in the column of **text** that you would like to filter. In this example, we will filter the Equipment Detail column to view only certain kinds of equipment.
3. Choose **Text Filters** to open the advanced filtering menu.
4. Choose a **filter**. In this example, we will choose **Does Not Contain** to view data that does not contain the text we specify.
5. The **Custom AutoFilter** dialog appears.
6. Enter your **text** to the right of your filter. *In this example*, we will enter "cam" to view data that does not contain those letters. That will exclude any equipment related to cameras, such as digital **cameras**, **camcorders**, **camera** bags, and the **digicam** printer.
7. Click **OK**. The data will be filtered according to the filter you chose and the text you specified.



To Use Advanced Date Filters:

Advanced date filters can be used to view information from a certain time period, such as last year, next quarter, between two dates, and more. Excel automatically knows your current date and time, making this tool very easy to use. In this example, we will use advanced date filters to view only the equipment that has been checked out this week.

1. From the **Data** tab, click the **Filter** command.
2. Click the **drop-down arrow** in the column of **dates** that you would like to filter. In this example, we will filter the Checked Out column to view only a certain range of dates.
3. Choose **Date Filters** to open the advanced filtering menu.
4. Click a **filter**. We will choose This Week to view equipment that has been checked out this week.
5. The worksheet will be filtered according to the date filter you chose.

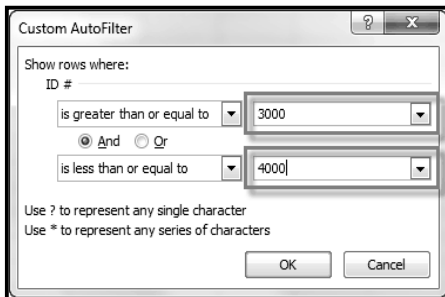


	C	D	E	F
1	Ragnar Technologies Inc.			
2	Equipment Detail	Checked Out	Checked In	By Whom
3	10" Saris Netbook Pro	04-Oct-10		Jay Peralta
9	17" Saris X-10 Laptop	04-Oct-10		Nick Ortiz
13	EDI SmartBoard L500-1	05-Oct-10	06-Oct-10	Anthony Liddell
17	Omega PixL Digital Camcorder	06-Oct-10		Min Seung
21	7N Light Rolling Laptop Case	04-Oct-10		Jay Peralta
22	7N Heavy Rolling Laptop Case	04-Oct-10		Nick Ortiz
32				

To Use Advanced Number Filters:

Advanced number filters allow you to manipulate numbered data in many different ways. For example, in a worksheet of exam grades, you could display the top and bottom numbers to view the highest and lowest scores. In this example, we will display only certain kinds of equipment based on the range of ID #s that have been assigned to them.

1. From the **Data** tab, click the **Filter** command.
2. Click the **drop-down arrow** in the column of **numbers** that you would like to filter. In this example, we will filter the ID # column to view only a certain range of ID #s.
3. Choose **Number Filters** to open the advanced filtering menu.
4. Choose a **filter**. *In this example*, we will choose Between to view ID #s between the numbers we specify.
5. Enter a **number** to the right of each filter. In this example, we will view ID #s greater than or equal to 3000, but less than or equal to 4000. That will display ID #s in the 3000-4000 range.
6. Click **OK**. The data will be filtered according to the filter you chose and the numbers you specified.



	A	B	C	D
1	Equipment Log -- Ragnar Technologies Inc.			
2	ID #	Type	Equipment Detail	Checked Out
15	3000	Other	Saris Lumina Digital Camera	12-May-10
16	3005	Other	Saris Zoom Z-60 Digital Camera	27-Jul-10
17	3070	Other	Omega PixL Digital Camcorder	06-Oct-10
18	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-10
19	3900	Other	U-Go Saris Label Maker	13-Jun-10
32				

Lesson: 8

Table, Chart, Sparklines & Templates

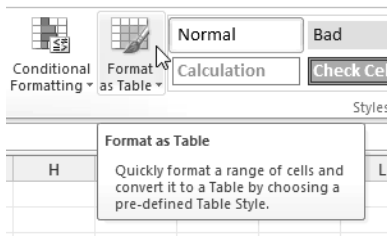
Once you have entered information into a spreadsheet, you may want to format it. Formatting your spreadsheet can not only improve the look and feel, but also make it easier to use.

To Format Information as a Table:

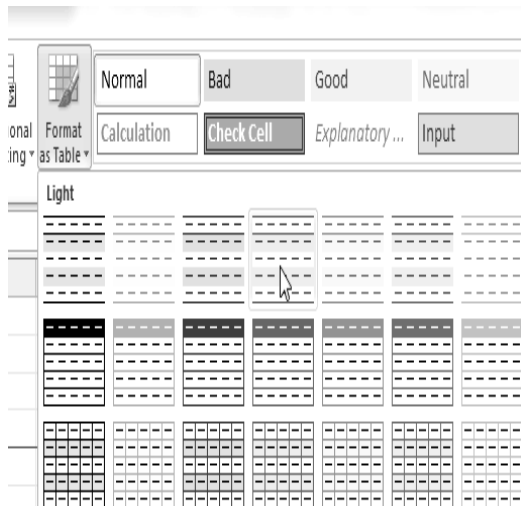
1. Select the cells you want to format as a table. *In this example*, an invoice, we will format the cells that contain the column headers and the order details.

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00

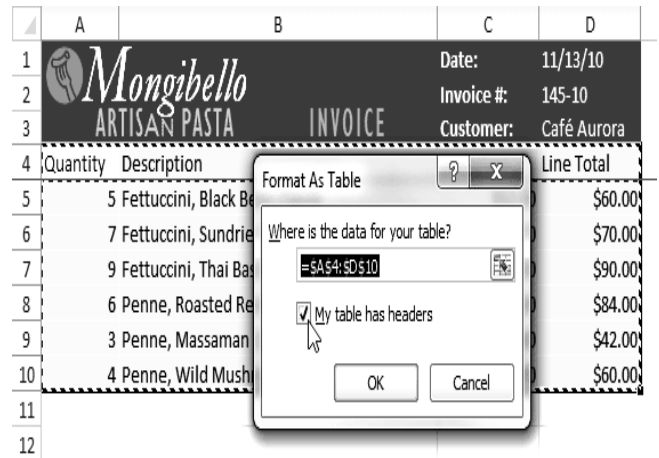
2. Click the **Format as Table** command in the **Styles** group on the Home tab.



3. A list of predefined **table styles** will appear. Click a table style to select it.



4. A dialog box will appear, confirming the **range** of cells you have selected for your table. The cells will appear selected in the spreadsheet, and the range will appear in the dialog box.
5. If necessary, **change** the range by selecting a new range of cells directly on your spreadsheet.



6. If your table has headers, check the box next to **My table has headers**.
7. Click **OK**. The data will be formatted as a table in the style that you chose.

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00

Tables include **filtering** by default. You can filter your data at any time using the **drop-down arrows** in the header. To convert a table back into "normal" cells, click the **Convert to Range** command in the **Tools** group. The filters and the Design tab will then disappear, but the cells will retain their data and formatting.

Modifying Tables

To Add Rows or Columns:

1. Select **any cell** in your table. The **Design** tab will appear on the Ribbon.
2. From the Design tab, click the **Resize Table** command.
3. Directly on your spreadsheet, select the new **range** of cells that you want your table to cover. You must select your original table cells as well.
4. Click **OK**. The new rows and/or columns will be added to your table.

To Change the Table Style:

1. Select **any cell** in your table. The **Design** tab will appear.
2. Locate the **Table Styles** group. Click the **More** drop-down arrow to see all of the table styles.
3. Hover the mouse over the various styles to see a live preview.
4. Select the desired style. The table style will appear in your worksheet.

To Change the Table Style Options:

When using an Excel table, you can turn various options **on** or **off** to change its appearance. There are six options: **Header Row, Total Row, Banded Rows, First Column, Last Column, and Banded Columns.**

1. Select **any cell** in your table. The **Design** tab will appear.
2. From the **Design** tab, **check** or **uncheck** the desired options in the **Table Style Options** group. Depending on the **Table Style** you're using, certain **Table Style Options** may have a different effect. You may need to **experiment** to get the exact look you want.

Working with Charts

A chart is a tool you can use in Excel to communicate your data graphically. Charts allow your audience to see the meaning behind the numbers, and they make showing comparisons and trends a lot easier. In this lesson, you will learn how to insert charts and modify them so that they communicate information effectively.

Excel workbooks can contain a lot of data, and that data can often be difficult to interpret. For example, where are the highest and lowest values? Are the numbers increasing or decreasing? The answers to questions like these can become much clearer when the data is represented as a chart. Excel has many different types of charts, so you can choose one that most effectively represents the data.

To Create a Chart:

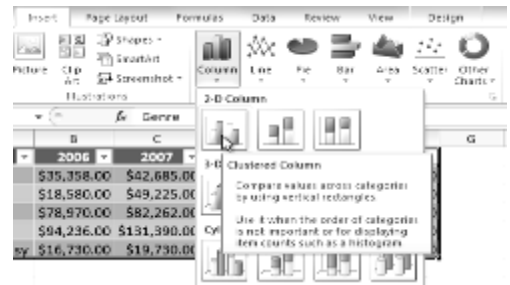
1. Select the **cells** that you want to chart, including the **column titles** and the **row labels**. These cells will be the **source data** for the chart.

	A	B	C	D	E	F
1	Genre	2006	2007	2008	2009	2010
2	Young Adult	\$35,358.00	\$42,685.00	\$20,893.00	\$16,065.00	\$21,388.00
3	Classics	\$18,580.00	\$49,225.00	\$16,326.00	\$10,017.00	\$26,134.00
4	Mystery	\$78,970.00	\$82,262.00	\$48,640.00	\$49,985.00	\$73,428.00
5	Romance	\$94,236.00	\$131,390.00	\$79,022.00	\$71,009.00	\$81,474.00
6	Sci-Fi & Fantasy	\$16,730.00	\$19,730.00	\$12,109.00	\$11,355.00	\$17,686.00
7						

2. Click the **Insert** tab.
3. In the **Charts** group, select the desired **chart category** (Column, for example).



4. Select the desired **chart type** from the drop-down menu (Clustered Column, for example).



5. The chart will appear in the worksheet.

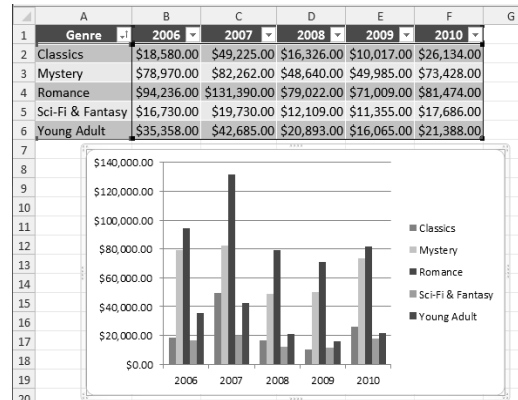


Chart Tools



Once you insert a chart, a set of **Chart Tools**, arranged into three tabs, will appear on the Ribbon. These are only visible when the chart is selected. You can use these three tabs to **modify** your chart.

To Change the Chart Type:

1. From the **Design** tab, click the **Change Chart Type** command. A dialog box appears.
2. Select the desired **chart type** and click **OK**.

To Switch Row and Column Data:

Sometimes when you create a chart, the data may not be grouped the way you want it to be. In the **clustered column chart** below, the Book Sales statistics are grouped **by Fiction/Non-Fiction**, with a column for each year. However, you can also **switch the row and column data** so that the chart will group the statistics **by year**, with columns for Fiction and Non-Fiction. In both cases, the chart contains the **same data**; it's just organized differently.

1. Select the **chart**.
2. From the **Design** tab, select the **Switch Row/Column** command.
3. The chart will then readjust.

To Change the Chart Layout:

1. Select the **Design** tab.
2. Click the **More** drop-down arrow in the **Chart Layouts** group to see all of the available layouts.
3. Select the desired layout.
4. The chart will update to reflect the new layout.
Some layouts include **chart titles**, **axes**, or **legend labels**. To change them, just place the **insertion point** in the text and begin typing.

To Change the Chart Style:

1. Select the **Design** tab.
2. Click the **More** drop-down arrow in the **Chart Styles** group to see all of the available styles.
3. Select the desired style.
4. The chart will update to reflect the new style.

To Move the Chart to a Different Worksheet:

1. Select the **Design** tab.
2. Click the **Move Chart** command. A dialog box appears. The current location of the chart is selected.
3. Select the desired location for the chart (i.e., choose an existing worksheet, or select New Sheet and name it).
4. Click **OK**. The chart will appear in the new location.

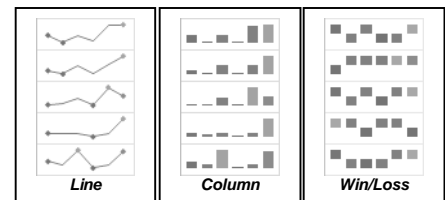
Working with Sparklines

Sparklines are miniature charts that fit into a single cell. Since they're so compact, you can place a large number of them in your worksheets. For example, you could place one sparkline on each row to show trends within that row. In this lesson, you will learn how to insert sparklines and change their type and appearance.

Sparklines were introduced in *Excel 2010* to be a convenient alternative to charts. Unlike a traditional chart, a **sparkline** is placed inside a cell, allowing you to easily create a large number of sparklines (for example, one on each row).

Types of Sparklines

There are three different types of sparklines: **Line**, **Column**, and **Win/Loss**. **Line** and **Column** work the same as line and column **charts**. **Win/Loss** is similar to **Column**, except it only shows whether each value is **positive** or **negative**, instead of how **high** or **low** the values are. All three types can display **markers** at important points, such as the **highest** and **lowest** points, to make them easier to read.



Why Use Sparklines?

Sparklines are basically charts, so why would you want to use sparklines instead of charts? Sparklines have certain advantages that make them more convenient in many cases. Imagine you have 1000 rows of data. If you place a sparkline on each row, it will be right next to its source data, making it easy to see the relationships between the numbers and the sparkline. If you used a traditional chart,

it would need to have 1000 data series in order to represent all of the rows, and you would probably need to do a lot of scrolling to find the relevant data in the worksheet.

Sparklines are ideal for situations where you just want to make the data clearer and more eye-catching, and where you don't need all of the features of a full chart. On the other hand, charts are ideal for situations where you want to represent the data in greater detail, and they are often better for comparing different data series.

To Create Sparklines:

Generally, you will have one sparkline for each row, but you can create as many as you want in any location you want. Just like with formulas it's usually easiest to create a single sparkline and then use the fill handle to automatically create the sparklines for the remaining rows.

1. Select the **cells** that you will need for the **first sparkline**. In this example, we are creating a sparkline for Kathy Albertson, so we will select her sales data.

	A	B	C	D	E	F	G	H
Salesperson	May	June	July	Aug.	Sept.	Oct.		
Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00		
Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00		
Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00		

2. Click the **Insert** tab.
3. In the **Sparklines** group, select **Line**. A dialog box will appear.



4. Make sure the **insertion point** is next to **Location Range**.
5. Click the **cell** where you want the sparkline to be. In this example, we'll select the cell to the right of the selected cells.

6. Click **OK**. The sparkline will appear in the document.
7. Click and drag the **fill handle** downward.



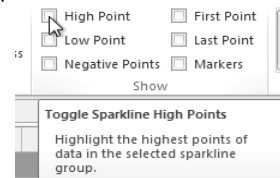
8. Sparklines will be created for the remaining rows.

	Sept.	Oct.
	\$8,237.00	\$8,690.00
	\$10,185.00	\$18,749.00
	\$13,452.00	\$8,046.00
	\$4,404.00	\$20,114.00
	\$3,170.00	\$10,733.00
	\$8,817.00	\$18,524.00
	\$13,090.00	\$13,953.00
	\$3,528.00	\$15,275.00
	\$4,839.00	\$13,085.00
	\$9,642.00	\$13,714.00

To Show Points on the Sparkline:

Certain points on the sparkline can be emphasized with markers, or dots, making the sparkline more readable. For example, in a line with a lot of ups and downs, it may be difficult to tell which ones are the highest and lowest points, but if you show the High Point and Low Point, it will be easy to identify them.

1. Select the **sparklines** that you want to change. If they are **grouped**, you only need to select one of them.
2. Locate the **Show** group in the **Design** tab.
3. Hover over the different **checkboxes** to see a description of each one.



4. Check each option that you want to show. The sparklines will update to show the selected options.

To Change the Style:

1. Select the **sparklines** that you want to change.
2. Locate the **Style** group in the **Design** tab.
3. Click the **More** drop-down arrow to show all of the available styles.
4. Select the desired **style**.
5. The sparklines will update to show the selected style.



To Change the Sparkline Type:

1. Select the **sparklines** that you want to change.
2. Locate the **Type** group in the **Design** tab.
3. Select the desired **type** (Column, for example).
4. The sparkline will update to reflect the new type.

Some sparkline types will be better or worse for certain types of data. For example, **Win/Loss** is best suited for data where there may be **positive** and **negative** values (such as **net earnings**).

Changing the Display Range

By default, each sparkline is scaled to fit the maximum and minimum values of **its own data**. This allows it to fill the entire cell no matter how high or low the values are. However, it has a **downside**: if you are trying to compare several sparklines, you won't be able to tell at a glance which ones have higher or lower values. The solution is to make the display range **the same** for all of the sparklines.

To Change the Display Range:

1. Select the **sparklines** that you want to change.
2. In the **Design** tab, click the **Axis** command. A drop-down menu will appear.
3. Under **Vertical Axis Minimum Value Options** and **Vertical Axis Maximum Value Options**, select **Same for All Sparklines**.
4. The sparklines will update to reflect the new range.

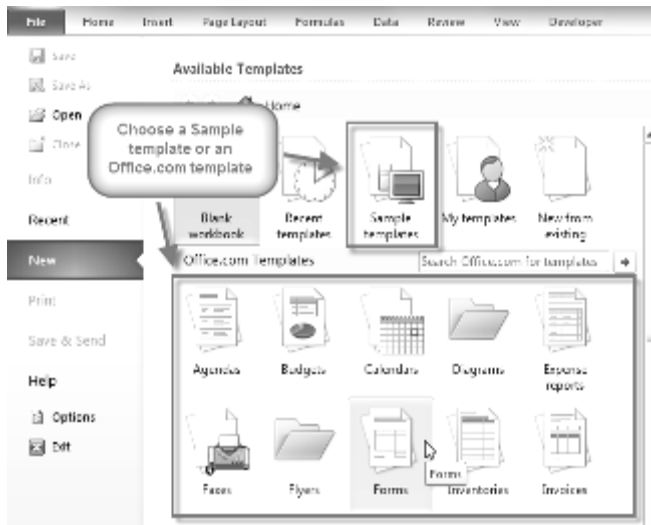
Using Templates

In Excel 2010, you have many templates that can save you a lot of time. A template is a pre-designed spreadsheet that you can use to create new spreadsheets with the same formatting and predefined formulas. With templates, you don't need to know how to do the math, or even how to write formulas - these are already integrated into the spreadsheet.

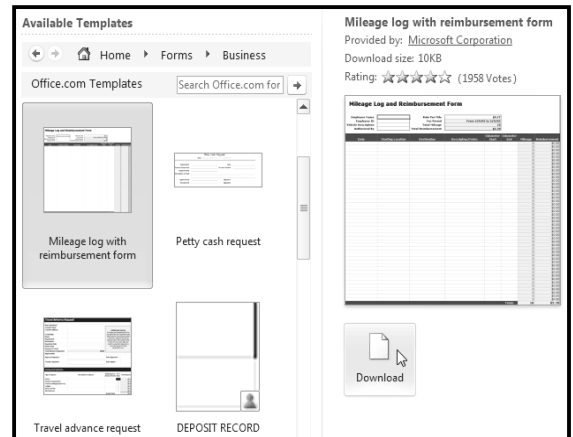
In this lesson, you will learn how to create a new workbook with a template, as well as basic information about how templates work in Excel 2010. Excel allows you to create new workbooks using templates, or a predefined pattern. Several templates are preloaded in Excel and others are located on Microsoft Office Online.

To Create a New Workbook Using a Template:

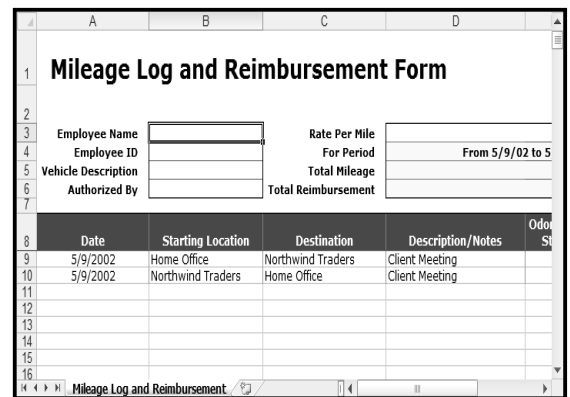
1. Click the **File** tab to go to **Backstage view**.
2. Select **New**. The **Available Templates** pane appears.
3. Click **Sample templates** to choose a built-in template, or select an **Office.com template** category to download a template. In this example, we will download a template from Office.com.



4. Thumbnail images of the templates you have to choose from appear in the center. A larger preview appears on the right.
5. Select the desired template, then click **Download** to open it. (If using a Sample template, Download will be replaced by **Create**.)



6. A new workbook will appear using the template you chose.



Lesson: 9

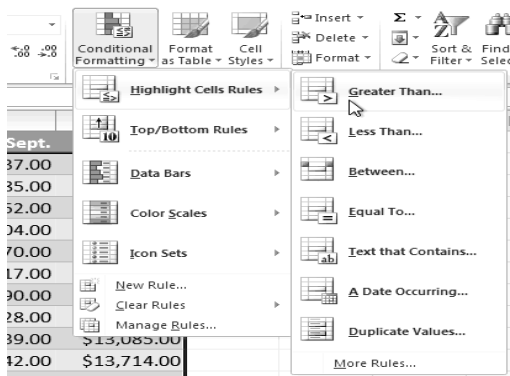
Conditional Formatting, Pivot Table & What-if Analysis

Using Conditional Formatting

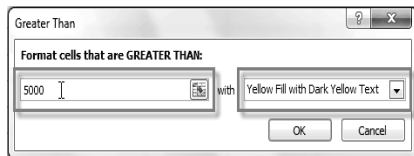
Imagine you have a spreadsheet with thousands of rows of data. It would be extremely difficult to see patterns and trends just from examining the raw data. Excel gives us several tools that will make this task easier. One of these tools is called conditional formatting. With conditional formatting, you can apply formatting to one or more cells based on the value of the cell. You can highlight interesting or unusual cell values, and visualize the data using formatting such as colors, icons, and data bars. **Conditional formatting applies** one or more rules to any cells that you want. An example of a rule might be "If the value is greater than 5,000, color the cell yellow." By applying this rule to the cells in a worksheet, you'll be able to see at a glance which cells are over 5,000. There are also rules that can mark the top 10 items, all cells that are below the average, cells that are within a certain date range, and many more.

To Create a Conditional Formatting Rule:

1. Select the **cells** that you want to add the formatting to.
2. In the **Home** tab, click the **Conditional Formatting** command. A drop-down menu will appear.
3. Select **Highlight Cells Rules** or **Top/Bottom Rules**. We will choose Highlight Cells Rules for this example. A menu will appear with several **rules**.
4. Select the desired rule (Greater Than, for example).



5. From the dialog box, enter a **value** in the space provided, if applicable. In this example, we want to format cells that are greater than \$5,000, so we'll enter 5000 as our value. If you want, you can enter a **cell reference** instead of a number.
6. Select a formatting style from the drop-down menu.



7. The formatting will be applied to the selected cells.

\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00
\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00
\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00
\$11,601.00	\$1,122.00	\$3,170.00	\$10,733.00
\$3,726.00	\$1,135.00	\$8,817.00	\$18,524.00
\$9,007.00	\$2,113.00	\$13,090.00	\$13,953.00
\$4,505.00	\$1,024.00	\$3,528.00	\$15,275.00
\$3,973.00	\$1,716.00	\$4,839.00	\$13,085.00

If you want, you can apply more than one rule to your cells.

Conditional Formatting Presets

Excel has a number of presets that you can use to quickly apply conditional formatting to your cells. They are grouped into three categories:

- **Data Bars** are horizontal bars added to each cell, much like a **bar graph**.

\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00
\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00
\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00
\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00

- **Color Scales** change the color of each cell based on its value. Each color scale uses a **two or three color gradient**. For example, in the **Green - Yellow - Red** color scale, the **highest** values are green, **average** values are yellow, and the **lowest** values are red.

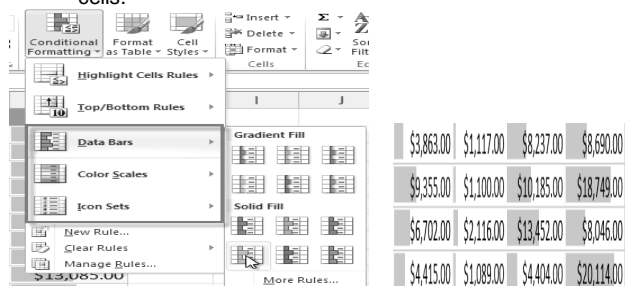
\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00
\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00
\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00
\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00

- **Icon Sets** add a specific icon to each cell based on its value.

↓ \$3,863.00	↓ \$1,117.00	↗ \$8,237.00	↘ \$8,690.00
↘ \$9,355.00	↓ \$1,100.00	↗ \$10,185.00	↘ \$18,749.00
↘ \$6,702.00	↓ \$2,116.00	↗ \$13,452.00	↘ \$8,046.00
↓ \$4,415.00	↓ \$1,089.00	↓ \$4,404.00	↑ \$20,114.00

To Use Preset Conditional Formatting:

1. Select the cells you want to add the formatting to.
2. In the **Home** tab, click the **Conditional Formatting** command. A drop-down menu will appear.
3. Select **Data Bars**, **Color Scales** or **Icon Sets** (Data Bars, for example). Then, select the desired preset.
4. The conditional formatting will be applied to the selected cells.



To Remove Conditional Formatting Rules:

1. Select the cells that have conditional formatting.
2. In the **Home** tab, click the **Conditional Formatting** command. A drop-down menu will appear.
3. Select **Clear Rules**.
4. A menu will appear. You can choose to clear rules from the **Selected Cells, Entire Sheet, This Table, or This PivotTable**. In this example, we will clear rules from the entire sheet.
You can edit or delete **individual** rules by clicking on the **Conditional Formatting** command and selecting **Manage Rules**. This is especially useful if you have applied **multiple** rules to the cells.

Creating PivotTables

PivotTable reports (or, simply **PivotTables**) make the data in your worksheets much more manageable by **summarizing** the data and allowing you to **manipulate** it in different ways. PivotTables can be an indispensable tool when used with large, complex spreadsheets, but they can be used with smaller spreadsheets as well.

When you have a lot of data, it can sometimes be difficult to analyze all of it. A PivotTable **summarizes** the data, making it easier to manage. Best of all, you can quickly and easily change the PivotTable to see the data in a different way, making this an extremely powerful tool.

Using PivotTables to Answer Questions

The example below contains sales statistics for a fictional company. There is a **row** for each order, and it includes the **order amount**, the name of the **salesperson** who made the sale, the **month**, the **sales region**, and the customer's **account number**.

Salesperson	Region	Account	Order Amount	Month
Albertson, Kathy	East	29386	\$925.00	January
Albertson, Kathy	East	74830	\$875.00	February
Albertson, Kathy	East	90099	\$500.00	February
Albertson, Kathy	East	74830	\$350.00	March
Brennan, Michael	West	82853	\$400.00	January
Brennan, Michael	West	72949	\$850.00	January
Brennan, Michael	West	90044	\$1,500.00	January
Brennan, Michael	West	82853	\$550.00	February
Brennan, Michael	West	72949	\$400.00	March
Davis, William	South	55223	\$235.00	February
Davis, William	South	10354	\$850.00	January
Davis, William	South	50192	\$600.00	March
Davis, William	South	27589	\$250.00	January
Dumlao, Richard	West	67275	\$400.00	January
Dumlao, Richard	West	41828	\$965.00	February
Dumlao, Richard	West	87543	\$125.00	March
Flores, Tia	South	97446	\$1,500.00	March
Flores, Tia	South	44499	\$205.00	January

Suppose we wanted to answer the question, "What is the amount sold by each salesperson?" This could be time-consuming, as each salesperson appears on multiple rows, and we would need to add up all of the order amounts for each salesperson. Of course, we could use the **Subtotal** feature to add them, but we would still have a lot of data to sift through.

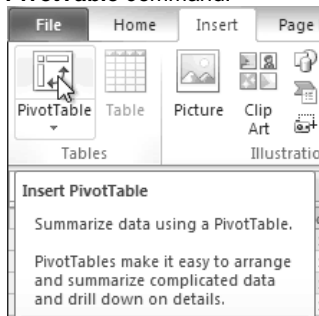
Luckily, a **PivotTable** can instantly do all of the math for us and summarize the data in a way that's not only easy to read, but easy to manipulate. When we're done, the PivotTable will look something like this:-

As you can see, the PivotTable is much easier to read. It only takes a **couple of steps** to create one, and once you create it you'll be able to take advantage of the PivotTable's powerful features.

Row Labels	Sum of Order Amount
Albertson, Kathy	\$2,650.00
Brennan, Michael	\$3,700.00
Davis, William	\$1,935.00
Dumlao, Richard	\$1,490.00
Flores, Tia	\$4,565.00
Post, Melissa	\$1,690.00
Thompson, Shannon	\$3,160.00
Walters, Chris	\$4,375.00
Grand Total	\$23,565.00

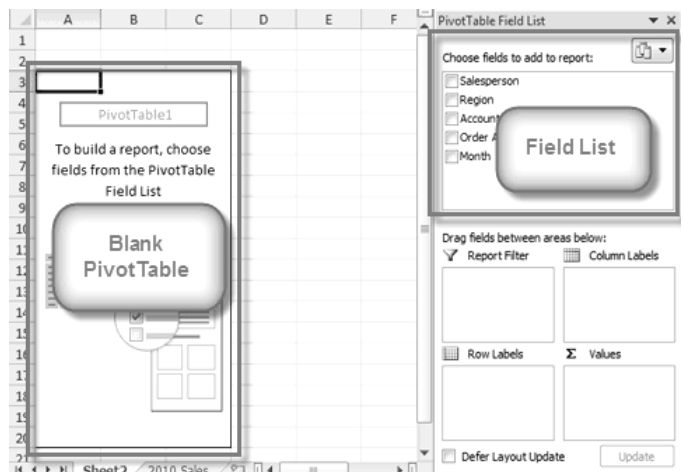
To Create a PivotTable:

1. Select the **table** or **cells** (including column headers) containing the data you want to use.
2. From the **Insert** tab, click the **PivotTable** command.



3. The **Create PivotTable** dialog box will appear. Make sure the settings are correct, and then click **OK**.

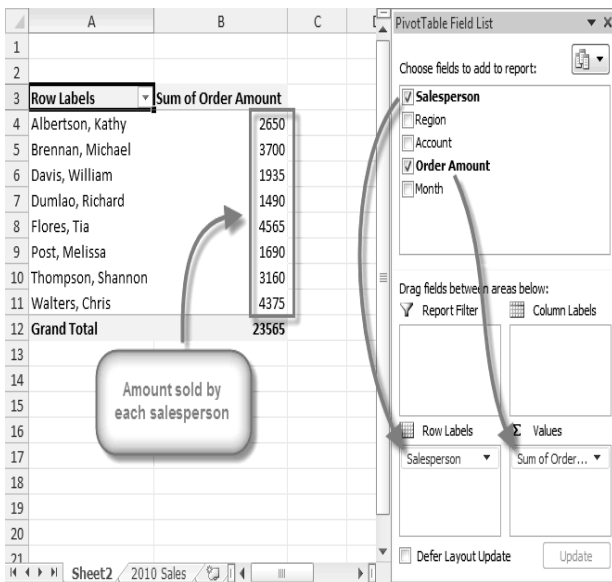
5. A blank PivotTable will appear on the left, and the Field List will appear on the right



To Add Fields to the PivotTable:

Now, you'll need to decide which **fields** to add to the PivotTable. Each field is simply a **column header** from the source data. It may be helpful to recall the **question** that you are trying to answer. In this example, we want to know the total **amount** sold by each **salesperson**, so we'll just need the **Order Amount** and **Salesperson** fields.

1. In the **Field List**, place a check mark next to each field you want to add.
2. The selected fields will be added to one of the four **Areas** below the Field List. In this example, the **Salesperson** field is added to the **Row Labels** area, and the **Order Amount** is added to the **Values** area. If a field is not in the desired area, you can drag it to a different one.
3. The PivotTable now shows the **amount** sold by each **salesperson**.



Just like with normal spreadsheet data, you can sort the data in a PivotTable using the **Sort & Filter** command in the **Home** tab. You can also apply any type of formatting that you want. For example, you may want to change the **Number Format** to **Currency**. However, be aware that some types of formatting may disappear when you modify the PivotTable.

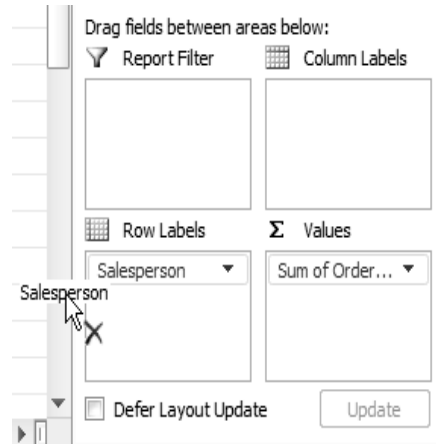
Pivoting Data

One of the best things about PivotTables is that they let you "pivot" the data in order to look at it in a different way. This allows you to answer multiple questions and even experiment with the data to learn new things about it.

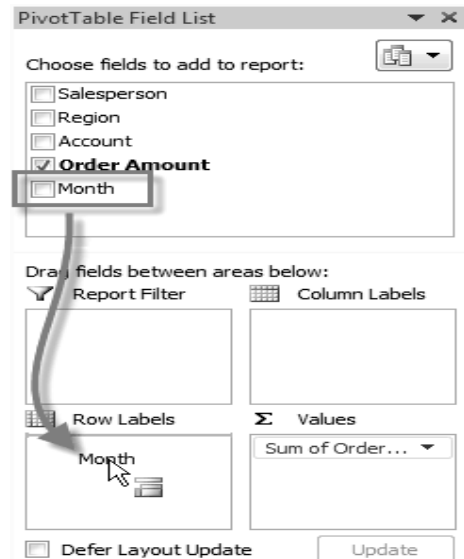
In our example, we used the PivotTable to answer the question "What is the total amount sold by each salesperson?" But now we'd like to answer a new question, such as "What is the total amount sold in each month?" We can do this by simply changing the Row Labels

To Change the Row Labels:

1. Drag any existing **fields** out of the **Row Labels** area, and they will disappear.



2. Drag a new field from the **Field List** into the **Row Labels** area. In this example, we're using the **Month** field.



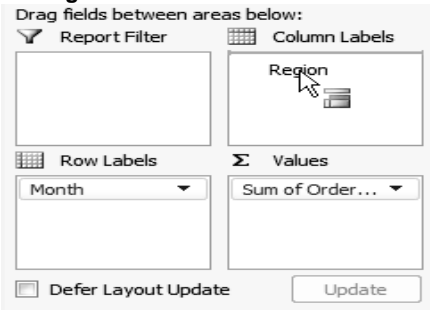
3. The PivotTable will adjust to show the new data. In this example, it now shows us the total **Order Amount** for each **month**.

Row Labels	Sum of Order Amount
January	\$9,090.00
February	\$9,160.00
March	\$5,315.00
Grand Total	\$23,565.00

To Add Column Labels:

So far, our PivotTable has only shown one column of data at a time. In order to show multiple columns, you'll need to add Column Labels.

1. Drag a field from the **Field List** into the **Column Labels** area. In this example, we're using the **Region** field.



2. The PivotTable will now have multiple columns. In this example, there is a column for each **region**.

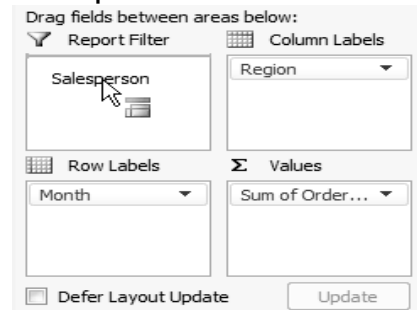
Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	\$1,690.00	\$1,140.00	\$3,110.00	\$3,150.00	\$9,090.00
February	\$1,950.00	\$1,720.00	\$3,975.00	\$1,515.00	\$9,160.00
March	\$700.00	\$300.00	\$3,790.00	\$525.00	\$5,315.00
Grand Total	\$4,340.00	\$3,160.00	\$10,875.00	\$5,190.00	\$23,565.00

Report Filters

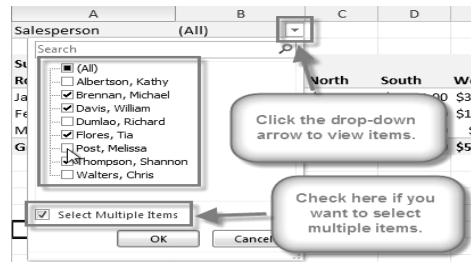
Sometimes you may want focus on just a portion of the data and filter out everything else. In our example, we're going to focus on certain salespeople, to see how they affect the total sales.

To Add a Report Filter:

1. Drag a field from the **Field List** into the **Report Filter** area. In this example, we're using the **Salesperson** field.



2. The report filter appears above the PivotTable. Click the **drop-down arrow** on the right side of the filter to view the list of items.
3. Select the item that you wish to view. If you want to select more than one item, place a checkmark next to **Select Multiple Items**. Then click **OK**. In the example below, we are selecting five salespeople.



4. Click **OK**. The PivotTable will adjust to reflect the changes.

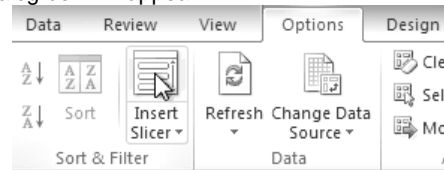
Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	\$765.00	\$1,140.00	\$2,755.00	\$2,750.00	\$7,410.00
February	\$575.00	\$1,720.00	\$1,220.00	\$550.00	\$4,065.00
March	\$350.00	\$300.00	\$2,525.00	\$400.00	\$3,575.00
Grand Total	\$1,690.00	\$3,160.00	\$6,500.00	\$3,700.00	\$15,050.00

Slicers

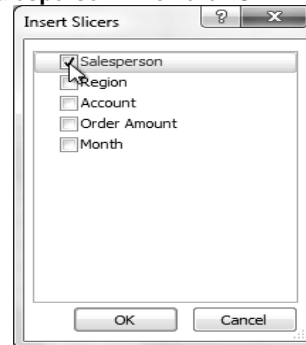
Slicers were introduced in Excel 2010 to make filtering data easier and more interactive. They're basically just report filters, but they're more interactive and faster to use, as they let you quickly select items and instantly see the result. If you filter your PivotTables a lot, you might want to use slicers instead of report filters.

To Add a Slicer:

1. Select any cell in your PivotTable. The **Options** tab will appear on the **Ribbon**.
2. From the **Options** tab, click the **Insert Slicer** command. A dialog box will appear.



3. Select the desired field. In this example, we will select **Salesperson**. Then click **OK**.



4. The Slicer will appear next to the PivotTable. Each item that is selected will be highlighted in **blue**. In the example below, the Slicer contains a list of all of the different salespeople, and **four** of them are currently selected.

Sum of Order Amount	Column Labels	South	West	Grand Total
January		\$2,010.00	\$3,150.00	\$5,160.00
February		\$3,740.00	\$1,515.00	\$5,255.00
March		\$3,190.00	\$525.00	\$3,715.00
Grand Total		\$8,940.00	\$5,190.00	\$14,130.00

Salesperson
Albertson, Kathy
Brennan, Michael
Davis, William
Dumlaio, Richard
Flores, Tia
Post, Melissa
Thompson, Shannon
Walters, Chris

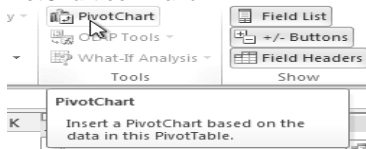
(A slicer with four selected items)

Pivot Charts

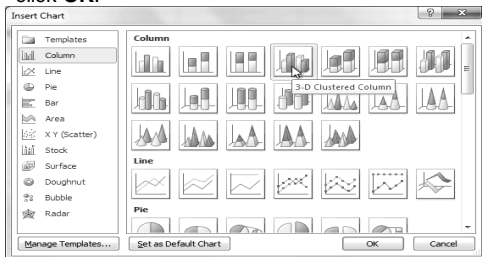
Pivot Charts are like regular charts, except they display data from a **PivotTable**. As with a regular chart, you'll be able to select a **chart type, layout and style** to best represent the data. In this example, we'll use a PivotChart so we can visualize the **trends** in each sales region.

To Create a PivotChart:

1. Select any cell in your PivotTable. The **Options** tab will appear in the **Ribbon**.
2. From the **Options** tab, click the **PivotChart** command.

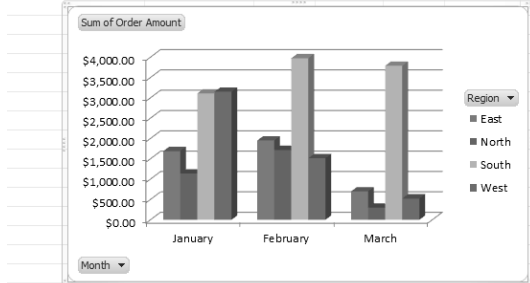


3. From the **dialog box**, select the desired **chart type** (3-D Clustered Column, for example) and click **OK**.



4. The PivotChart will appear in the worksheet. If you want, you can move it by clicking and dragging.

Sum of Order Amount	Column Labels	East	North	South	West	Grand Total
January		\$1,690.00	\$1,140.00	\$3,110.00	\$3,150.00	\$9,090.00
February		\$1,950.00	\$1,720.00	\$3,975.00	\$1,515.00	\$9,160.00
March		\$700.00	\$300.00	\$3,790.00	\$525.00	\$5,315.00
Grand Total		\$4,340.00	\$3,160.00	\$10,875.00	\$5,190.00	\$23,565.00



If you make any changes to the PivotTable, the PivotChart will adjust automatically.

Using What-If Analysis

The real power in Excel comes in its ability to perform multiple mathematical calculations for you. One of the tools in Excel that you can use to perform these calculations is a Data tool called What-If Analysis. What-If analysis allows you to see the effect that different values have in formulas. Have you ever thought, "What interest rate do I need to qualify for to have a car payment of \$400 on the car I want?" This question can be answered using What-If Analysis.

What-If Analysis

In many worksheets, there may be some cells whose values are unknown, or you may just want to change certain cells to see what the outcome is. What-if analysis is perfect for these situations. It allows you to experiment and answer questions with your data, even when the data is incomplete.

Goal Seek

Goal Seek is a type of what-if analysis that is useful if you know the desired result, but need to find the input value that will give you that result. For example, suppose you need a loan to buy a new car. You already know that you want a loan amount of \$20,000, a 60-month term (the length of time it takes to pay off the loan), and a payment of no more than \$400 a month. However, you're not sure yet what the interest rate is going to be.

In the image below, you can see that Interest Rate is left blank, and Payment is \$333.33. That's because the payment is being calculated by a specialized function called the PMT (Payment) function, and \$333.33 is what the monthly payment would be if there were no interest (\$20,000 divided by 60 monthly payments).

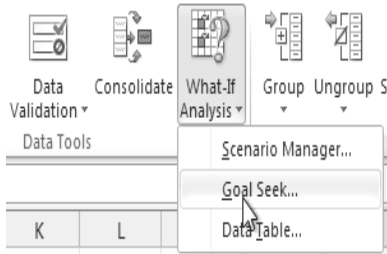
If we typed different values into the empty Interest Rate cell, we could eventually find the value that causes Payment to be \$400, and that would be the highest interest rate that we could afford.

	A	B	C	D	E
1	<i>My Car Loan</i>				
2	Loan Amount	20000			
3	Term (months)	60			
4	Interest Rate				
5	Payment				
6					

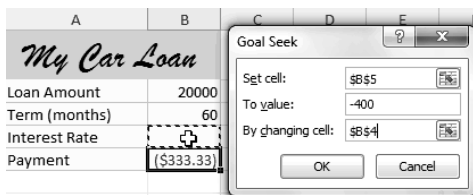
However, Goal Seek can do this automatically by starting with the result and working backward.

To Use Goal Seek to Find the Interest Rate:

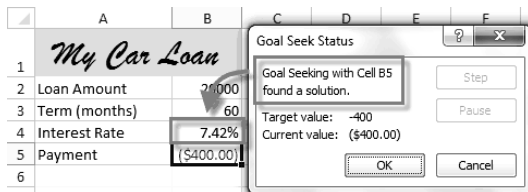
1. From the **Data** tab, click the **What-If Analysis** command.
2. Select **Goal Seek**.



3. A dialog box will appear containing three fields:
 - **Set cell:** This is the cell that will contain the **desired result** (in this case, the monthly payment). In this example, we will set it to **B5** (it doesn't matter whether it's an **absolute** or **relative** reference).
 - **To value:** This is the desired result. We'll set it to **-400**. Since we're making a payment that will be **subtracted** from our loan amount, we have to enter the payment as a **negative number**.
 - **By changing cell:** This is the cell where Goal Seek will place its answer (in this case, the interest rate). We'll set it to **B4**.



4. When you're done, click **OK**. The dialog box will tell you whether or not Goal Seek was able to find a solution. In this example, the solution is **7.42%**, and it has been placed in cell **B4**. This tells us that a 7.42% interest rate will give us a \$400-a-month payment on a \$20,000 loan that is paid off over 5 years, or 60 months.

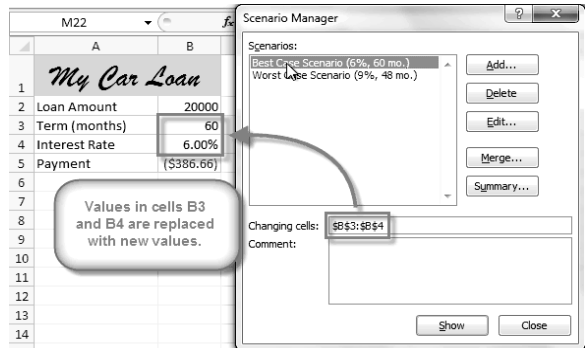


Other Types of What-If Analysis

For more advanced projects, you may want to look at the other two types of what-if analysis: **scenarios** and **data tables**. Rather than starting from the desired result and working backward, like Goal Seek, these options allow you to test multiple values and see how the result changes.

Below is an introduction to some of the things you can do with **scenarios** and **data tables**.

- **Scenarios** let you substitute values for **multiple cells** (up to 32) at the same time. It is especially well-suited to showing **best-case** and **worst-case** scenarios. You can create **as many scenarios as you want**, and then compare them without having to manually change all of the values. In the example below, each scenario contains a **term** and an **interest rate**. When each scenario is selected, it will replace the values in the spreadsheet with its own values, and the **result** will be recalculated.



- **Data Tables** allow you to take one or two variables in a formula and replace them with **as many different values as you want**, and then view the results in a table. This option is especially powerful because it shows **multiple results** at the same time, unlike Scenarios or Goal Seek. In the example below, **24 possible results** are shown in the table; doing the same task with **Scenarios** would take much longer.

Loan Amount	20000				
Term (months)	60				
Interest Rate					
Payment	(\$333.33)	36	48	60	72
	5.5%	-\$603.92	-\$465.13	-\$382.02	-\$326.76
	6.0%	-\$608.44	-\$469.70	-\$386.66	-\$331.46
	6.5%	-\$612.98	-\$474.30	-\$391.32	-\$336.20
	7.0%	-\$617.54	-\$478.92	-\$396.02	-\$340.98
	7.5%	-\$622.12	-\$483.58	-\$400.76	-\$345.80
	8.0%	-\$626.73	-\$488.26	-\$405.53	-\$350.66

Lesson: 10

Reviewing, Sharing, Saving & Printing

Reviewing and Sharing Workbooks

Suppose someone asked you to proofread or collaborate on a worksheet they put together. If you had a hard copy, you might use a red pen to cross out cell data, mark misspellings, or add comments in the margins. However, you could also do all of these things in Excel using the Track Changes and Comments features.

When you've finished reviewing the worksheet, the other person can choose to automatically Accept all of your changes, or decide whether to Accept or Reject each change one-by-one.

About Track Changes

When you turn on the Track Changes option, every change you make to the worksheet will be highlighted with a unique border and indicator. Hovering your mouse over a highlighted cell will display the details of the change. This allows the other person to see what changes have been made before making the changes permanent.

Time	Item	Facilitator
AM:	0:15:Break	
PM:	1:45:Cady Falls hike (strategy game?)	Marianne, Liz
PM:	1:00:Lunch (with strategy game team)	
PM:	0:30:Strategy debrief	
PM:	1:00:Get to know your team	B. Nemeec, 10/12/2010 2:46 PM: Se changed cell D14 from '?' to 'Get to know your team'.
PM:	1:00:Strengths exercise	
PM:	0:15:Break	
PM:	0:45:Redwoods hike	Dean
PM:	1:00:Team building exercise	Garth, exec team
PM:	2:00:Dinner	
	12:00	

The **color** of the highlights will vary depending on who is reviewing the document, so if there are multiple reviewers, you'll be able to tell at a glance who made each change. There are some changes that Excel **cannot** track. Familiarize yourself at changes that Excel does not track or highlight.

To Turn on Track Changes:

1. Go to the **Review** tab.
2. Click **Track Changes**, then select **Highlight Changes** from the drop-down menu.
3. The **Highlight Changes** dialog box will appear.
4. Check the box next to **Track changes while editing**.
5. Verify the box is checked for **Highlight changes on screen**. This will highlight your changes while you work.
6. Click **OK**.
7. If prompted, click **OK** to allow Excel to save your workbook
8. Change tracking is now active. Any changes you make to the worksheet will be **highlighted** with a unique border and indicator.

Your workbook will be "shared" automatically when you turn Track Changes on. Shared workbooks are designed to be stored where other users (such as users on the same network) can access and edit the workbook at the same time.

To Turn off Track Changes:

1. From the **Review** tab, click **Track Changes**. Then select **Highlight Changes** from the drop-down menu.
2. Uncheck the box next to **Track changes while editing**.
3. Click **Yes** to confirm that you want to turn off Track Changes and stop sharing your workbook.

Turning off Track Changes will delete any tracking that has taken place in your workbook. You will not be able to view, accept, or reject changes; instead, they will all be applied to your workbook automatically. Always review the changes in your worksheet before turning Track Changes off.

Adding and Deleting Comments

Sometimes, you may want to add a comment to a worksheet, to provide feedback for the author instead of changing the contents. Comments are highlighted by a unique indicator and can be read by the original author or by any other reviewers.

To Add a Comment:

1. Select the cell where you want the comment to appear.
2. From the **Review** tab, click the **New Comment** command.



3. Type your comment.

6	Time	Item	Facilitator
9	1:00:	Work relationships exercise	Garth, Dean, Liz
10	0:15:	Break	
11	1:45:	Cady Falls hike (strategy game?)	B. Nemeec: This would be a great time to do the strategy game.
12	1:00:	Lunch (with strategy game team)	
13	0:30:	Strategy debrief	
14	1:00:	Get to know your team	
15	1:00:	Strengths exercise	

4. The red **indicator** in the upper right corner shows that there is a comment in that cell.
5. Hover your mouse over the cell to **view** the comment.

To Edit a Comment:

1. Select the cell containing the comment you wish to edit.
2. From the **Review** tab, click the **Edit Comment** command (where the **New Comment** command used to be).
3. Edit your comment.

Finalizing and Protecting Your Workbook

Before you send your workbook out, take a minute to prepare a final copy. Excel has tools that might save you from sharing a workbook that contains spelling errors, or information about the workbook itself that you do not want the recipient to see. Use the Spelling command to find and edit any misspelled words; use the Document Inspector to find and delete any hidden data or personal information that is stored in the workbook, such as hidden comments, invisible objects, and file paths; and consider your Protect Workbook options, designed to keep other users from making unwanted changes to your workbook.

To Check Spelling:

1. Select the cells you want to spell check.
2. Click on the Spelling command from the **Review** tab.
3. The **Spelling** dialog box will open. From the Spelling dialog box, you can review and edit any misspelled words.

You can also check the spelling of every cell in an active worksheet by selecting any empty cell in the worksheet and then clicking on the **Spelling** command.

Ignoring Spelling "Errors"

There are times when Excel will say something is an error when it is not. This often happens with people's names, which may not be in the dictionary. Even if Excel says that something is an error, you can choose not to change it. There are three options you can choose from:

- **Ignore Once:** This will skip the word without changing it.
- **Ignore All:** This will skip the word without changing it, and it will also skip all other instances of this word in the worksheet.
- **Add to Dictionary:** This adds the word to the dictionary so that it will never come up as an error again. Make sure that the word is spelled correctly before choosing this option.

To Use the Document Inspector:

1. In **Backstage view**, click **Info**.
2. Click on the **Check for Issues** button. A drop-down menu will appear.
3. Select **Inspect Document**. A dialog box will appear.
4. Check the boxes beside the content you want to inspect. To unselect a box, simply click it again and the check mark will disappear.
5. Click **Inspect**.
6. After the Document Inspector finishes, a new dialog box will appear where you can **review the inspection results**. Click the **Remove All** command beside any information you want to remove.
It is a good idea to save an additional copy of your workbook before you use the Document Inspector to remove information, because some changes cannot be undone.

Protecting Your Workbook

By default, anyone with access to your workbook will be able to open, copy, and change any part of it unless you protect it. There are many ways you can protect your workbook depending on your needs. For example, you can mark your workbook as final, set it up with a password, put restrictions on who can make changes, or make it so that only certain cells or features of the workbook are changeable.

To Protect Your Workbook:

1. Click the **File** tab to access the **Backstage view**.
2. From the **Info** pane, click the **Protect Workbook** command.
3. Choose the **option** that best suits your needs. In this example, we will select **Mark as Final**. Marking your workbook as final is a way to discourage others from making any changes to the workbook. It will alert whoever opens it that typing, editing, and proofreading commands are unavailable.
4. Click **OK**.
5. Another dialog box will appear. Click **OK** to confirm.

Saving Workbook

Are you saving a workbook for the first time? Saving it as another name? Sharing it with someone that does not have Excel 2010? There are many ways you share and receive workbooks, which will affect how you need to save the file. In this lesson you will learn how to use the **Save** and **Save As** commands, how to save as an Excel 97-2003 compatible workbook, and how to save as a PDF.

To Use the Save As Command:

Save As allows you to choose a name and location for your workbook. Use it if you are saving a workbook for the first time or if you want to save a different version of a workbook while keeping the original.

1. Click the **File** tab.
2. Select **Save As**.
3. The **Save As** dialog box will appear. Select the location where you wish to save the workbook.
4. Enter a name for the workbook and click **Save**.

If you are using **Windows 7**, you will most likely want to save files to your **Documents library**. For other versions of Windows, you will most likely want to save files to the **My Documents folder**.

To Use the Save Command:

1. Click the **Save** command on the **Quick Access Toolbar**.
2. The workbook will be saved in its current location with the same file name.

If you are saving for the first time and select **Save**, the **Save As** dialog box will appear.

To Use AutoRecover:

Excel automatically saves your workbooks to a temporary folder while you are working on them. If you forget to save your changes, or if Excel crashes, you can recover the autosaved file.

1. Open a workbook that was previously closed without saving.
2. In **Backstage view**, click **Info**.
3. If there are autosaved versions of your workbook, they will appear under **Versions**. Click on the file to open it.
4. A yellow caution note will appear on the ribbon of the workbook. To restore this version of the workbook click **Restore** and then click **OK**.

By default, Excel autosaves every 10 minutes. If you are editing a workbook for less than 10 minutes, Excel may not create an autosaved version.

If you do not see the file you are looking for, or if you are looking for an autosaved version of a file that has no previously saved versions, you can browse all autosaved files by clicking on the Manage Versions button and selecting Recover Unsaved Workbooks from the drop-down menu.

To Save As an Excel 97-2003 Workbook:

You can share your workbooks with anyone using Excel 2010 or 2007, since they use the same file format. However, earlier versions of Excel use a different file format, so if you want to share your workbook with someone using an earlier version of Excel, you will need to save it as an **Excel 97-2003 Workbook**.

1. Click the **File** tab.
2. Select **Save As**.
3. In the **Save as type** drop-down menu, select **Excel 97-2003 Workbook**.
4. Select the location you wish to save the file.
5. Enter a name for the file and click **Save**.

To Save As a PDF:

Saving your workbook as an Adobe Acrobat Document, which is called a PDF file, can be especially useful when your recipients do not have Excel. A **PDF** file will make it possible for recipients to view the content from your workbook, but they will not be able to edit anything. Click the **File** tab.

1. Select **Save As**.
2. In the **Save as type** drop-down menu, select **PDF**.
3. Select the location you wish to save the file.
4. Enter a name for the file and click **Save**.

Excel defaults to saving the active worksheet only. If you have multiple worksheets and want to save all of them in the same PDF file, click on Options. The Options dialog box will appear. Select Entire workbook from the Options dialog box and click OK.

Printing

There are many choices you can make when printing an Excel workbook. You can choose what parts of a workbook to print and how the data fits on the page.

In previous versions of Excel, there was a Print Preview option that allowed you to preview and modify the workbook before printing. You may have noticed that this feature seems to be gone in Excel 2010. It actually has not disappeared; it has just been combined with the Print window to create the **Print pane**, which is located in **Backstage view**.

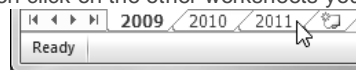
To View the Print Pane:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **Print**. The **Print pane** appears, with the **print settings** on the left and the **Print Preview** on the right.

To Print Active Sheets:

If you have multiple worksheets in your workbook, you will need to decide if you want to print the whole workbook or specific worksheets. Excel gives you the option to Print Active Sheets. A worksheet is considered active if it is selected.

1. Select the worksheets you want to print. To print multiple worksheets, click on the first worksheet, hold down the **Ctrl** key, then click on the other worksheets you want to select.



2. Click the **File** tab.
3. Select **Print** to access the **Print pane**.
4. Select **Print Active Sheets** from the **print range** drop-down menu.
5. Click the **Print** button.



To Print the Entire Workbook:

1. Click the **File** tab.
2. Select **Print** to access the **Print pane**.
3. Select **Print Entire Workbook** from the **print range** drop-down menu.
4. Click the **Print** button.

To Print a Selection, or Set the Print Area:

Printing a selection (sometimes called setting the print area) lets you choose which cells to print, as opposed to the entire worksheet.

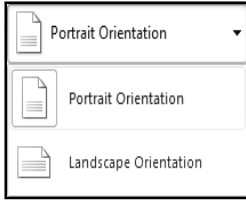
1. Select the cells that you want to print.

	A	B	C
1	Employee Name	January	February
2	Allenson, Carol	\$ 5,897.00	\$ 2,356.00
3	Altman, Zoey	\$ 666.00	\$ 6,210.00
4	Aurelio, Fies	\$ 5,889.00	\$ 9,385.00
5	Aurelio, Vig	\$ 8,765.00	\$ 9,258.00
6	Bergman, Jeffery	\$ 1,928.00	\$ 6,595.00
7	Bittiman, William	\$ 4,108.00	\$ 7,172.00
8	Carlson, David	\$ 6,302.00	\$ 358.00
9	Carlton, Potter	\$ 3,647.00	\$ 2,858.00

2. Click the **File** tab.
3. Select **Print** to access the **Print pane**.
4. Select **Print Selection** from the **print range** drop-down menu.
5. You can see what your selection will look like on the page in **Print Preview**.
6. Click the **Print** button.

You don't have to wait until you're ready to print to **set the print area**. You can also set it from the **Page Layout** tab in advance. This will place a dotted line around your selection, so you can see which cells are going to print while you work. To do this, just **select** the cells you want to print, go to the **Page Layout** tab, and choose **Print Area**.

To Change Page Orientation:

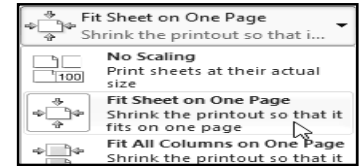


Change the page orientation to Portrait to orient the page vertically or Landscape to orient the page horizontally. Portrait is useful for worksheets needing to fit more rows on one page, and Landscape is useful for worksheets needing to fit more columns on one page.

1. Click the **File** tab.
2. Select **Print** to access the **Print pane**.
3. Select either **Portrait Orientation** or **Landscape Orientation** from the **orientation** drop-down menu.
4. Your page orientation is changed.

To Fit a Worksheet on One Page:

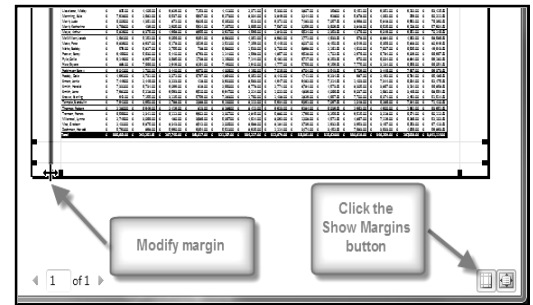
1. Click the **File** tab.
2. Select **Print** to access the **Print pane**.
3. Select **Fit Sheet on One Page** from the **scaling** drop-down menu.
4. Your worksheet is reduced in size until it fits on one page. Remember that if it is scaled too small it might be difficult to read.



To Modify Margins While in Print Preview:

The margins of your worksheet may need to be adjusted to make data fit more comfortably on the printed page. You can adjust the margins in Print Preview.

1. Click the **File** tab.
2. Select **Print** to access the **Print pane**.
3. Click on the **Show Margins** button. Your margins will appear.
4. Hover your mouse over one of the **margin markers** until the **double arrow** appears.
5. **Click and drag** the margin to your desired location.
6. Release the mouse. The margin is modified.

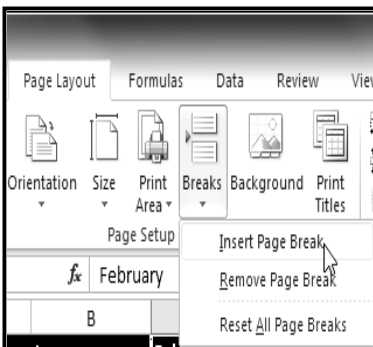


To Use Print Titles:

Imagine how difficult it would be to read a worksheet if the column and row headings only appeared on the first page. The Print Titles command allows you to select specific rows and columns to appear on each page.

1. Click the **Page Layout** tab.
2. Select the **Print Titles** command.
3. The **Page Setup** dialog box appears. Click the icon at the end of the **Rows to repeat at top** field.
4. Your mouse becomes the small **selection arrow**. Click on the rows you want to appear on each printed page. The **Rows to repeat at top** dialog box will record your selection.
5. Click the icon at the end of the **Rows to repeat at top** field.
6. Repeat for **Columns to repeat at left**, if necessary.
7. Click **OK**. You can go to **Print Preview** to see how each page will look when printed.

To Insert a Break:



1. Click the **Page Layout** tab.
2. Determine the placement of the break by clicking on the **row below, cell below**, or **column to the right** of where you want the break to appear. For example, select column C and a break will appear after column B.
3. Select the **Insert Page Break** command from the **Breaks** drop-down menu.
4. The break is inserted. You can go to **Print Preview** to confirm it appears in the correct place on the page.

	A	B	C
1	Employee Name	January	February
2	Allenson, Carol	\$ 5,897.00	\$ 2,356.00
3	Altman, Zoey	\$ 666.00	\$ 6,210.00
4	Aurelio, Fies	\$ 5,889.00	\$ 9,385.00
5	Au	\$ 8,765.00	\$ 9,258.00
6	Be	\$ 1,928.00	\$ 6,595.00
7	Bi	\$ 4,108.00	\$ 7,172.00
8	Ca	\$ 6,302.00	\$ 358.00
9	Carlton, Potter	\$ 3,647.00	\$ 2,858.00
10	Chantay, Marjan	\$ 7,916.00	\$ 2,611.00
11	Collin, Bevell	\$ 8,985.00	\$ 539.00
12	Collman, Harry	\$ 5,019.00	\$ 4,573.00

Unit-IV- MS-PowerPoint 2010

Lesson: 1

Getting Started with PowerPoint

PowerPoint 2010 is presentation software that allows you to create dynamic slide presentations that may include animation, narration, images, videos and more. Microsoft PowerPoint, usually just called PowerPoint, is a commercial presentation program developed by Microsoft. It is part of the **Microsoft Office** suite which also includes another two office tools - Microsoft Excel and Microsoft Word. PowerPoint uses a graphical approach to presentations in the form of slide shows that accompany the oral delivery of the topic. The current versions are Microsoft PowerPoint 2010 for Windows and 2011 for Mac.

What is Microsoft PowerPoint used for?

The main purpose of MS PowerPoint is to enable the user to create dynamic, informational slide shows through the use of text, graphics, and animation. Slide shows created with the software are often displayed on projection screens for business, training, or educational presentations, although they can be distributed as stand-alone files. Additionally, the slides can be arranged and printed as handouts for reference.

New features in PowerPoint 2010

With Microsoft PowerPoint, you can make charts, tables, and macros, and insert images, audio, video, and other multimedia files. With the new release of Microsoft Office 2010, many advanced features were added in PowerPoint 2010.

- Embed and edit video from within PowerPoint. Now you can add fades, formatting effects, bookmark scenes, and trim videos to give your presentations a professional multimedia experience. And since the embedded videos become part of your PowerPoint presentation, you don't have to manage additional files when sharing with others.
- Use new and improved picture editing tools. You can use picture editing tools including versatile artistic effects and advanced correction, color, and cropping tools, to fine-tune every picture in your presentation to look its absolute best. Even, dynamic 3-D slide transitions and more realistic animation effects can be added to grab your audience's attention.
- Work together more successfully. If you are one of the many people who work with others on presentations and projects, PowerPoint 2010 is the perfect tool for you. The new added co-authoring capabilities to edit the same presentation allows you to work with people in different locations at the same time. You can even communicate as you work, directly from PowerPoint.
- Access and share your content from more places. Your ideas, deadlines, projects, and work emergencies don't always occur conveniently when you are at your desk. Fortunately, you now have the power to get things done when and where you need to, from the Web with Microsoft PowerPoint Web App or even from your smartphone with Microsoft PowerPoint Mobile.

Create a slide show

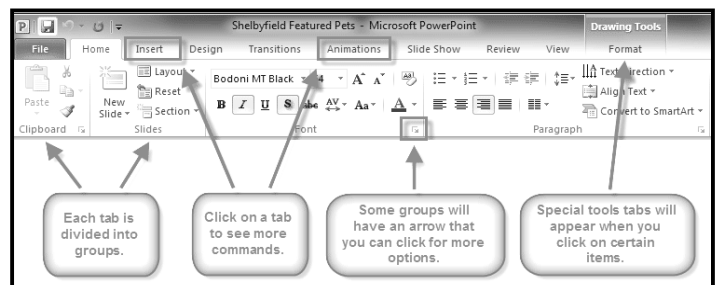
When beginning a new slide show, PowerPoint provides an array of templates to choose from. Experienced users with a specific look in mind can start with a blank presentation for setting attributes, such as colors and fonts, to their own specifications. After creating the initial file, the next step is to create a slide, which can be done by using an auto layout, or a blank screen in order to add components manually. You can then choose to add a combination of text and graphics to suit the needs of the presentation, and apply animation to either of these elements to create a dynamic effect. You can add as many slides and make them as content-rich as your system can handle; there are no limits imposed in the software itself.

The Ribbon and the Quick Access Toolbar are where you will find the commands you need to do common tasks in PowerPoint. If you are familiar with PowerPoint 2007, you will find that the main difference in the PowerPoint 2010 Ribbon is that commands such as Open and Print are now housed in Backstage view.

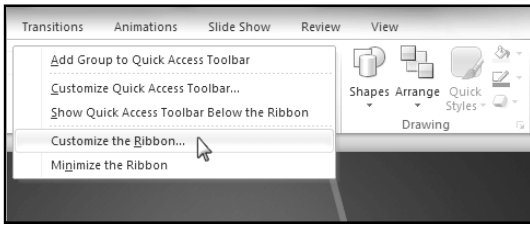
The Ribbon

The Ribbon contains multiple tabs, each with several groups of commands. Some tabs, like "Drawing Tools" or "Table Tools," may appear only when you are working with certain items like images or tables. In addition, you can add your own customized tabs that contain your favorite commands.

Certain programs, such as **Adobe Acrobat Reader**, may install additional tabs to the Ribbon. These tabs are called **Add-ins**.



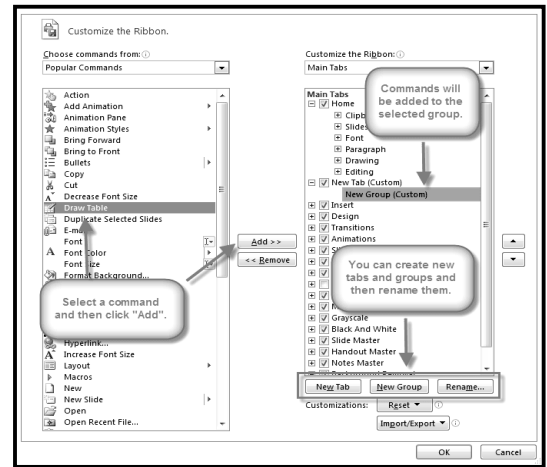
To Customize the Ribbon:



You can customize the Ribbon by creating your own tabs that house your desired commands. Commands are always housed within a group, and you can create as many groups as you need to keep your tabs organized. In addition, you can even add commands to any of the default tabs, as

long as you create a custom group within the tab.

1. Right-click the Ribbon and select **Customize the Ribbon**. A dialog box will appear.
2. Click **New Tab**. A new tab will be created with a new group inside it.
3. Make sure the new group is selected.
4. Select a command from the list on the left, then click **Add**. You can also drag commands directly into a group.
5. When you are done adding commands, click **OK**. If you do not see the command you want, click on the **Choose commands** drop-down box and select **All Commands**.



To Minimize and Maximize the Ribbon:

The Ribbon is designed to be responsive to your current task and easy to use, but if you find it is taking up too much of your screen space, you can minimize it.

1. Click the **arrow** in the upper-right corner of the Ribbon to minimize it.
2. To maximize the Ribbon, click the arrow again.

When the Ribbon is minimized, you can make it reappear by clicking on a tab. However, the Ribbon will disappear again when you are not using it.

The Quick Access Toolbar

The Quick Access Toolbar is located above the Ribbon, and it lets you access common commands no matter which tab you are on. By default, it shows the Save, Undo, and Repeat commands. You can add other commands to make it more convenient for you.

To Add Commands to the Quick Access Toolbar:

1. Click the **drop-down arrow** to the right of the **Quick Access Toolbar**.
2. Select the **command** you wish to add from the drop-down menu. To choose from more commands, select **More Commands**.

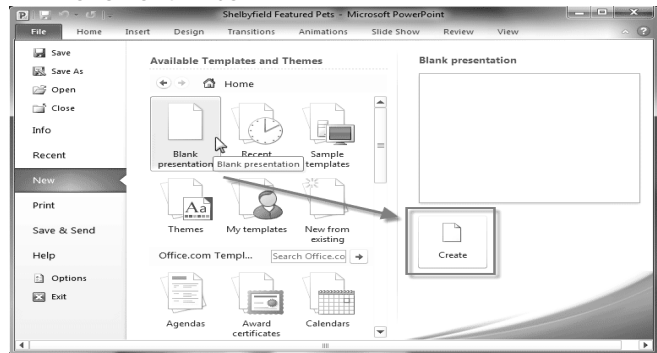


To Get to Backstage View:

1. Click the **File** tab.
2. You can choose an option on the left side of the page.
3. To get back to your document, just click any tab on the Ribbon.

To Create a New, Blank Presentation:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **New**.
3. Select **Blank presentation** under **Available Templates and Themes**. It will be highlighted by default.
4. Click **Create**. A new, blank presentation appears in the PowerPoint window.



To save time, you can create your presentation from an **Office.com template**, which you can also select under Available Templates and Themes.

To Open an Existing Presentation:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **Open**. The Open dialog box appears.
3. Select your desired presentation and then click **Open**.

If you have opened the existing presentation recently, it may be easier to choose **Recent** from the **File** tab instead of **Open** to search for your presentation.

Lesson: 2

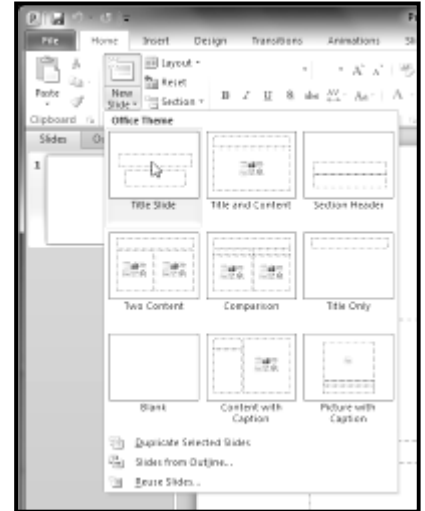
Slide Basic

PowerPoint includes all the features you need to produce professional-looking presentations. When you create a PowerPoint presentation, it is made up of a series of slides. The slides contain the information you want to communicate with your audience. This information can include text, pictures, charts, video, sound, and more. Before you begin adding information to slides, you need to know the basics of working with slides.

About Slides



Slides contain placeholders, which are areas on the slide that are enclosed by dotted borders. Placeholders can contain many different items, including text, pictures, charts, and more. Some placeholders have placeholder text, or text that you can replace. They also have thumbnail-sized icons that represent specific commands such as Insert Picture, Insert Chart, and Insert Clip Art. In PowerPoint, hover over each icon to see the type of content you can insert in a placeholder.



About Slide Layouts

The placeholders are arranged in different layouts that can be applied to existing slides, or chosen when you insert a new slide. A slide layout arranges your content using different types of placeholders, depending on what kind of information you might want to include in your presentation. In the example above, the layout is called Title and Content and includes title and content placeholders. While each layout has a descriptive name, you can also tell from the image of the layout how the placeholders will be arranged.

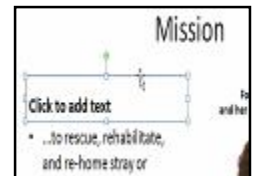
To Change the Layout of an Existing Slide:

1. Select the slide you wish to change.
2. Click the **Layout** command in the **Slides** group on the **Home** tab. A menu will appear with your options.
3. Choose a layout from the menu. The slide will change in the presentation.

To Delete a Placeholder:

You can easily customize your layout by deleting unwanted or "extra" placeholders from any slide.

1. Position your mouse on the **dotted border** of the placeholder so it changes to a **cross with arrows**.
2. Click the border to select it.
3. Press **Backspace** or **Delete** on your keyboard. The placeholder will be removed from the slide.



To Add a Text Box:

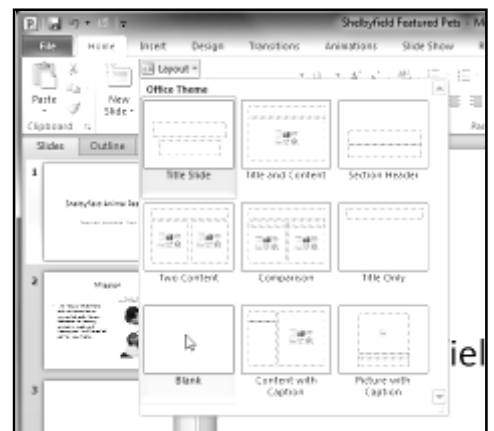
Text boxes allow you to add to your current layout, so you can place text wherever you want on your slide.

1. From the Insert tab, click the Text Box command.
2. Your cursor will turn into an **upside-down cross**.
3. Click, hold, and **drag** your mouse to draw a text box. A text box will appear.

To Use a Blank Slide:

For more control over your content, you may prefer a blank slide (a slide without placeholders) over one of the existing layouts. Blank slides can be customized by adding your own text boxes, pictures, charts, and more.

- Select **Blank** from the menu of **layout** options.



To Insert a New Slide:

1. From the **Home** tab, click the bottom half of the **New Slide** command to open the menu of slide layout options.
2. Select the slide you want to insert.
3. A new slide will be added your presentation.

To instantly add a slide that uses the same layout as the one you have selected, simply click the top half of the **New Slide** command.

**To Copy and Paste a Slide:**

1. On the **Slides** tab in the left pane, select the slide you wish to copy.
2. Click the **Copy** command on the **Home** tab. You can also right-click your selection and choose **Copy**.
3. In the left pane, click just below a slide (or between two slides) to choose the location where you want the copy to appear. A **horizontal insertion point** will mark the location.
4. Click the **Paste** command on the Home tab. You can also right-click and choose **Paste**. The copied slide will appear. To select multiple slides, press and hold **Ctrl** on your keyboard, and click the slides you wish to select.

To Duplicate a Slide:

An alternative to Copy and Paste, Duplicate copies the selected slide and, in one step, pastes it directly underneath. This feature does not allow you to choose the location of the copied slide (nor does it offer Paste Options for advanced users), so it is more convenient for quickly inserting similar slides.

1. Select the slide you wish to duplicate.
2. Click the **New Slide** command.
3. Choose **Duplicate Selected Slides** from drop-down menu.
4. A copy of the selected slide appears underneath the original.

To Delete a Slide:

1. Select the slide you wish to delete.
2. Press the **Delete** or **Backspace** key on your keyboard.

To Move a Slide:

1. Select the slide you wish to move.
2. Click, hold, and **drag** your mouse to a new location. A horizontal insertion point will mark the location.
3. **Release** the mouse button. The slide will appear in the new location.

About Slide Views

It is important that you be able to access the different slide views and use them for various tasks. The slide view commands are located on the bottom right of the PowerPoint window in Normal View.

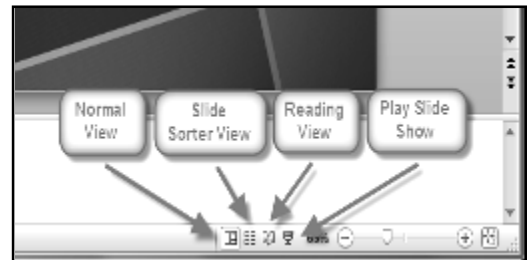
Normal View: This is the default view where you create and edit your slides. You can also move slides in the Slides tab in the pane on the left.

Slide Sorter View: In this view, miniature slides are arranged on the screen. You can drag and drop slides to easily reorder them, and see more slides at one time. This is a good view to use to confirm that you have all the needed slides and that none have been deleted.

Reading View: This view fills most of the computer screen with a preview of your presentation. Unlike Slide Show View, it includes easily accessible buttons for navigation, located at the bottom right.

Slide Show View: This view completely fills the computer screen, and is what the audience will see when they view the presentation. Slide Show View has an additional menu that appears when you hover over it, allowing you to navigate through the slides, and access other features you can use during a presentation.

Use the keys on your keyboard (including the arrow keys, **Page Up** and **Page Down**, **space bar**, and **Enter**) to move through the slides in Slide Show view. Press the **Esc key** to end the slide show.

**To View an Outline of Your Presentation:**

The Outline tab shows your slide text in outline form. This allows you to quickly edit your slide text, and view the contents of multiple slides at once.

1. Click the **Outline** tab in the left pane.
2. An outline of your slide text appears
3. Type directly in the pane to make changes to your text.

To Organize Slides into Sections:

You can organize your slides into sections to make your presentation easier to navigate. Sections can be collapsed or expanded in the left pane, and named for easy reference. In this example, we will add two sections: one for dogs that are available for adoption, and another for cats and other pets.

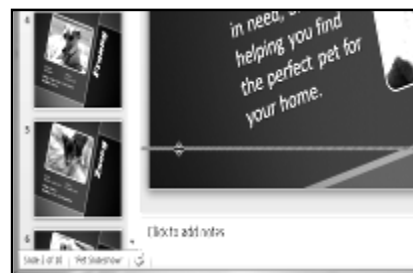
1. Select the slide that you want to begin your first section.
2. From the **Home** tab, click the **Section** command.
3. Choose **Add Section** from the drop-down menu.
4. An **Untitled Section** appears in the left pane.
5. To rename the section while it is still selected, click the **Section** command, and choose **Rename Section** from the drop-down menu.
6. Enter your new section name in the dialog box. Then click **Rename**.
7. Repeat to add as many sections as you need.
8. In the left pane, click the **arrow** next to a section name to collapse or expand it.

Adding Notes to Slides

PowerPoint gives you the ability to add notes to your slides, often called speaker notes, to help you deliver or prepare for your presentation. You can enter and view your speaker notes using the Notes pane or the Notes Page View.

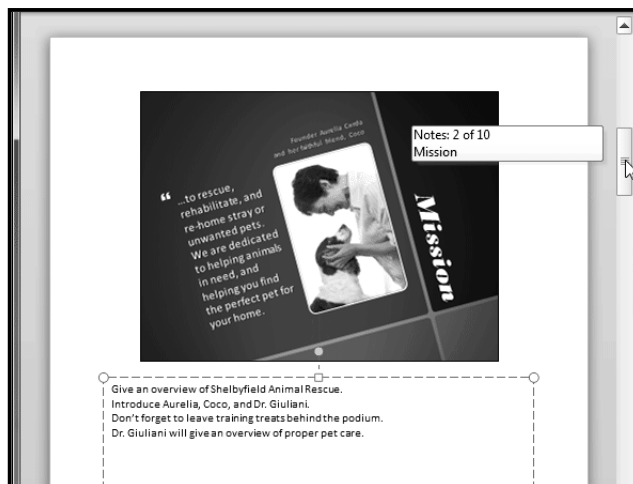
To Use the Notes Pane:

1. Locate the **Notes** pane at the bottom of the screen, directly below the **Slide** pane.
2. Click and **drag** the edge of the pane to make it bigger or smaller, if desired.
3. Type your notes in the **Notes** pane.



To Use the Notes Page View:

1. Go to the **View** tab.
2. Click the **Notes Page** command in the **Presentation Views** group.
3. Type your notes in the **text box**, or use the **scroll bar** to review your slides.



Lesson: 3

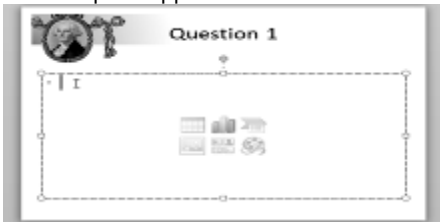
Inserting Text, Themes & Images

Inserting Text

It is important to know how to perform basic tasks with text, Theme & Images, when working in PowerPoint; you will learn the basics of working with text, Themes & Images including how to insert, delete, and move text, Images & Themes.

To Insert Text:

1. Click the **placeholder** or **text box** where you want to insert text.
2. The insertion point appears.



3. Type directly into the placeholder or text box. Some placeholders automatically format your text in a **bulleted list**. This is because bulleted lists are so frequently used in PowerPoint. To remove the bullets, deselect the **Bullets** command in the **Paragraph** group on the **Home** tab.

To Delete Text:

1. Place the **insertion point** next to the text you wish to delete.
2. Press the **Backspace** key on your keyboard to delete text to the **left** of the insertion point.
3. Press the **Delete** key on your keyboard to delete text to the **right** of the insertion point.

To Select Text:

1. Place the **insertion point** next to the text you wish to select.
2. Click the mouse button, and, while holding it down, drag the mouse over the text.
3. Release the mouse. The text will be selected. A **highlighted box** will appear over the selected text. When you select text in PowerPoint, a **hover toolbar** with formatting options appears. This makes formatting commands easily accessible, which may save you time. If the toolbar does not appear at first, try moving the mouse over the selection.

To Copy and Paste Text:

1. Select the text you wish to copy.
2. Click the **Copy** command on the Home tab. You can also right-click your selection and choose **Copy**.
3. Place your insertion point where you wish the text to appear.
4. Click the **Paste** command on the Home tab. The text will appear.

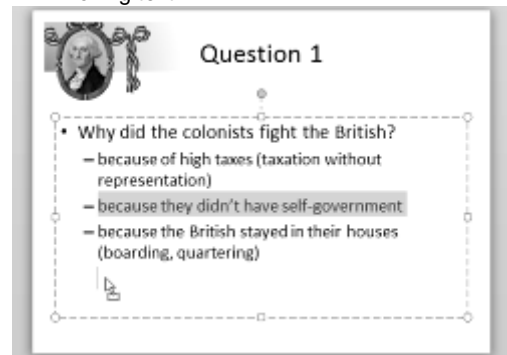
To Cut and Paste Text:

1. Select the text you wish to cut.
2. Click the **Cut** command on the **Home** tab. You can also right-click your selection and choose **Cut**.
3. Place your insertion point where you wish the text to appear.
4. Click the **Paste** command on the Home tab. The text will reappear.

You can also cut, copy, and paste by right-clicking your slide and choosing the desired action from the drop-down menu. When you use this method to paste, you can choose from four options that determine how the text will be formatted: **Use Destination Theme, Keep Source Formatting, Picture** and **Keep Text Only**. You can hover the mouse over each icon to see what it will look like before you click it.

To Drag and Drop Text:

1. Select the text you wish to copy.
2. Click, hold, and **drag** your mouse to the location where you want the text to appear. The cursor will have a rectangle under it to indicate that you are moving text.



3. Release the mouse button, and the text will appear.

If text **does not appear** in the exact location you wish, you can press the **Enter** key on your keyboard to move the text to a new line.

Find and Replace

Find and Replace is another technique that can be used to edit text. Find and Replace allows you to search all of your slides for a specific word or phrase (for example, "English"), then replace it with another word or phrase (for example, "British").

To Add a Text Box:


Text can be inserted into both **placeholders** and **text boxes**. A **placeholder** is a kind of text box, but is unique because it is part of the **slide layout**, and often contains

formatting specific to the slide (for example, a larger font size for the title of your presentation). Inserting an extra **text box** allows you to **add** to the slide layout, so you can include as much text as you want.

1. From the **Insert** tab, click the **Text Box** command.
2. Your cursor will turn into an **upside-down cross**.
3. Click the area on your slide where you want to add a text box. A text box will appear with an **insertion point** inside.




To Move a Placeholder or Text Box:

1. Click the box you would like to move.
2. Position your mouse on the **border** of the box so it changes to a **cross with arrows** .
3. Click and hold the mouse button as you **drag** the box to the desired location.
4. Release the mouse button. The box will be moved.

To rotate the box, click and drag on the green circle at the top of the box.

To Resize a Placeholder or Text Box:

1. Click the box you wish to resize.
2. Position your mouse over any one of the **sizing handles** that appear on the corners and sides of the box. The cursor will become a pair of **arrows** .
3. Click, hold, and **drag** your mouse until the text box is the desired size.
4. Release the mouse button. The box will be resized.

To Insert a Bulleted List:

1. Select the text box (or specific text) that you want to format as a bulleted list.
2. Click the **Bullets** command in the **Paragraph** group on the **Home** tab.
3. A bulleted list will appear.

To Change Horizontal Text Alignment:

1. Select the text you wish to modify.
2. Select one of the four **alignment options** in the **Paragraph** group.
 - **Align Text Left:** Aligns all the selected text to the left margin.
 - **Center:** Aligns text an equal distance from the left and right margins.
 - **Align Text Right:** Aligns all the selected text to the right margin.
 - **Justify:** Justified text is equal on both sides and lines up equally to the right and left margins. Many newspapers and magazines use full-justification.

The alignment commands align the text within the placeholder or text box it is in, not across the slide.

To Change Vertical Text Alignment:

1. Select the text your wish to modify.
2. Click the **Align Text** command in the **Paragraph** group. A menu will appear.
3. Choose to align the text at the **Top, Middle,** or **Bottom** of the text box.

To Change Text Direction:

1. Select the text your wish to modify.
2. Click the **Text Direction** command in the **Paragraph** group. A menu will appear.
3. Choose for the direction of the text to be **Horizontal, Rotated,** or **Stacked**.

Applying a Theme

A theme is a predefined combination of colors, fonts, and effects that can be applied to your presentation. PowerPoint includes built-in themes that allow you to easily create professional-looking presentations without spending a lot of time formatting.

A theme is a set of colors, fonts, effects, and more that can be applied to your entire presentation to give it a consistent, professional look. You've already been using a theme, even if you didn't know it: the default Office theme, which consists of a white background, the Calibri font, and primarily black text. Themes can be applied or changed at any time.

Theme Elements

Every PowerPoint theme, including the default Office theme, has its own theme elements. Those elements are:

- **Theme Colors** (available from every **Color** menu)
- **Theme Fonts** (available from the **Font** menu)
- **Shape Styles** (available in the **Format** tab when you click on a shape)

Why Use Theme Elements?

If you're using theme elements, you'll probably find that your presentation looks pretty good. All of the colors will work well together, which means you won't have to spend as much time formatting your presentation. But there's another great reason to use theme elements: when you switch to a different theme, **all of those elements will update** to reflect the new theme. You can drastically change the look of your presentation in just a couple clicks.

Remember, the colors and fonts will only update if you're using **Theme Fonts** or **Theme Colors**. If you choose one of the **Standard Colors** or any of the **Fonts** that are not **Theme Fonts**, then your text will not change when you change the theme. That can be useful if you're creating a logo or title that always needs to look the same.

Themes and Slide Layouts

As you can see from the two different **Title Slides** above, themes also affect the various **slide layouts**.

If you apply a theme before you start building your presentation, you will be able to arrange your content to fit

the layouts you have to choose from. If you apply the theme after, the text boxes and placeholders may move depending on the theme you choose.

Applying Themes

To Insert an Image From a File:

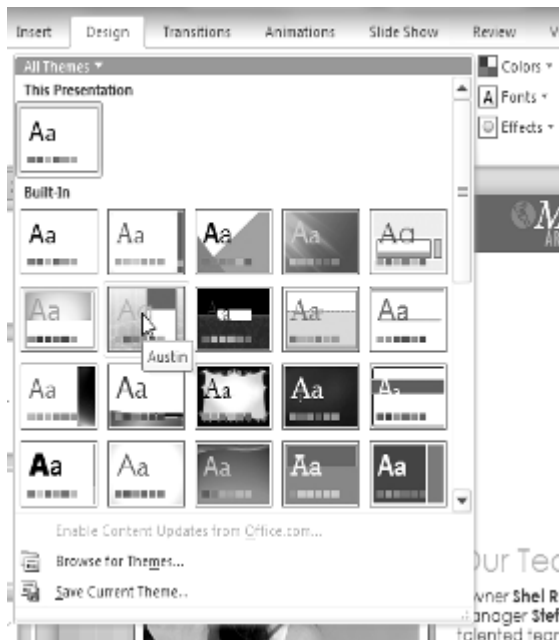
You will need to know how to **apply** a theme and how to switch to a different theme if you want to use this feature to create presentations. All of the themes that are included in PowerPoint are located in the **Themes** group on the **Design** tab. Themes can be applied or changed at any time.

To Apply a Theme:

1. Go to the **Design** tab.
2. Locate the **Themes** group. Each image represents a theme.



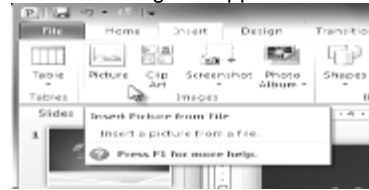
3. Click the drop-down arrow to access more themes.
4. Hover over a theme to see a **live preview** of it in the presentation. The name of the theme will appear as you hover over it.
5. Click a theme to apply it to the slides.



Inserting Images

Adding images to your presentations makes them more interesting and engaging. Pictures, clip art and screenshots can be inserted into PowerPoint to help you effectively communicate your ideas to your audience.

1. Select the **Insert** tab.
2. Click the **Picture** command in the **Images** group. The Insert Picture dialog box appears.



3. Select the desired image file and click **Insert**.
4. The picture will appear in your slide.

You can also select the **Insert Picture from File** command in a **placeholder** to insert images.



To Locate Clip Art:

1. Select the **Insert** tab.
2. Click the **Clip Art** command in the **Images** group.
3. The clip art options appear in the **task pane** to the right of the document.
4. Enter keywords in the **Search for:** field that are related to the image you wish to insert.
5. Click the drop-down arrow in the **Results should be:** field.
6. Deselect any types of media you do not wish to see.
7. If you would like to also search for clip art on Office.com, place a checkmark next to **Include Office.com content**. Otherwise, it will just search for clip art on your computer.
8. Click **Go**.

To Insert Clip Art:

1. Review the results from a clip art search in the **Clip Art** pane.
2. Select the desired image.
3. The clip art will appear in your slide.



You can also select the **Insert Clip Art from File** command in a **placeholder** to insert clip art.

Inserting Screenshots

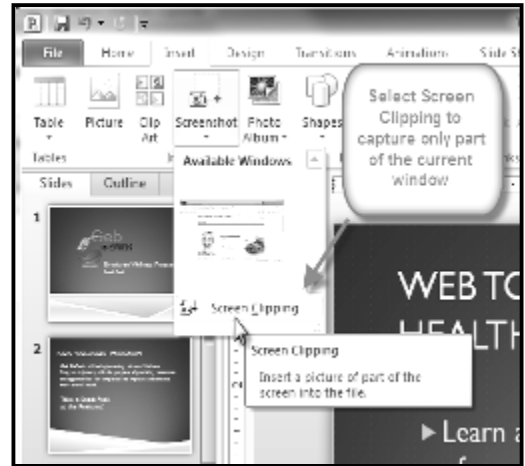
Screenshots are pictures that capture the visible windows and items displayed on your computer screen. They may include an open window of a website, items on your desktop or an open program, like the PowerPoint images displayed in this tutorial. These images can be useful for explaining or displaying computer programs, functions and websites. PowerPoint allows you to capture an image of an entire window or a **screen clipping** of part of a window.

To Insert Screenshots of a Window:


1. Select the **Insert** tab.
2. Click the **Screenshot** command in the **Images** group.
3. The **Available Windows** from your desktop will appear. Select the window you would like to capture as a screenshot.
4. The screenshot will appear in your slide.

Inserting a Screen Clipping from a Window:

1. Select the **Insert** tab.
2. Click the **Screenshot** command and select **Screen Clipping**.
3. A faded view of your current desktop will appear and your cursor will turn into a cross shape **+**.
4. Click, hold and drag on the area of the window that you want to capture.
5. The screen clipping will appear in your slide.




To Resize an Image:

1. Click on the image.
2. Position your mouse over any one of the **corner sizing handles**. The cursor will become a pair of directional arrows .
3. Click, hold, and **drag** your mouse until the image is the desired size.
4. Release the mouse. The image will be resized.

The side sizing handles change the image's size, but do not keep the same proportions. If you want to keep the image's proportions, always use the corner handles.

To Move an Image:

1. Click on the image. The cursor will turn into a cross with arrows. 
2. While holding down the mouse button, **drag the image** to the desired location.
3. Release the mouse button. The box will be moved.

To rotate the image, click and drag on the green circle located at the top of the image.

Lesson: 4

Inserting WordArt, Shapes, Tables & Charts

Inserting Word Arts

PowerPoint allows you to add effects to the text inside of a text box, which is known as WordArt. For the most part, the types of effects you can add are the same as the ones you can add to shapes and text boxes (shadow, bevel, etc.). However, with WordArt, you can also Transform the text to give it a wavy, slanted, or inflated look.

To Apply a WordArt Style to Text:

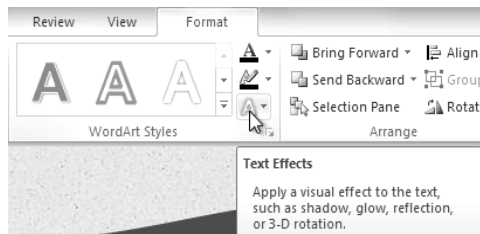
A **WordArt Style** will automatically apply several effects to your text at once. You can then refine the look of your text by adding or modifying text effects.

1. Select the text box, or select some text inside of the text box. The **Format** tab will appear.
2. Click the **Format** tab.
3. In the **WordArt Styles** group, click the **More** drop-down arrow to view all of the available styles.
4. Select the desired style preset to apply the style to your text.



To Add or Modify Text Effects:

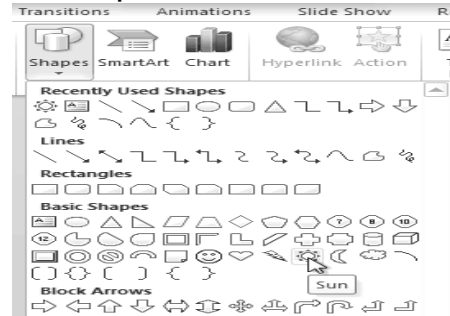
1. Select the text box, or select some text inside of the text box. The **Format** tab will appear.
2. Click the **Format** tab.
3. Click the **Text Effects** command in the **WordArt Styles** group. A drop-down menu will appear showing the different **effect categories**.
4. Hover over an effect category. A drop-down menu will appear. You can hover the mouse over the different presets to see a live preview.
5. Select the desired effect preset. The effect will be applied to your text. If you want, you can combine several different effects.



In the WordArt Styles group, you can also use the **Text Fill** and **Text Outline** drop-down boxes to modify the fill and outline color.

Inserting a Shape

1. Select the **Insert** tab.
2. Click the **Shapes** command.



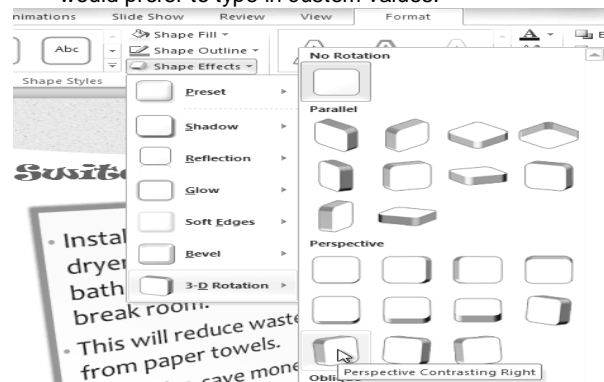
3. Select a shape from the drop-down menu.
4. Click and drag the mouse until the shape is the desired size.
5. Release the mouse button.

3-D Effects to Shapes

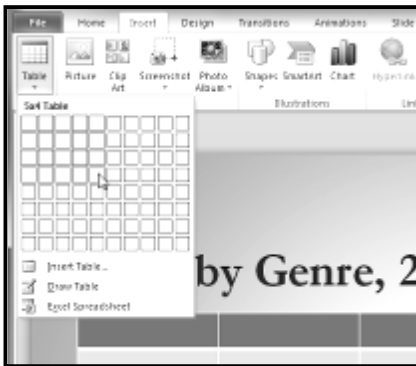
There are two kinds of effects that you can apply to your shapes and text boxes to give them a 3-D appearance: **3-D Rotation** and **Bevel**. **3-D Rotation** gives the appearance that you are viewing the object from a different angle, and it can be applied to any shape. **Bevel** adds thickness and a rounded edge to shapes, but it doesn't work with every type of shape.

To Use 3-D Rotation:

1. Select the shape or text box.
2. Click on the **Format** tab.
3. Click **Shape Effects** from the **Shape Styles** group.
4. Hover the mouse over **3-D Rotation**. A drop-down menu will appear.
5. Select the desired **rotation preset** from the drop-down menu. You can also click **3-D Rotation Options** if you would prefer to type in custom values.



Inserting Table



1. On the **Insert** tab, click the **Table** command.
2. Hover your mouse over the diagram squares to select the number of **columns** and **rows** in the table.
3. Click your mouse. The table will appear on the slide.
4. You can now place the insertion point anywhere in the table to add text.



To make sure your table looks good with the slide layout, you can also insert a table using the **placeholder**. Click the **Insert Table** icon in the placeholder, then enter the desired number of rows and columns.

Inserting Charts

PowerPoint uses an **Excel worksheet** as a placeholder for entering chart data. Therefore, when you insert or edit a chart in PowerPoint, an Excel window will automatically open.

To Insert a Chart:



1. Select the **Insert** tab.
2. Click the **Insert Chart** command in the **Illustrations Group**. The **Insert Chart** dialog box will appear.
3. Select a **category** from the left pane of the dialog box and review the **charts** that appear in the center.
4. Select the desired chart.
5. Click **OK**. An Excel window will open with a placeholder for your data.

The placeholder source data

	Series 1	Series 2	Series 3	
1				
2	Category 1	4.3	2.4	2
3	Category 2	2.5	4.4	2
4	Category 3	3.5	1.8	3
5	Category 4	4.5	2.8	5

To resize chart data range, drag lower right corner of range.

The source data entered above will appear in the chart

Fiction Sales in 2010

Series 1
Series 2
Series 3

Category 1
Category 2
Category 3
Category 4

Lesson: 4

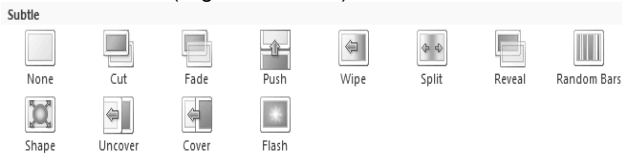
Transition & Slide Show

Transitions are motion effects that, when in Slide Show View, add movement to your slides as you advance from one slide to another. There are many transitions to choose from; each one allows you to control the speed, and even add sound.

About Transitions

You can apply different transitions to some or all of your slides to give your presentation a polished, professional look. There are three categories of unique transitions to choose from, all of which can be found on the **Transitions tab**:

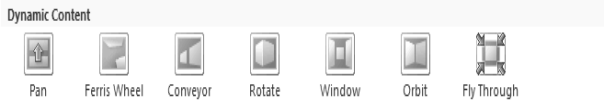
- **Subtle** (slight transitions)



- **Exciting** (strong transitions)

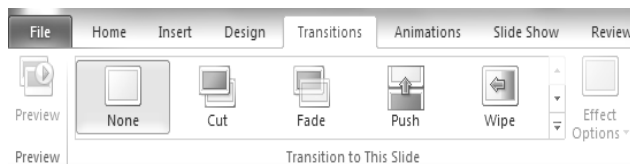


- **Dynamic Content** (strong transitions that affect only the content, such as text or images)



To Apply a Transition:

1. Select the **slide** you wish to modify.
2. Click the **Transitions** tab.
3. Locate the **Transition to This Slide** group. By default, **None** is applied to each slide.



4. Click the **More** drop-down arrow to display all the transitions.
5. Click a **transition** to apply it to the selected slide. This will automatically preview the transition as well.

When working with transitions, the Apply To All command in the Timing group can be used at any time to make your presentation uniform. Use this command with caution. Not only does it apply the same transition to every slide; it also applies the settings in the Timing group, which you may not want to be the same throughout your presentation.

To Preview a Transition:

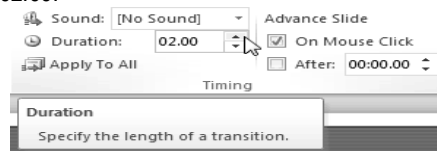
You can **preview** the transition for a selected slide at any time, using either of these two methods:

- Click the **Preview** command on the **Transitions** tab.
- Click the star **Play Animations** icon. The icon appears on the **Slides** tab in the **left pane** beside any slide that includes a transition.



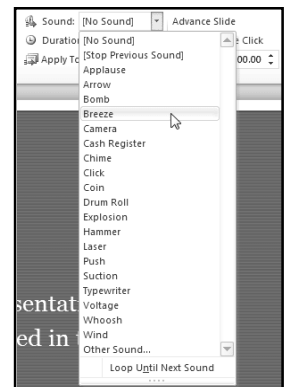
To Modify the Duration:

1. Select the slide that includes the **transition** you wish to modify.
2. In the **Duration** field in the **Timing** group, enter the amount of time you want the transition to take. In this example, we will specify the length as 2 seconds, or 02.00.



To Add Sound:

1. Select the slide that includes the **transition** you wish to modify.
2. Click the **Sound** drop-down menu in the **Timing** group.
3. You will hear the sound and see a live preview of the transition as you hover over each sound.
4. Click a **sound** to apply it to the selected slide.



To Remove a Transition:

1. Select the **slide** you wish to modify.
2. Choose **None** from the gallery in the **Transition to This Slide** group.
3. Repeat this process for each slide you want to modify.

To remove transitions from **all slides**, select a slide that uses **None**, and click the **Apply to All** command.

To Advance Slides Automatically:

Normally, in Slide Show View, you would advance to the next slide by clicking your mouse (or pressing Enter on your keyboard). Using the **Advance Slides** settings in the **Timing** group, you can set your presentation to advance on its own instead, and display each slide for a specific amount of time. This is useful for unattended presentations, such as at a trade show booth.

1. Select the slide you wish to modify.
2. Locate the **Timing** group on the **Transitions** tab.
3. Under **Advance Slide**, uncheck the box next to **On Mouse Click**.
4. In the **After** field, enter the amount of time you want to display the slide. In this example, we will advance the slide automatically after 1 minute 30 seconds, or 01:30:00.
5. Select another slide and repeat the process until all the desired slides have the appropriate timing.

Presenting Slide Show

Once your slide show is completed, you will need to learn how to present it to an audience. PowerPoint offers several tools and features that can assist you in making your presentation smooth, engaging and professional.

To Start Slide Show:

1. Select the **Slide Show** tab.
2. Click the **From Beginning** command in the **Start Slide Show** group to start the slide show with the first slide.



You can also start the slide show from the slide you prefer by selecting the slide and clicking on **From Current Slide** from the Start Slide Show group. This option is convenient if you only want to view or present certain slides.

Another option for starting the slide show is to select **Slide Show** view at the bottom of the window.

Starting Slide Show view option

To Advance and Reverse Slides:

1. Hover your mouse over the bottom right of the screen. A menu will appear.
2. Click on the **right arrow** to advance slides or click on the **left arrow** to reverse slides.

Advance or reverse slides

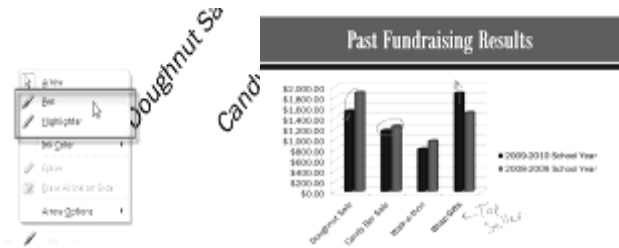
You may also use the **arrow keys** on your keyboard to advance and reverse slides.

To Stop or End Slide Show:

To end slide show, hover and select the **menu box options** command and click **End Show**. You can also press the **"Esc"** key at the top left of your keyboard to end show.

To Access the Pen or Highlighter:

1. Hover and click on the **pen menu option** in the bottom left of your screen.
2. Select **Pen** or **Highlighter** based on your preference.



3. Use the pointer to **draw on or mark your slides**.

From the same menu, you can also **change the color** of the pen or highlighter. Keep in mind that light color choices are best for the highlighter.

To Erase Ink Markings:

1. Hover and click on the **pen menu option** in the bottom left of your screen.
2. Select **Eraser** to erase individual ink markings or select **Erase All Ink on Slide** to erase all markings.

When you end your slide show, you also have the option to **Keep** or **Discard** (erase) any ink markings you made during your presentation.

To Jump to a Non-Adjacent Slide:

1. Hover and click on the **menu box option** in the bottom left of your screen.
2. Select **Go to Slide** and choose the slide you would like to jump to in your presentation.

To Access the Desktop:

Sometimes you may need to access the Internet or other files and programs on your computer during your presentation. PowerPoint allows you to access your desktop task bar without ending your presentation.

1. Hover and click on the **menu box option** in the bottom left of your screen.
2. Select **Screen** and then click on **Switch Programs**.
3. Your computer's **task bar** will appear. Choose a program you would like to switch to.

Menu Access Options:

You can also access any of the above menu items by **right-clicking** anywhere on the screen during your slide show.

- Switch between the pen pointer and mouse pointer by pressing **"Ctrl + P"** (pen) or **"Ctrl + M"** (mouse) on the keyboard.
- Press **"E"** on the keyboard to erase any ink markings while using the pen or highlighter.

To Access Slide Show Set Up Options:

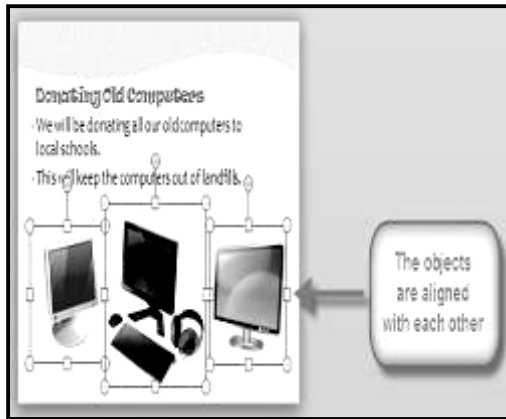
1. Select the **Slide Show** tab.
2. Click the **Set Up Show** command.
3. The Set Up Show dialog box will appear.
4. Click **OK** to apply the settings to the slide show.

Lesson: 5

Aligning & Animating Objects

In PowerPoint, each slide may have multiple items, such as pictures, shapes and text boxes. PowerPoint lets you arrange the objects the way you want by aligning, grouping, rotating, and ordering them in various ways.

Aligning Objects



You can **click** and **drag** objects to align them manually, but guesswork will never give you the best result. Additionally, aligning objects in this way can take a great deal of time. Luckily, PowerPoint provides you with several commands that allow you to **easily arrange** and position objects

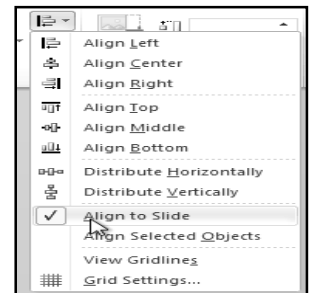
To Align Two or More Objects:

1. Click and drag your mouse to form a **selection box** around the objects you want to align. All of the objects will now have **sizing handles** to show that they are selected.
2. From the **Format** tab, click the **Align** command and select **Align Selected Objects**.
3. Click the **Align** command again and select one of the six **alignment options**.
4. The objects will align to each other based on the option that you have selected.

To Align Objects to the Slide:

Sometimes, you may wish to align one or more objects to a specific location within the slide, such as the top or bottom. You can do this by simply selecting the **Align to Slide** option before you align the objects.

1. Click and drag your mouse to form a **selection box** around the objects you want to align. All of the objects will now have **sizing handles** to show that they are selected.
2. From the **Format** tab, click the **Align** command and select **Align to Slide**.
3. Click the **Align** command again and select one of the six **alignment options**.
4. The objects will align to the slide based on the option that you have selected.



To Distribute Objects Evenly:

If you have arranged objects in a row or column, you may want them to be an equal distance from one another for a neater appearance. You can do this by distributing the objects horizontally or vertically.

1. Click and drag your mouse to form a **selection box** around the objects you want to align. All of the objects will now have **sizing handles** to show that they are selected.
2. From the **Format** tab, click the **Align** command.
3. From the menu, select **Distribute Horizontally** or **Distribute Vertically**.

To Change the Ordering by One Level:

1. Select an object. The **Format** tab will appear.
2. From the **Format** tab, click the **Bring Forward** or **Send Backward** command to change the object's ordering by **one level**. If the object overlaps with more than one other object, you may need to click the command **several times** to achieve the desired ordering.
3. The objects will reorder themselves.

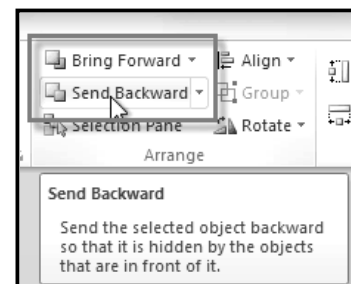
To Bring an Object to the Front or Back:

If you want to move an object behind or in front of several objects, it's usually faster to bring it to front or send it to back rather than clicking the ordering commands multiple times.

1. Select an object. The **Format** tab will appear.
2. From the **Format** tab, click the **Bring Forward** or **Send Backward** drop-down box.
3. From the drop-down menu, select **Bring to Front** or **Send to Back**.
4. The objects will reorder themselves.

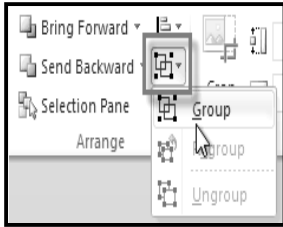
To Rotate an Object:

1. Select an object. The **Format** tab will appear.



- From the **Format** tab, click the **Rotate** command. A drop-down menu will appear.
- Select the desired **rotation option**.
- The object in the slide will rotate.

To Group Objects:



- Click and drag your mouse to form a **selection box** around the objects you want to align. All of the objects will now have **sizing handles** to show that they are selected.
- From the **Format** tab, click the **Group** command and select **Group**.



- The selected objects will now be grouped. There will be a **single box with sizing handles** around the entire group to show that they are one object.

If you select the objects and the Group command is disabled, it may be because one of the objects is inside a place holder. If this happens, try reinserting the images or cutting and pasting them into the same slide outside of any placeholders.

To Ungroup Objects:

- Select the grouped object that you wish to ungroup.
- From the **Format** tab, click the **Group** command and select **Ungroup**.
- The objects will be ungrouped.

Animating Text and Objects

In PowerPoint you can animate text and objects such as clip art, shapes, and pictures. Animation, or movement, on the slide can be used to draw the audience's attention to specific content or to make the slide easier to read.

The Four Types of Animations

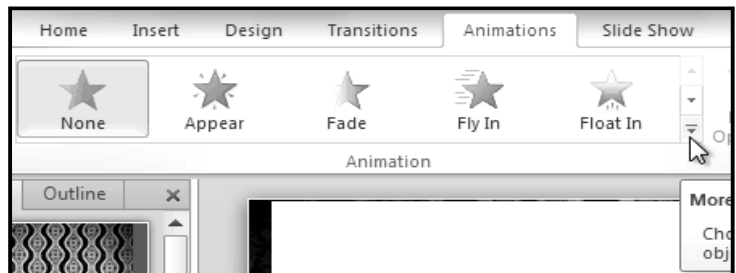
There are many different animation effects that you can choose from, and they are organized into four types:

- Entrance:** These control how the object enters the slide. For example, with the **Bounce** animation, the object will "fall" onto the slide and then bounce several times.
- Emphasis:** These animations occur while the object is on the slide, often triggered by a **mouse click**. For example, you can set an object to **Spin** when you click the mouse.
- Exit:** These control how the object exits the slide. For example, with the **Fade** animation, the object will simply fade away.
- Motion Paths:** These are similar to **Emphasis** effects, except the object moves within the slide along a pre-determined path, for example a **circle**.



To Apply an Animation to an Object:

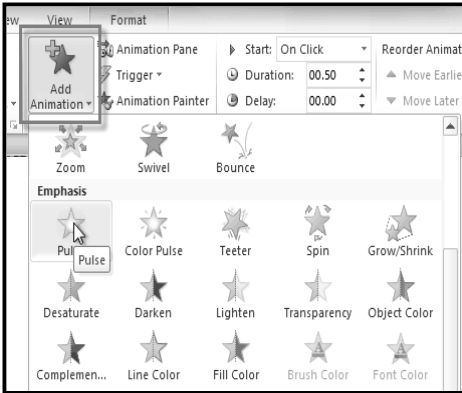
- Select an object.
- Click the **Animations** tab.
- In the **Animation** group, click the **More** drop-down arrow to view the available animations.
- Select the desired animation effect.
- The object will now have a small **number** next to it to show that it has an animation. Also, in the Slide pane, the slide will now have a **star** symbol next to it. At the bottom of the menu, you can access even more effects.



Effect Options

Some effects will have options that you can change. For example, with the Fly In effect, you can control which direction the object comes from. These options can be accessed from the **Effect Options** command in the **Animation group**.

To Add Multiple Animations to an Object:

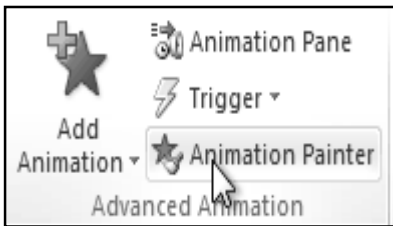


If you select a new animation from the menu in the Animation group, it will replace the object's current animation. However, you'll sometimes want to place more than one animation on an object, for example an Entrance and an Exit effect. To do this, you'll need to use the Add Animation command, which will allow you to keep your current animations while adding new ones.



1. Select the object.
2. Click the **Animations** tab.
3. In the **Advanced Animation** group, click the **Add Animation** command to view the available animations.
4. Select the desired animation effect.
5. If the object has more than one effect, it will have a different **number** for each effect. The numbers indicate the **order** in which the effects will occur.

To Copy Animations with the Animation Painter:



to the object.

In some cases, you may want to apply the same effects to more than one object. You can do that by copying the effects from one object to another using the Animation Painter.



1. Click on the object that has the effects that you want to copy.
2. From the **Animations** tab, click the **Animation Painter** command.
3. Click on the object that you want to copy the effects to. The effects will be applied

To Reorder the Animations:

1. Select the **number** of the effect that you want to change.
2. From the **Animations** tab, click the **Move Earlier** or **Move Later** commands to change the ordering.

To Preview Animations:

Any animation effects that you have applied will show up when you play the slide show. However, you can also quickly preview the animations for the current slide without viewing the slide show.

1. Navigate to the **slide** that you want to preview.
2. From the **Animations** tab, click the **Preview** command. The animations for the current slide will play.

The Animation Pane

The Animation Pane allows you to view and manage all of the effects that are on the current slide. You can modify and reorder effects directly from the Animation Pane, which is especially useful when you have a large number of effects.

To Open the Animation Pane:

1. From the **Animations** tab, click the **Animation Pane** command.
2. The Animation Pane will open on the right side of the window. It will show all of the effects for the current slide in the order that they will appear.

To Reorder Effects from the Animation Pane:

1. On the **Animation Pane**, click and drag an effect up or down.
2. The effects will reorder themselves.

To Preview Effects from the Animation Pane:

1. From the **Animation Pane**, click the **Play** button.
2. The effects for the current slide will play. On the right side of the Animation Pane, you will be able to see a **timeline** that shows the progress through each effect.
If the timeline is not visible, click the drop-down arrow for an effect and select **Show Advanced Timeline**.

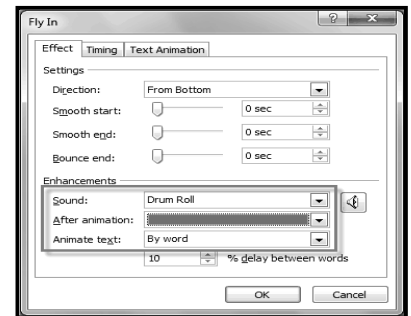
To Change an Effect's Start Option:

By default, an effect starts playing when you click the mouse during a slide show. If you have multiple effects, you will need to click multiple times to start each effect individually. However, by changing the start option for each effect, you can have effects that automatically play at the same time or one after the other.

1. From the **Animation Pane**, select an effect. A drop-down arrow will appear next to the effect.
2. Click the drop-down arrow. You will see three **start options**:
 - **Start on Click:** This will start the effect when the mouse is clicked.
 - **Start With Previous:** This will start the effect at the same time as the previous effect.
 - **Start After Previous:** This will start the effect when the previous effect ends.

To Open the Effect Options Dialog Box:

1. From the **Animation Pane**, select an effect. A drop-down arrow will appear next to the effect.
2. Click the drop-down arrow and select **Effect Options**. The Effect Options dialog box will appear.
3. From here, you can add various **enhancements** to the effect:
 - **Sound:** Adds a sound effect to the animation.
 - **After animation:** Changes the color or hides the object after the animation is over.
 - **Animate text:** If you are animating text, you can choose to animate it **all at once**, **one word at a time**, or **one letter at a time**.



Some effects have **additional options** that you can change. These will vary depending on which effect you have selected.

To Change the Effect Timing:

1. From the **Effect Options** dialog box, select the **Timing** tab.
2. From here, you can add a **delay** before the effect starts, change the **duration** of the effect, and control whether or not the effect **repeats**.
3. Select the desired start option.

When you **preview** the animations, all of the effects will play through automatically. To test effects that are set to **Start on Click**, you will need to play the slide show.

Lesson: 6

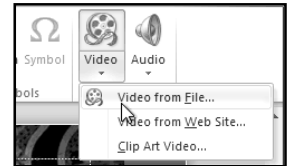
Inserting Video & Audio

Inserting Video

Videos are a great way to make your presentations more engaging for your audience. PowerPoint allows you to insert a video from a file on your computer or from a web site such as **YouTube**. You can even edit the video within PowerPoint and customize its appearance with a Video Style.

To Insert a Video from a File on Your Computer:

1. From the Insert tab, click the Video drop-down arrow and select Video from File.
2. Locate and select the desired video file and then click **Insert**.
3. The video will be added to the slide.

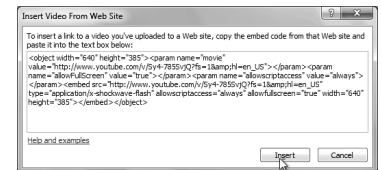
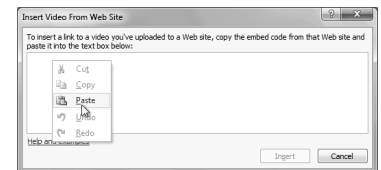


To Insert a Video from a Web Site:



Some web sites, like **YouTube or Hulu**, allow you to embed videos in a blog, Facebook profile, or other web page. In PowerPoint, you can embed videos in your slides in the same way. This feature only works with web sites that provide embed code, and the embed code from some sites may not work with PowerPoint.

1. On the web site that contains the video (YouTube, for example), locate and copy the **embed code**.
2. In PowerPoint, click the **Insert** tab.
3. Click the **Video** drop-down arrow, and select **Video from Web Site**.
4. In the space provided, right-click and select **Paste**. The embed code will appear.
5. Click **Insert**. The video will be added to the slide.



To Preview the Video:



1. Make sure the video is selected.
2. Click the **Play/Pause** button below the video. The video will start playing, and the **timeline** next to the Play/Pause button will begin to advance.
3. To jump to a different part of the video, click anywhere on the **timeline**.

If you are using an embedded video from a web site, you may need to click the **Play** button in the **Playback** tab in order to view the video's playback controls (the Play button is also located on the Format tab).

To Resize the Video:

1. Select the video. A box with **resizing handles** will appear around the video.
2. Click and drag any of the handles to resize the movie.

Edit and Format Video

The **Playback** tab has several options that you can use to edit your video. For example, you can **trim** your video so that it will only play an excerpt, add a **fade in** and **fade out**, and add **bookmarks** that allow you to jump to specific points in the video.

Most of the features on the Playback tab can only be used with videos that are inserted from a file. They will not work with embedded videos.

To Trim the Video:

1. From the **Playback** tab, click the **Trim Video** command. The Trim Video dialog box will appear.
2. Use the **green** and **red** handles to set the start time and end time.
3. To preview the video file, click the **Play** button.
4. Adjust the green and red handles again if necessary, and then click **OK**.

To Add a Fade In and Fade Out:

1. On the **Playback** tab, locate the **Fade In** and **Fade Out** fields.
2. Type in the desired values, or use the **up** and **down** arrows to adjust the times.

To Add a Bookmark:

1. Click the **Play/Pause** button to play the video, and when you have located the part that you want to bookmark, **pause** it. You can also click the **timeline** to locate the desired part of the video.
2. From the **Playback** tab, click **Add Bookmark**.
3. A small circle will appear on the timeline to indicate the bookmark.
4. You can now click the bookmark to jump to that location.

To Remove a Bookmark:

1. Select the bookmark.
2. From the **Playback** tab, click **Remove Bookmark**. The bookmark will disappear.

Video Options

There are other options that you can set to control how your video plays, and these are found in the **Video Options** group on the **Playback** tab:-

- **Volume:** Changes the audio volume in the video.
- **Start:** Controls whether the video file starts **automatically** or when the mouse is **clicked**.
- **Play Full Screen:** Lets the video fill the entire screen while it is playing.
- **Hide While Not Playing:** Hides the video when it is not playing.
- **Loop until Stopped:** Causes the video to repeat until it is stopped.
- **Rewind after Playing:** Causes the video to return to the beginning when it is finished playing.

To Create a Poster Frame:

1. Select the video.
2. Start playing the video. When you see the frame that you want to use, click the **Play/Pause** button to pause it.
3. From the **Format** tab, click the **Poster Frame** command. A drop-down menu will appear.
4. Select **Current Frame**.
5. The current frame will become the poster frame.

If you would prefer to use a picture from your computer, you can select **Image from file** from the menu.

To Apply a Video Style:

1. Select the video. The **Format** tab will appear.
2. Select the **Format** tab.
3. In the **Video Styles** group, click the **More** drop-down arrow to display all the video styles.
4. Select the desired style.
5. The new style will be applied to the video.

To Insert Audio from a File on Your Computer:

1. From the **Insert** tab, click the **Audio** drop-down arrow and select **Audio from File**.
2. Locate and select the desired audio file and then click **Insert**.
3. The audio file will be added to the slide.

To Record Audio:

1. From the **Insert** tab, click the **Audio** drop-down arrow and select **Record Audio**.
2. Type a **name** for the audio recording, if desired.
3. Click the red **Record** button to start recording.
4. When you're finished recording, click the **Stop** button.
5. To preview your recording, click the **Play** button.
6. When you're done, click **OK**. The audio file will be inserted into the slide.

To Insert Clip Art Audio:

1. From the **Insert** tab, click the **Audio** drop-down arrow and select **Clip Art Audio**. The Clip Art pane will appear on the right.
2. Enter keywords in the **Search for:** field and click **Go**.
3. The results will appear in the Clip Art pane. To preview an audio file, right-click the file and select **Preview/Properties**.
4. A dialog box will appear, and the audio file will start playing automatically (it may take a few seconds to load). To play it again, press the **Play** button.
5. When you're finished previewing the file, click **Close**.
6. Once you have found the audio file that you want to use, click it to insert it into the slide.

To Trim the Audio:

1. From the **Playback** tab, click the **Trim Audio** command. The Trim Audio dialog box will appear.
2. Use the **green** and **red** handles to set the start time and end time.
3. To preview the audio file, click the **Play** button.
4. Adjust the green and red handles again if necessary, and then click **OK**.

To Add a Fade In and Fade Out:

1. On the **Playback** tab, locate the **Fade In** and **Fade Out** fields.
2. Type in the desired values, or use the **up** and **down** arrows to adjust the times.

To Add a Bookmark:

1. Click the **Play/Pause** button to play the audio file, and when you have located the part that you want to bookmark, **pause** it. You can also click the **timeline** to locate the desired part of the audio file.
2. From the **Playback** tab, click **Add Bookmark**.
3. A small circle will appear on the timeline to indicate the bookmark.
4. You can now click the bookmark to jump to that location.

Audio Options

There are other options that you can set to control how your audio file plays, and these are found in the **Audio Options** group on the **Playback** tab.

- **Volume:** Changes the audio volume.
- **Start:** Controls whether the audio file starts **automatically** or when the mouse is **clicked**.
- **Hide During Show:** Hides the audio icon while the slide show is playing.
- **Loop until Stopped:** Causes the audio file to repeat until it is stopped.
- **Rewind after Playing:** Causes the audio file to return to the beginning when it is finished playing.

Lesson: 7

Advance Presentation Options

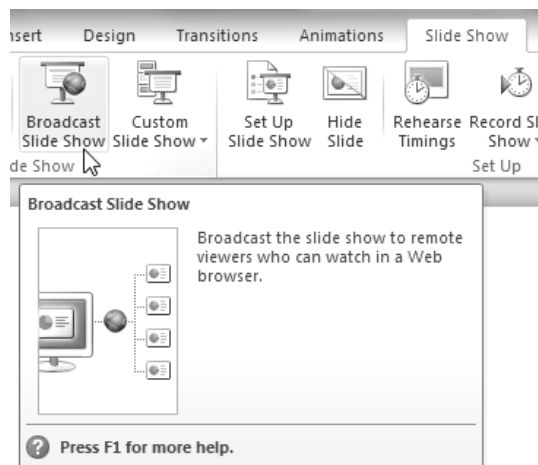
Broadcasting Your Slide Show to Remote Audiences

Broadcasting a presentation remotely is surprisingly easy. All you and your viewers need is an internet connection-- they don't even need PowerPoint. Once your viewers are connected, you can start the presentation as you normally would.

Please note that you cannot edit your presentation or mark it with a highlighter or pen while you are broadcasting a slide show. You also cannot use PowerPoint to speak to your audience. Plan to communicate with your viewers through teleconferencing, or pre-record your narration.

To Broadcast a Slide Show:

1. Select the **Slide Show** tab and locate the **Start Slide Show** group.
2. Click the **Broadcast Slide Show** command. The **Broadcast Slide Show** dialog box will open.



3. Click **Start Broadcast**. A status bar will appear as PowerPoint prepares your broadcast.



4. A link will appear. Select the link, and click **Copy Link** to make a copy of the link, or **Send in Email** to send an email with the link to your viewers.



5. Click **Start Slide Show**.
6. Present your slide show.
7. When you are finished, click **End Broadcast** in the yellow bar at the top of the screen.

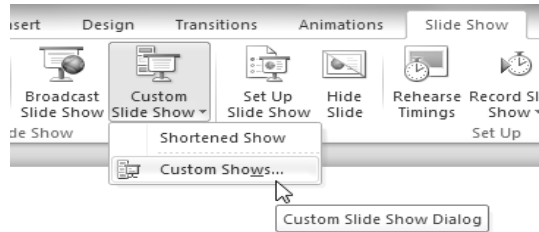


Customizing Your Slide Show

Sometimes you might want to **hide** a slide while still keeping it in your presentation. For instance, if you are presenting a slide show to more than one group of people, hiding or even rearranging certain slides could help you tailor your slide show to each group you present it to. You could also choose to create a shortened version of your slide show to present when you're short on time. The **Custom Slide Show** feature allows you to create and name different versions of your slide show with hidden or rearranged slides.

To Create a Custom Show:

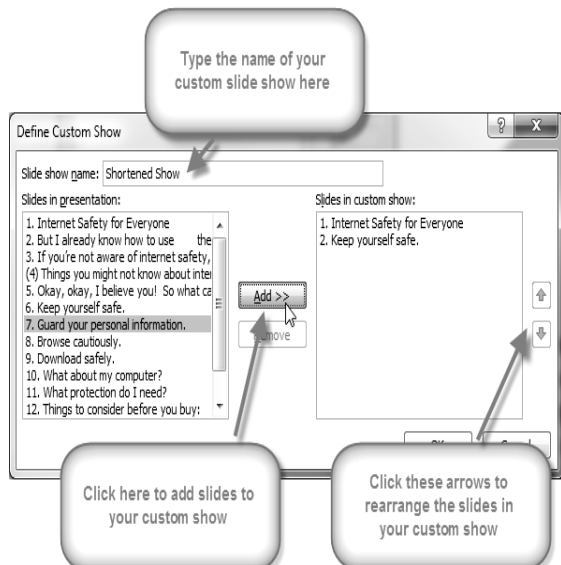
1. Select the **Slide Show** tab and locate the **Start Slide Show** group.
2. Click the **Custom Slide Show** command.



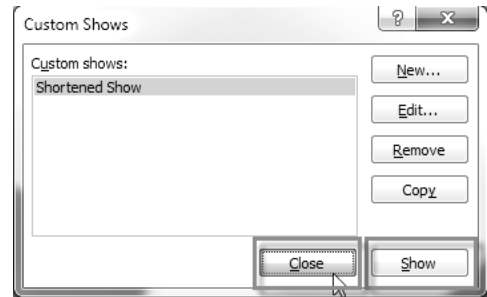
3. Select **Custom Shows...**. The **Custom Shows** dialog box will appear.
4. Click **New**. The **Define Custom Show** dialog box will appear.



5. Locate the **Slide show name** box and type in a name for your custom show.
6. Select the slides in the **Slides in presentation:** box that you would like to include in your custom show, then click **Add>>** to add them to the **Slides in custom show:** box. If necessary, use the **up** and **down** arrows to reorder the added slides.



7. Click **OK**.
8. Select **Close** to exit or **Show** to view your custom show.



You can also hide slides by selecting the **Hide Slide** command, which can be found on the **Slide Show** tab. To unhide a slide, simply click the **Hide Slide** command again.

Creating Handouts of a Presentation

Printing handouts with images of your slides can be helpful to your audience, as it gives them a hard copy of the information you're presenting. Plus, they can take notes on the handouts as you present your slide show.

To Create Handouts of a Presentation:

1. Click the **File** tab. This takes you to the **Backstage view**.
2. Click **Print**.
3. Click the drop-down arrow in the box that says **Full Page Slides**, and locate the **Handouts** group.
4. Select a page layout for your handouts. Up to nine slides can be displayed per page. Note that the **3 slides** layout offers lined space for your viewers to take notes.
5. Click the **Print** command.

If you would like to add a header or footer to your handouts, click the **View** tab on the Ribbon, then select **Handout Master**. Just type your header or footer information into the boxes provided. To return to the normal view, click **Exit Master View**.

Lesson: 8

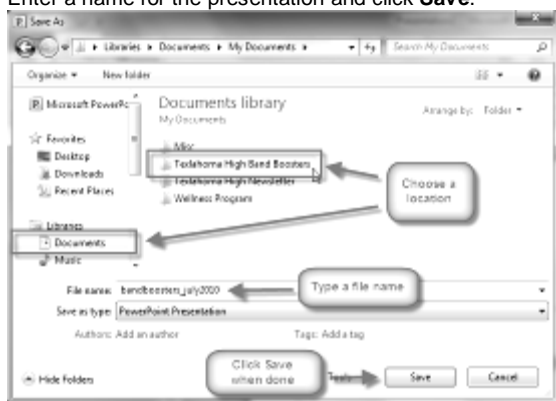
Saving & Printing

Are you saving for the first time? Do you need to share your presentation with someone who does not have PowerPoint 2010? Would you like to print handouts of your presentation? Perhaps you need a printout that shows your notes with your slides? All of these things will affect how you **save and print your PowerPoint presentations**.

To Use the Save As Command:

Save As allows you to choose a name and location for your presentation. It's useful if you've first created a presentation or if you want to save a different version of a presentation while keeping the original.

1. Click the **File** tab.
2. Select **Save As**.
3. The **Save As** dialog box will appear. Select the location where you wish to save the presentation.
4. Enter a name for the presentation and click **Save**.



If you're using **Windows 7**, you'll usually want to save things to your **Documents library**, and in other versions of Windows you'll save them to the **My Documents folder**.

To Use the Save Command:

1. Click the **Save** command on the **Quick Access Toolbar**.
2. The presentation will be saved in its current location with the same file name.

If you are saving for the first time and select **Save**, the **Save As** dialog box will appear.

AutoRecover

PowerPoint automatically saves your presentation to a temporary folder while you're working on them. If you forget to save your changes, or if PowerPoint crashes, you can recover the autosaved file.

1. Open a presentation that was previously closed without saving.
2. In **Backstage view**, click **Info**.
3. If there are autosaved versions of your file, they will appear under **Versions**. Click on the file to open it.
4. To save changes, click **Restore** and then click **OK**.

By default, PowerPoint autosaves every 10 minutes. If you are editing a presentation for less than 10 minutes, PowerPoint may not create an autosaved version.

To Save As PowerPoint 97 - 2003 Presentation:

You can share your presentation with anyone using PowerPoint 2010 or 2007, since they use the same file format. However, earlier versions of PowerPoint use a different file format, so if you want to share your presentation with someone using an earlier version of PowerPoint, you'll need to save it as a PowerPoint 97-2003 presentation.

1. Click the **File** tab.
2. Select **Save As**.
3. In the **Save as type** drop-down menu, select **PowerPoint 97-2003 Presentation**.
4. Select the location you wish to save the presentation.
5. Enter a name for the presentation and click **Save**.

To Save as a Different File Type:

If you would like to share your presentation with someone who does not have PowerPoint, you have several different file types to choose from.

1. Click the **File** tab.
2. Select **Save & Send**.
3. Choose from three special **File Types**.
 - **Create PDF/XPS Document:** Saves the contents of your slide show as a document instead of a PowerPoint file.
 - **Create a Video:** Saves your presentation as a video that can be shared online, in an email, or on a disc.
 - **Package Presentation for CD:** Saves your presentation in a folder along with the Microsoft PowerPoint Viewer, a special slide show player that anyone can download and use.

To View the Print Pane:

1. Click the **File** tab to go to **Backstage view**.
2. Select **Print**. The Print pane appears, with the print settings on the left and the **Preview** on the right.

To Print:

1. Go to the **Print** pane.
2. Determine and choose how you want the slides to appear on the page.
3. If you only want to print certain pages, you can type a **range** of pages. Otherwise, select **Print All Pages**.
4. Select the **number of copies**.
5. Check the **Collate** box if you are printing multiple copies of a multi-page document.
6. Select a **printer** from the drop-down list.
7. Click the **Print** button.

Unit-V- MS-Access 2010

Lesson: 1

Getting Started with M.S Access 2010

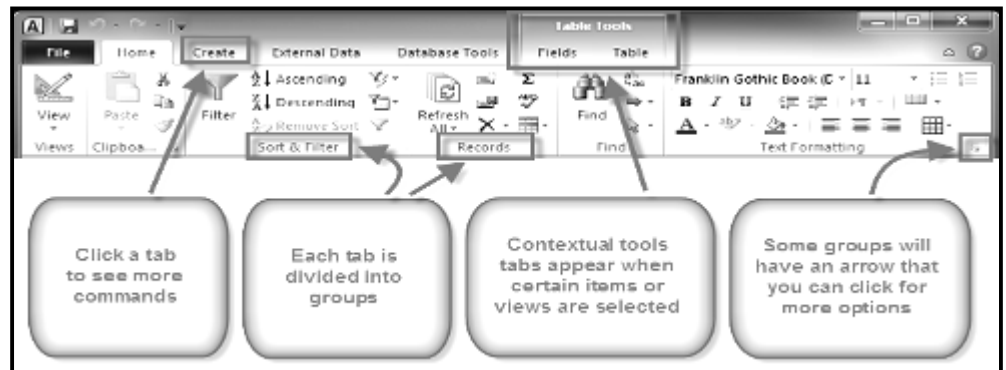
Access 2010 is relational database software in the Microsoft 2010 Office Suite that allows users to enter, manage and run reports on large amounts of data. Whenever you're learning a new program, it's important to familiarize yourself with the program window and the tools within it. Working with Access is no different. Knowing your way around the Access environment will make learning and using Access much easier. You will familiarize yourself with the Access environment, including the Ribbon, the **Backstage view**, the **Navigation Pane**, the **Document Tabs bar**, and the **Record Navigation bar**. You will also learn how to navigate with navigation form, if your database includes one.

Working with Your Access Environment

The **Ribbon** and the **Quick Access Toolbar** are where you will find the commands you will use to do common tasks in Access. If you are familiar with Access 2007, you will find that the main difference in the **Access 2010 Ribbon** is that commands such as **Open** and **Print** are now housed in **Backstage view**.

The Ribbon

The Ribbon contains multiple **tabs**, each with several **groups** of commands. Some tabs, like **Form Layout Tools** or **Table Tools**, may appear only when you are working with certain objects like forms or tables. These tabs are called **contextual tabs**, and are highlighted in a contrasting color to distinguish them from normal tabs.

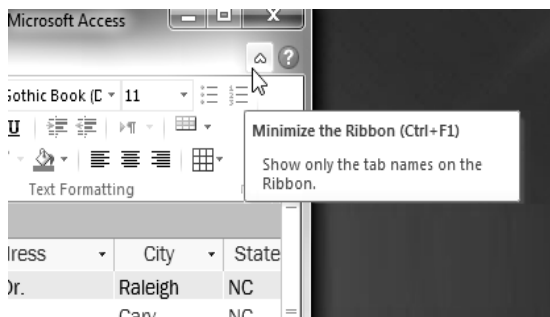


To Minimize and Maximize the Ribbon:

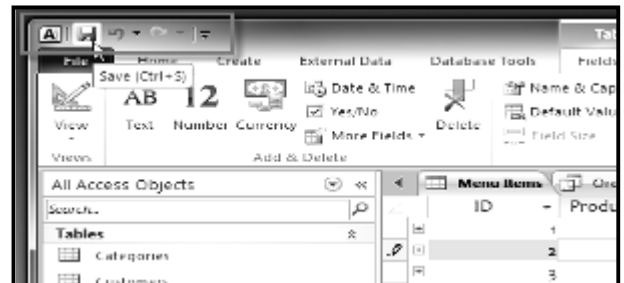
The Ribbon is designed to be easy to use and responsive to your current task, but if you feel that it's taking up too much of your screen space, you can minimize it.

1. Click the **arrow** in the upper-right corner of the Ribbon to minimize it.
2. To maximize the Ribbon, click the arrow again.

When the Ribbon is minimized, you can make it reappear by clicking on a tab. However, the Ribbon will disappear again when you are not using it.



The Quick Access Toolbar



The **Quick Access Toolbar** is located above the Ribbon, and it lets you access common commands no matter which tab you are on. By default, it shows the **Save**, **Undo**, and **Repeat** commands. If you'd like, you can **customize** it by **adding additional commands**.

Note that the **Save** command only saves the current open object. In addition, the **Undo** command will not undo certain actions, like adding a record. Pay close attention to your information when using the **Undo** command to make sure it has the desired effect.

Backstage View

Backstage view gives you various options for opening, saving, printing, and viewing more information about your database. It is similar to the Office Button Menu from Access 2007 or the File Menu from earlier versions of Access. However, unlike those menus, it is a full-page view, which makes it easier to work with.

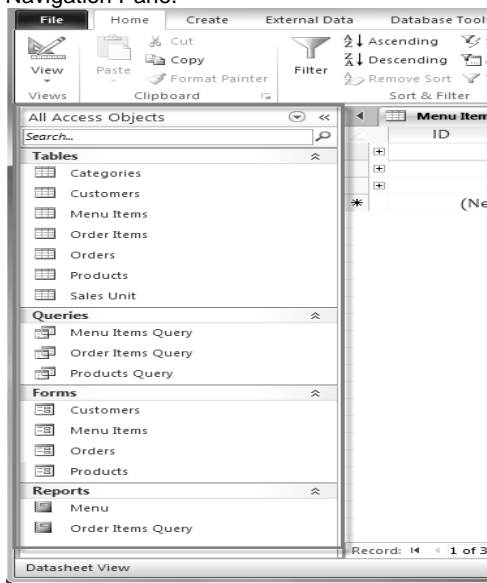
To Get to Backstage View:

1. Click the **File** tab.
2. You can choose an option on the left side of the page.
3. To get back to your database objects, just click any tab on the Ribbon.



The Navigation Pane

The **Navigation Pane** is a list containing every object in your database. For easier viewing, the objects are organized into groups by type. You can **open**, **rename**, and **delete** objects using the Navigation Pane.

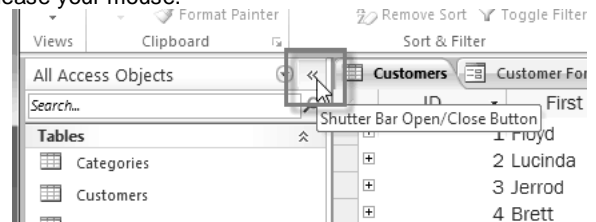


To Minimize and Maximize the Navigation Pane:

The Navigation Pane is designed to help you manage all your objects, but if you feel that it takes up too much of your screen space, you can **minimize** it.

1. Click the **double arrow** << in the upper-right corner of the Navigation Pane to minimize it.
2. To make the Navigation Pane visible again, click the **double arrow** >> to maximize it.

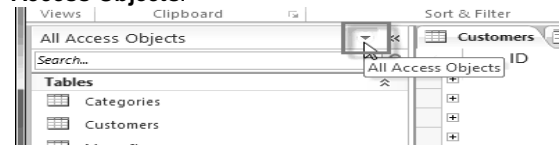
If you would like to make the Navigation Pane smaller without fully minimizing it, you can **resize** it. Simply **click** and **drag** the right border of the Navigation Pane. When it is the desired size, release your mouse.



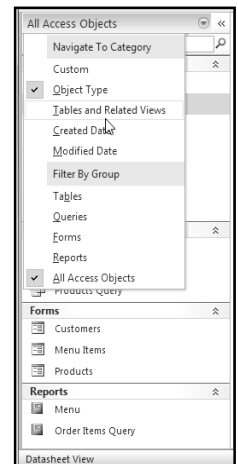
To Sort the Objects in the Navigation Pane:

By default, your objects are sorted by type, with the tables in one group, the forms in another, and so on. However, if you wish, you can sort the objects in the Navigation Pane into groups of your choosing.

1. Click the **drop-down arrow** to the right of the words **All Access Objects**.



2. In the drop-down menu, select the desired sort.
 - o Select **Custom** to create a custom group for sorting the objects. After applying the sort, simply drag the desired objects to the new group.
 - o Select **Object Type** to group the objects by type. This is the default setting.
 - o Select **Tables and Related Views** to group forms, queries, and reports together with the tables they refer to.
 - o Select **Created Date** or **Modified Date** to sort the objects from most to least recently created or modified.
3. The objects in the Navigation Pane will now be sorted to reflect your choice.



To further customize the appearance of the Navigation Pane, you can also **minimize groups** of objects you don't want to see. Simply click the upward double arrow > next to the name of the group. To restore the group to its full size, click the downward double arrow >>.

Databases with Navigation Forms

Some databases include a **navigation form** that opens automatically when the database is opened. Navigation forms are designed as a **user-friendly** replacement for the **Navigation Pane**. They contain **tabs** that allow you to view and work with common forms, queries, and reports. Having your frequently-used objects available to you in one place lets you access them quickly and easily. To **open** an object from a navigation form, simply click on its tab. The object will be displayed within the navigation form. Once an object is open, you can work with it as you normally would.



(Viewing the Orders form using a navigation form)

Generally, navigation forms include only the objects a typical user will need to work with fairly regularly, which is why your navigation form may not include every single form, query, or report. This makes it easier to navigate around the database. By hiding tables and rarely used forms, queries, and reports, it also reduces the chance of the database being damaged by users accidentally editing or deleting necessary data.

For this reason, it's important to ask your database designer or administrator before you work with objects that are not available in your navigation form. Once you have the go-ahead, you can simply **maximize the Navigation Pane** and open the objects from there.

Lesson: 2

Introduction to Database & Objects

Databases

Access 2010 is a **database creation and management** program. To understand Access, you must first understand **databases**. You will familiarize yourself with the differences between data management in **Access** and **Microsoft Excel**.

What is a Database?

A **database** is a collection of data that is stored in a computer system. Databases allow their users to **enter**, **access**, and **analyze** their data quickly and easily. They're such a useful tool that you see them all the time. Ever waited while a doctor's receptionist entered your personal information into a computer, or watched a store employee use a computer to see whether an item was in stock? Then you've seen a database in action.

The easiest way to understand a database is to think of it as a **collection of lists**. Think about one of the databases we mentioned above-- the database of patient information at a doctor's office. What lists are contained in a database like that? Well, to start with, there's a list of the customer names. Then, there's a list of past appointments, a list with medical history for each patient, a list of contact information... and so on, and so on.

This is true of all databases, from the simplest to the most complex. For instance, if you like to bake, you might decide to keep a database containing the types of cookies you know how to make and the friends you give those cookies to. This is one of the simplest databases imaginable. It contains two lists: a list of your friends, and a list of cookies.



However, if you were a professional baker, you would have many more lists to keep track of: a list of customers, a list of products sold, a list of prices, a list of orders... it goes on and on. The more lists you add, the more **complex** the database will be.



In Access, lists are a little more complex than the ones you write on paper. Access stores its lists of data in **tables**, which allow you to store even more detailed information. *In the table below*, the **"People"** list in the amateur baker's database has been expanded to include other relevant information about the baker's friends.

ID	Name	Cell Phone	Birthday	Nut Allergy?
1	Dad	555-0404	June 3	Yes
2	Aunt Aida	555-9890	July 8	No
3	Joakim	555-0462	September 19	No
4	Dwane	555-9975	January 5	No
5	Allegra	555-0099	January 14	Yes

(A table in Access)

If you are familiar with other programs in the Microsoft Office suite, this might remind you a lot of Excel, which allows you to organize data in a similar way. And in fact, you could build a very similar table in Excel.

Why Use a Database?

If a database is essentially a collection of lists stored in tables, and you can build tables in Excel, why do you need a real database in the first place? While Excel is great at storing and organizing numbers, Access is far stronger at handling non-numerical data like names and descriptions. Non-numerical data plays a big role in almost any database, and it's important to be able to sort and analyze it.

However, the thing that really sets databases apart from any other way of storing data is **connectivity**. We call a database like the ones you'll work with in Access a **relational database**. A relational database is able to understand how lists and the objects within them **relate** to one another. **To explore this idea, let's go back to the simple database with two lists:** names of your friends, and the types of cookies you know how to make. You decide to create a third list to keep track of the batches of cookies you make and who they're for. Since you're only making cookies you know the recipe for, and you're only going to give them to your friends, this new list will get all its information from the lists you made earlier.

See how the third list uses words that appeared in the first two lists? A database is capable of understanding that the "Dad" and "Oatmeal" cookies in the "Batches" list are the same things as the "Dad" and "Oatmeal" in the first two lists. This relationship seems obvious, and a person would understand it right away. However, an Excel workbook wouldn't.

Excel would treat all of those things as distinct and unrelated pieces

of information. In Excel, you'd have to enter every single piece of information about a person or type of cookie all over again each time you mentioned it, because that database wouldn't be **relational** like an Access database is. Simply put, relational databases can recognize what a human can: that if the same words appear in multiple lists, they **refer** to the same thing. The fact that relational databases can handle information this way allows you to **enter, search, and analyze** data in more than one table at a time. All of these things would be very difficult to do in Excel, but in Access, even complicated tasks can be simplified and made fairly user-friendly.



Introduction to Objects

Databases in Access 2010 are composed of four objects: **tables, queries, forms, and reports**. Together, these objects allow you to enter, store, analyze, and compile your data as you wish.

Tables

By this point, you should already understand that a database is a collection of data organized into many connected **lists**. In Access, all data is stored in **tables**, which put tables at the heart of any database. You might already know that tables are organized into vertical **columns** and horizontal **rows**.

ID	First Name	Last Name	Street Address	City	State	Zip
20	Barbara		29 North Luke Ct.	Raleigh	NC	276
29	Bob	Jones	63-C Chapel Ct.	Durham	NC	276
30	Juanita	Williams	123 Garden Plow Way	Raleigh	NC	276
31	Sara	Thomas	127 South Pejulup Ln.	Raleigh	NC	276
32	Larry	Binder	124 Heuristic Way	Raleigh	NC	276
33	Samantha	Ferguson	2380 New Cove Rd.	Garner	NC	276
34	Jamie	Stone	131 W Clinton St.	Raleigh	NC	276
35	Patti	Cheng	9 Atlantic Blvd	Raleigh	NC	276
36	Greg	Newton	2520 Hopkins Rd.	Raleigh	NC	276
37	Carol	Allenson	3201 Glenwood Ave. U	Raleigh	NC	276
38	Zoey	Altman	817 Hillsborough St. A	Raleigh	NC	276
39	Danny	Haverford	202 Cedar Ln.	Raleigh	NC	276
40	Vig	Aurelio	53 Pine St.	Raleigh	NC	276
41	Jeffery	Bergman	1245 Ross Park Dr.	Raleigh	NC	276
42	William	Bittiman	1122 Glenwood Ave.	Raleigh	NC	276
43	Megan	Draper	311 Cook St.	Raleigh	NC	276
44	Dick	Whitman	105 David St.	Raleigh	NC	276
45	Marjan	Jameson	202 C St. Unit A	Raleigh	NC	276
46	Colin	Hopkins	321 F. Edenton St.	Raleigh	NC	276

In Access, rows and columns are referred to as **Records** and **Fields**. A **field** is more than just a column: it's a way of organizing information by the **type** of data it is. Every piece of information within a field is of the same **type**. **For example**, every entry in a field called "First Name" would be a name, and every entry in a field called "Street Address" would be an address.

ID	First Name	Last Name	Street Address
67	Joy	Zachman	877 Lee St.
68	Frances	Trenton	901 Kenan Rd.
69	Latavia		Mclver Ct.
70	Kurtis		3 Cobb Rd.
71	Lashaunda		1 Hinton St.
72	Lieselotte		2 Spencer Ave.
73	Sula	Smart	56 Dey Rd.
74	Jude	Smith	929 Greenlaw Dr.
75	Katharine	Kellerman	76 Murphy Ave.
76	Ruiari	O'Brien	100 Aycock St.
77	Tyra	Kirby	8700 Stacey Rd.
78	Michiko	Akiwana	901 Glenwood Ave.
79	Betty	Potter	80 Greene St.
80	Elizabeth	Loges	44 Steven Rd.

Likewise, a **record** is more than just a row-- it's a unit of information. Every cell in a given row is part of that row's record.

ID	First Name	Last Name	Street Address	City	State	Zip
84	Magda	Sremski	98 Tyler St.	Raleigh	NC	276
85	Peggy	Moss	1130 Jackson St.	Raleigh	NC	276
94	Margot	Wade	532 Chronicle Way	Raleigh	NC	276
95	Florent	Marais	53 Ada St.	Raleigh	NC	276
96	Erwan	Haussman	918 Lonesome Dove R	Raleigh	NC	276
97	Rodrigue	Sterling	49 Mockingbird Way	Raleigh	NC	276
102	Theodore	Achi	120 Baker St.	Raleigh	NC	276

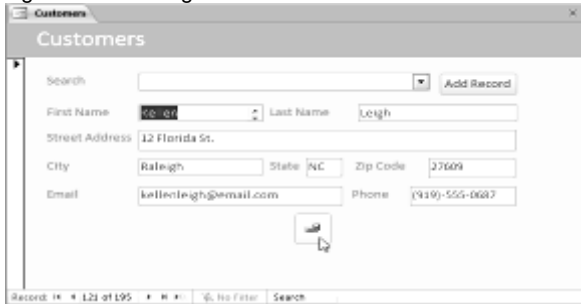
Notice how each record spans several fields. Even though the information in each record is organized into fields, it belongs with the other information in that record. See the **number** at the left of each row? That's the **ID number** that identifies each record. The ID number for a record refers to every piece of information contained on that row.

ID	First Name	Last Name	Street Address	City
84	Magda	Sremski	98 Tyler St.	Raleigh
85	Peggy	Moss	1130 Jackson St.	Raleigh
94	Margot	Wade	532 Chronicle Way	Raleigh
95	Florent	Marais	53 Ada St.	Raleigh
96	Erwan	Haussman	918 Lonesome Dove R	Raleigh
97	Rodrigue	Sterling	49 Mockingbird Way	Raleigh
102	Theodore	Achi	120 Baker St.	Raleigh
105	Dwyane	James	4221 Basil Ct.	Cary

Tables are good for storing **closely related information**. Say that you own a bakery and have a database that includes a table with your customers' names and information like their phone numbers, home addresses, and email addresses. Since these pieces of information are all details about your customers, you'd include them all in the same **table**. Each customer would be represented by a unique **record**, and each type of information about those customers would be stored in its own field. If you decided to add any more information-- say, the customer's birthday-- you would simply create a new field within the same table.

Forms

Forms are used for: **entering, modifying, and viewing** records. You have probably had to fill out forms on many occasions, like when visiting a doctor's office, applying for a job, or registering for school. The reason forms are used so often is that they're an easy way to guide people into entering data correctly. When you enter information into a form in Access, that data goes exactly where the database designer wants it to go-- in one or more related tables.

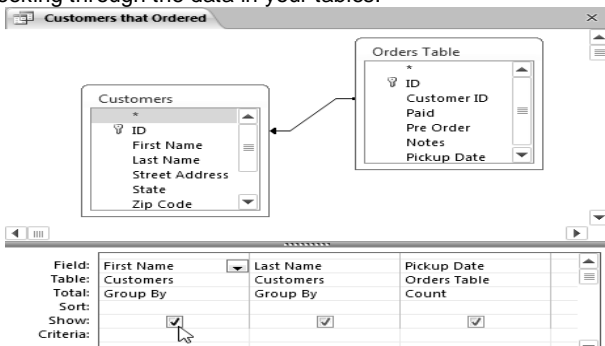


(A form)

Forms make entering data easier. Working with extensive tables can be confusing, and when you have connected tables, you might need to work with more than one at once to enter a set of data. However, with forms, it's possible to enter data into multiple tables at once, all in one place. Database designers can even set restrictions on individual form components to ensure that all of the needed data is entered in the correct format. All in all, forms help keep data consistent and well-organized, which is essential for an accurate and powerful database.

Queries

Queries are a way of **searching** for and **compiling** data from one or more tables. Running a query is like asking a detailed **question** of your database. When you build a query in Access, you are **defining specific search conditions** to find exactly the data you want. Queries are far more powerful than the simple searches you might carry out within a table. While a **search** would be able to help you find the name of one customer at your business, you could run a **query** to find the name and phone number of every customer who's made a purchase within the past week. A well-designed query can give information that you might not be able to find out just by looking through the data in your tables.



(A query design)

Reports

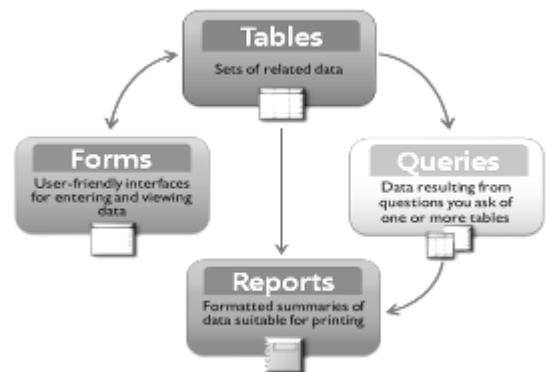
Reports offer you the ability to **present** your data in **print**. If you've ever received a computer printout of a class schedule or a printed invoice of a purchase, you've seen a database report. Reports are useful, because they allow you to present components of your database in an easy-to-read format. You can even customize a report's appearance to make it visually appealing. Access offers you the ability to create a report from any **table** or **query**.



(A report)

Putting it All Together

Even if you have a good idea of how each object can be used, it can initially be hard to understand how they all work together. It helps to remember that they all work with the same data. Every piece of data a **query**, **form**, or **report** uses is stored in one of your database **tables**.



(The four Access 2010 objects)

Forms allow you to both add data to tables and view data that already exists. Reports present data from tables and also from queries which, in turn, search for and analyze data within those same tables.

These relationships sound complicated, but in fact, they work together so well and naturally that we often don't even notice when we're using connected database objects.

Managing Databases and Objects

Each Access database consists of multiple **objects** that let you interact with data. Databases can include **forms** for entering data, **queries** for searching within it, **reports** for analyzing it, and of course, **tables** for storing it. Whenever you work with your database, you are working with many of these objects at once. Fortunately, Access makes managing these objects pretty easy.

To Open an Existing Database:

1. Click the **File** tab. This takes you to **Backstage view**.
2. Select **Open**. A dialog box will appear.
3. Locate and select the desired database, then click **Open**.
4. One or more **warning messages** may appear when you open your database.
 - If the database contains customized functions, a yellow bar with a security warning may appear below the Ribbon. If you trust the source of your database, click **Enable Content** for your database to display correctly.
 - After enabling all content in the database, you may see a message asking if you want to make the database a **Trusted Document**. Click **yes** if you would like all content to be automatically enabled each time you open the database.
 - You may be prompted to **Log In** to the database. Select your name from the log in list. If your name does not appear, click **Add User** to enter your information.

If you have opened the existing database recently, it may be easier to look for your database in the short list that appears in the sidebar or to select **Recent** and choose a database from the list that appears.

To Close a Database:

1. Click the **File** tab to go to **Backstage View**.
2. Select **Close Database**.
3. If you have any unsaved objects, a dialog box will pop up for each one asking if you would like to save it. Select **Yes** to save the object, **No** to close it without saving, or **Cancel** to leave your database open.

To Open an Object:

1. In the **Navigation Pane**, locate the object you would like to open.
2. **Double-click** the desired object. It will open and appear as a **tab** in the **Document Tabs bar**.

By default, the most recently opened object will display in the main window as the **current object**. To view another open object, simply click its tab in the **Document Tabs bar**.

Saving Objects


As in other Microsoft Office programs, you will be prompted to save any unsaved work when you attempt to close your database. However, it is a good idea to save your work as you go along. Saving your work often is the best way to ensure that you don't lose any information if your computer crashes.

To Save a New Object:

1. Select the object you wish to save by clicking its tab in the **Document Tabs bar**.
2. Select the **File** tab to navigate to **Backstage View**.
3. Click **Save**.
4. The first time you save an object, you will be prompted to name it. Enter the desired object name, and click **OK**.

To save an existing object, select **save** in **Backstage View**, or simply click the **Save** command in the Quick Access Toolbar.

To Close an Object:

1. Select the object you wish to close on the **Document Tabs bar**.
2. Click the  on the far right of the Document Tabs bar.
3. If there are any unsaved changes to the object, you will be prompted to save it. Select **Yes** to save, **No** to close it without saving your changes, or **Cancel** to leave the object open.

You can also close an object by right-clicking its tab on the Document Tabs bar. A drop-down menu will appear. Select **Close** to close that object, or **Close All** to close all open objects.

To Rename an Object:

1. If the object you wish to rename is open, **close** it.
2. In the **Navigation Pane**, **right-click** the object you would like to rename.
3. Select **Rename**.
4. Type the new name, then press the **Enter** key.

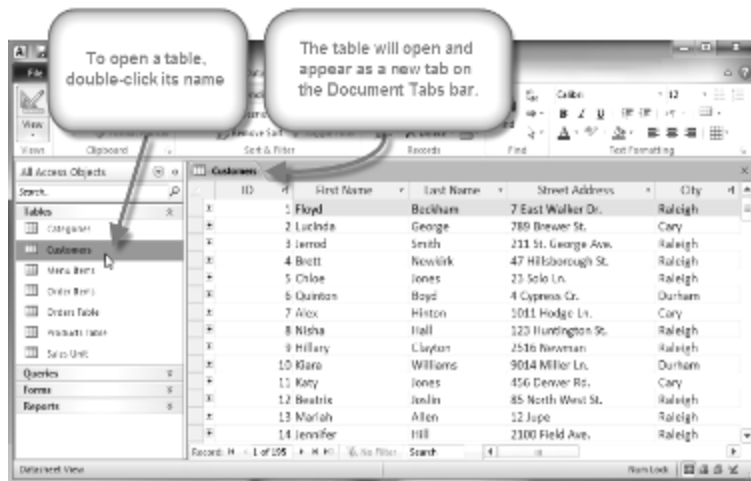
Lesson: 3

Working with Tables

While there are four types of database objects in Access 2010, **tables** are arguably the most important. Even when you're using forms, queries, and reports, you're still working with tables, since that's where all your **data** is stored. Tables are at the heart of any database, so it's important to understand how to use them.

To Open an Existing Table:

1. **Open** your database and locate the **Navigation Pane**.
2. In the **Navigation Pane**, locate the table you would like to open. Tables are marked with the icon.
3. **Double-click** the name of the table. It will open and appear as a **tab** in the **Document Tabs bar**.



ID	First Name	Last Name	Street Address
67	Joy	Zachary	877 Lee St.
68	Frances	Trouton	901 Kenan Rd.
69	Latavia		Melver Ct.
70	Kurtis		9 Cobbs Rd.
71	Lashaunda		Hinton St.
72	Lieselotte	Smart	2 Spencer Ave.
73	Sula		56 Dey Rd.

A **record** is one unit of information. Every cell on a given row is part of that row's record. Each record has its own **ID number**. Within a table, each ID number is unique to its record, and refers to all the information within that record. The ID number for a record cannot be changed.

ID	First Name	Last Name	Street Address
84	Magda	Spencer	98 Tyler St.
85	Peggy	Moss	1130 Jackson St.
94	Walter	Wade	532 Chronicle Way
96	Florent	Marais	53 Ada St.
96	Erwan	Hausman	918 Lonesome Dow
97	Rodrigue	Sterling	49 Mockingbird Wa
102	Theodora	Achi	120 Baker St.
105	Dwyane	James	4221 Basil Ct.

Each cell of data in your table is part of both a **field** and a **record**. For instance, if you had a table of names and contact information, each person would be represented by a record, and each piece of information about them-- their name, phone number, address, and so on-- would be contained within a distinct field on that record's row.

Understanding Tables

All tables are composed of horizontal **rows** and vertical **columns**, with small rectangles called **cells** in the places where rows and columns intersect. In Access, rows and columns are referred to as **records** and **fields**.

ID	First Name	Last Name	Street Address	City
32	Larry	Binder	124 Heuristic Way	Raleigh
33	Samantha	Ferguson	2380 New Cove Rd.	Garner
34	Cheng	Cheng	9 Atlantic Blvd	Raleigh
35	Newton	Newton	2520 Hopkins Rd.	Raleigh
36	Allenson	Allenson	3201 Glenwood Ave. Unit A	Raleigh
38	Altman	Altman	817 Hillsborough St. Apt E11	Raleigh
39	Danny	Haverford	202 Cedar Ln.	Raleigh
40	Vig	Aurelio	53 Pine St.	Raleigh
41	Jeffery	Bergman	1245 Ross Park Dr.	Raleigh
42	William	Bittiman	1122 Glenwood Ave.	Raleigh
43	Megan	Draper	311 Cook St.	Raleigh
44	Dick	Whitman	105 David St.	Raleigh
45	Marjan	Jameson	202 C St. Unit A	Raleigh
46	Colin	Hopkins	321 E. Edenton St.	Raleigh
47	Hakim	Auden	921 Dawson St.	Raleigh

A **field** is a way of organizing information by type. Think of the **field name** as a question, and every cell within that field as a response to that question.

Navigating Within Tables

To navigate through records in a table, you can use the **up and down arrow keys**, **scroll up and down**, or use the arrows in the **record navigation bar** located at the bottom of your table. You can also find any record in the currently open table by **searching** for it using the **record search box**. Simply place your cursor in the search box, type any word that appears in the record you would like to find, and press the **enter** key. To view additional records that match your search, press enter again.

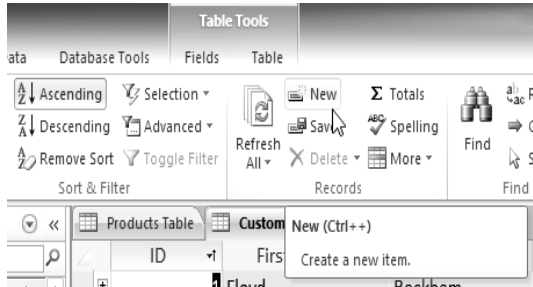


To navigate between fields, you can use the **left and right arrow keys** or **scroll left and right**.

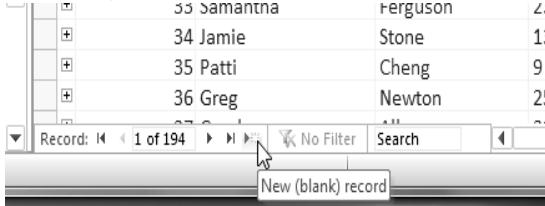
To Add a New Record:

There are three ways to add a new record to a table:

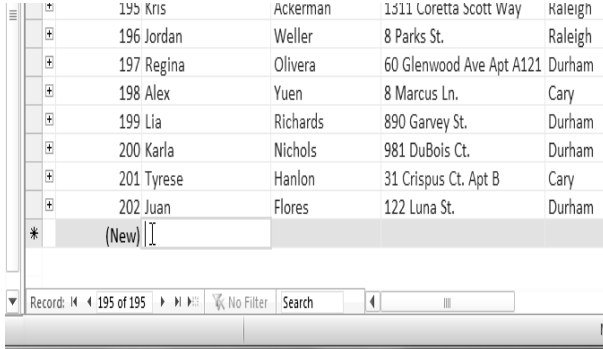
- In the **Records** group on the **Home** tab, click the **New** command.



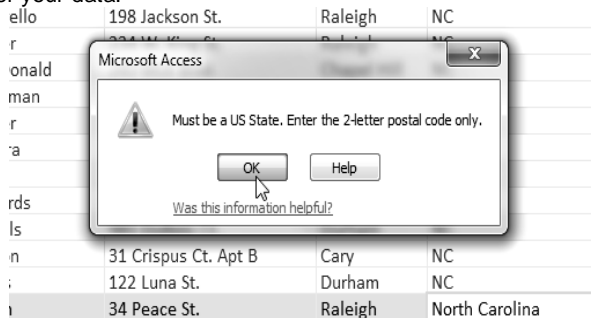
- On the **Record Navigation** bar at the bottom of the window, click the **New Record** button.



- Simply begin **typing** in the row below your last added record.



Occasionally when you enter information into a record, a window will pop up to tell you that the information you've entered is invalid. That means the field you're working with has a validation rule, which is a rule about the type of data that can appear in that field. Click OK, then follow the instructions in the pop-up window to re-enter your data.



To Save a Record:

1. Select the **Home** tab, and locate the **Records** group.
2. Click the **Save** command.

Be sure to save any unsaved records before closing a table. Access will not prompt you to save them when you close the table.

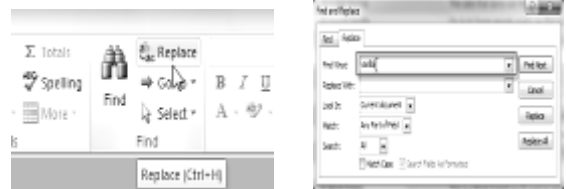
Editing Records

To quickly edit any record within a table, you can just click on it and type in your changes. However, Access also offers you the ability to **find and replace** a word within multiple records and to **delete** records entirely.

To Replace a Word within a Record:

You can edit multiple occurrences of the same word by using **Find and Replace**, which searches for a term and replaces it with another term.

1. Select the **Home** tab and locate the **Find** group.
2. Click the **Replace** command. The **Find and Replace** dialog box will appear.



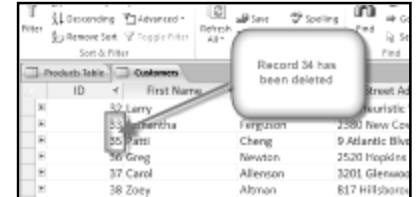
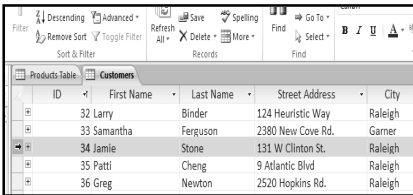
3. Click the **Find What:** box and type the word you would like to find.
4. Click the **Replace With:** box and type the word you would like to replace the original word.
5. Click the **Look In:** drop-down arrow to select the area you would like to search.
 - o Select **Current Field** to limit your search to the currently selected field.
 - o Select **Current Document** to search within the entire table.
6. Click the **Match:** drop-down arrow to select how closely you'd like results to match your search.
 - o Select **Any Part of Field** to search for your search term in any part of a cell.
 - o Select **Whole Field** to search only for cells that match your search term exactly.
 - o Select **Beginning of Field** to search only for cells that start with your search term.
7. Click **Find Next** to find the next occurrence of your search term.
8. Click **Replace** to replace the original word with the new one.

While you can use **Replace All** to replace every instance of a term, replacing them one at a time allows you to be absolutely certain that you edit only the data you want. Replacing data unintentionally can have a negative impact on your database.

To Delete a Record:

1. Select the entire record by clicking the **gray border** at the left side of the record.
2. Select the **Home** tab and locate the **Records** group.
3. Click the **Delete** command. The record will be permanently deleted.

The ID numbers assigned to records stay the same even after you delete a record. For example, if you delete the 34th record in a table, the sequence of record ID numbers will read "...32, 33, **35**, 36...", rather than "...32, 33, **34**, 35, 36...".



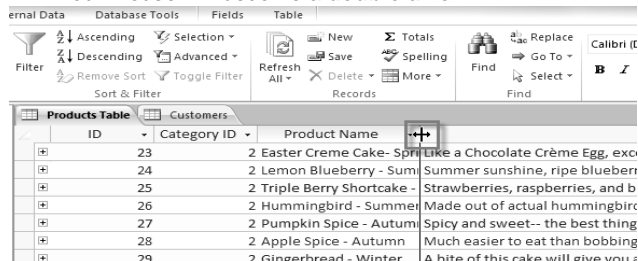
Resizing Fields and Rows

If your fields and rows are too small or large for the data contained with them, you can always **resize** them so that all the text is displayed.

To Resize a Field:

1. Place your cursor over the **right gridline** in the **field title**.

Your mouse will become a **double arrow** .



2. **Click and drag** the gridline to the right to increase the field width or to the left to decrease the field width.
3. **Release** the mouse. The field width will be changed.

To Resize a Row:

1. Place your cursor over the **bottom gridline** in the **gray area** to the left of the row. Your mouse will become a **double arrow** .
2. **Click and drag** the gridline downward to increase the row height or upward to decrease the row height.
3. **Release** the mouse. The row height will be changed.

Hiding Fields

If you have a field that you don't plan on editing or don't want other people to edit, you can **hide** it. A hidden field is invisible but is still part of your database. Data within a hidden field can still be accessed from forms, queries, reports, and any related tables.

To Hide a Field:

1. Right-click the **field title**.
2. From the drop-down menu, select **Hide Fields**.
3. The field will be hidden.

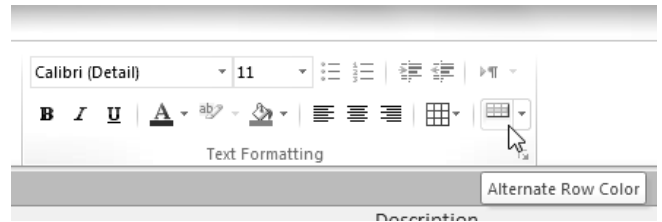
If you decide you would like the field to be visible again, you can **unhide** it. Simply right-click any field title, then select **Unhide Fields**. In the dialog box, click the checkboxes of any fields you would like to be visible again, then click **OK**.

Alternate Row Color

By default, the background of every other row in an Access table is a few shades darker than the background of the rest of the table. This darker **alternate row color** makes your table easier to read by offering a **visual distinction** between each record and the records directly above and below it.

To Change the Alternate Row Color:

1. Select the **Home** tab and locate the **Text Formatting** group.
2. Click the **Alternate Row Color** drop-down arrow.
3. Select a color from the drop-down menu, or select **No Color** to remove the alternate row color.
4. Your alternate row color will be updated.



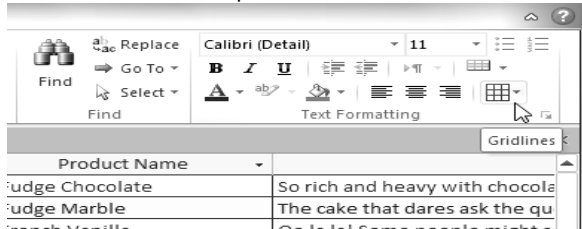
Modifying Gridlines

Another way Access makes your tables easier to read is by adding **gridlines** that mark the borders of each cell. Gridlines are the **thin lines** that appear between each cell, row, and column of your table. By default, gridlines are dark gray and appear on every side of a cell, but you can **change their color**, or **hide** undesired gridlines.

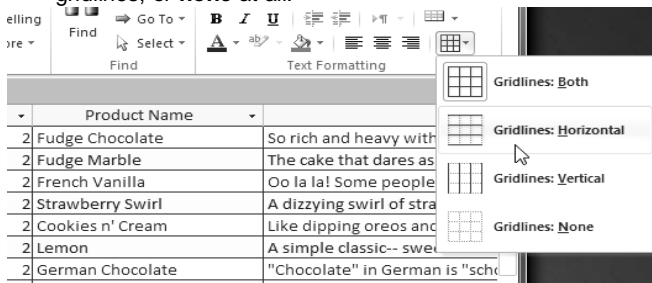
ID	Category ID	Product Name	Description
10	2	Fudge Chocolate	So rich and heavy with chocolate, you'll
11	2	Fudge Marble	The cake that dares ask the question: w
12	2	French Vanilla	Oo la la! Some people might say this ca
13	2	Strawberry Swirl	A dizzying swirl of strawberries and crè
14	2	Cookies n' Cream	Like dipping oreos and milk, but a cake,
15	2	Lemon	A simple classic-- sweet and sour.
16	2	German Chocolate	"Chocolate" in German is "schokolade."
17	2	Red Velvet	Your grandma's favorite cake, topped w

To Customize Which Gridlines Appear:

1. Select the **Home** tab and locate the **Text Formatting** group.
2. Click the **Gridlines** drop-down arrow.



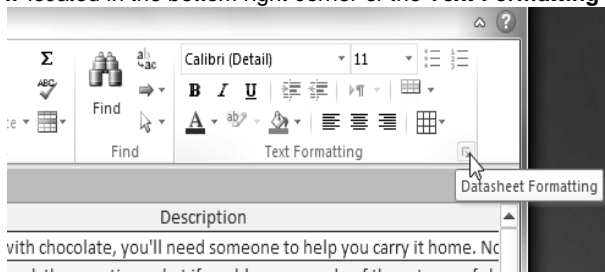
3. Select the gridlines you would like to appear. You can choose to have **horizontal** gridlines between the rows, **vertical** gridlines between the columns, **both** types of gridlines, or **none** at all.



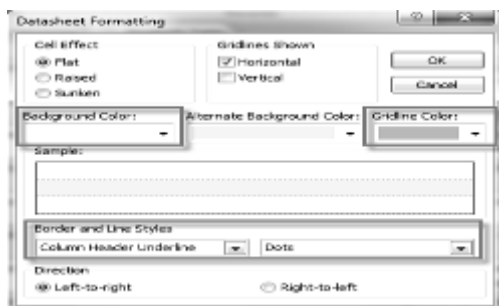
4. The gridlines on your table will be updated.

Additional Formatting Options

To view additional formatting options, click the **Datasheet Formatting** arrow located in the bottom right corner of the **Text Formatting** group.



The **Datasheet Formatting** dialog box offers many advanced formatting options, including the ability to modify background color, gridline color, and border and line style. It even includes the ability to view a **sample** table with your formatting choices, so play around with the various formatting options until you get your table looking the way you want it.

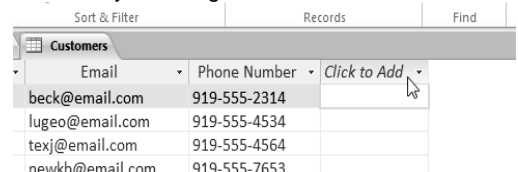


Adding and Rearranging Fields

Access makes it easy to rearrange existing fields and add new ones. When you add a new field, you can even set the **data type**, which dictates which **type** of data can be entered into that field.

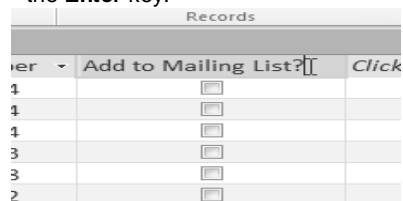
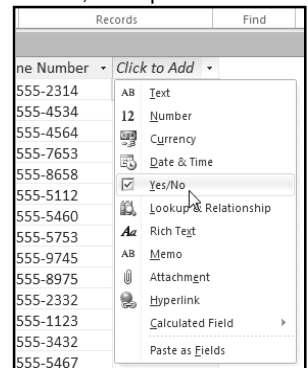
To Add a New Field to an Existing Table:

1. Open the table, then click the header with the text **Click to Add**. If you already have many fields, you may have to scroll all the way to the right to see this.




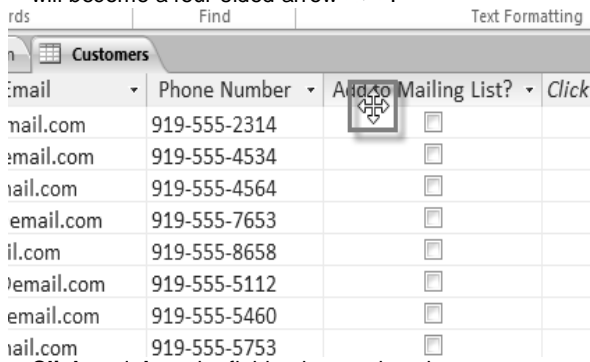
2. A drop-down menu will appear. Select the **data type** you'd like for the new field.

- **Text:** The default option, and best for text. You should also choose it for numbers you don't plan to do math with, like postal codes and phone numbers.
 - **Number:** Best for numbers you might want to do calculations with, like quantities of an item ordered or sold.
 - **Currency:** Automatically formats numbers in the currency used in your region.
 - **Date & Time:** Allows you to choose a date from a pop-out calendar.
 - **Yes/No:** Inserts a checkbox into your field.
 - **Memo:** Ideal for large amounts of text, like product descriptions. You can format text entered in Memo fields.
 - **Attachment:** Allows you to attach files, like images.
 - **Hyperlink:** Creates a link out of web or email addresses.
3. Type a name for your field, then press the **Enter** key.

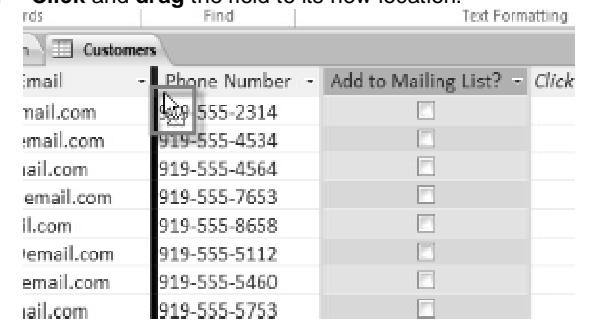


To Move a Field:

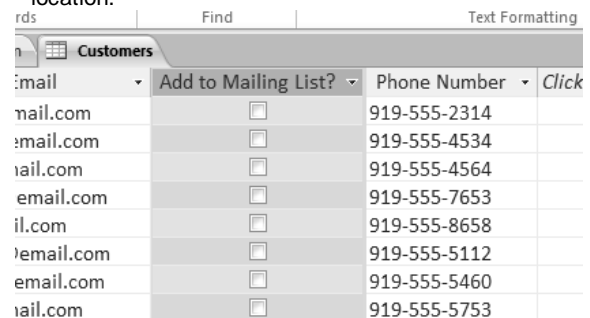
1. Locate the field you wish to move, then hover your mouse over the **bottom border** of the **field header**. Your cursor will become a four-sided arrow .



2. **Click and drag** the field to its new location.



3. **Release** your cursor. The field will appear in the new location.



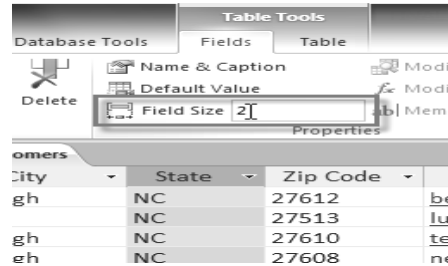
Field Character Limits

Setting the character limit for a field sets a rule about how many characters-- letters, numbers, punctuation, even spaces-- can be entered in that field. This can be useful to keep the data in your records concise, or even to force the user to enter the data a certain way.

For instance, in the example below, the user is entering records which include addresses. If you set the character limit in the "state" field as "2," the user can only enter 2 characters of information. This means that he must enter postal abbreviations for the states instead of the full name-- here, NC instead of North Carolina. Note that you can only set a character limit for fields defined as text.

To Set a Character Limit for a Field:

1. Select the desired field.
2. Click the **Fields** tab in the **Table Tools** tab group, then locate the **Properties** group.
3. In the box next to **Field Size**, type the maximum number of characters you would like to allow in your field.



4. **Save** your table.

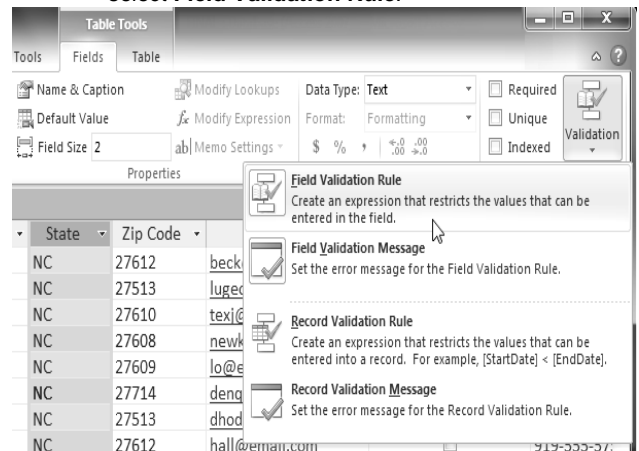
Validation Rules

A **validation rule** is a rule that dictates what information can be entered into a field. When a validation rule is in place, it is impossible for a user to enter data that violates that rule. For example, if we were asking the user to input a state name into a table with contact information, we might create a rule which limits the valid responses to U.S. state postal codes. This would prevent users from typing something that wasn't actually a real state postal code.

In the example below, we will apply that rule to our **Customers** table. It's a fairly simple validation rule-- we'll just name all of the valid responses a user could enter, which will mean the user can't type anything else into the record. However, it's possible to create validation rules that are much more complex.

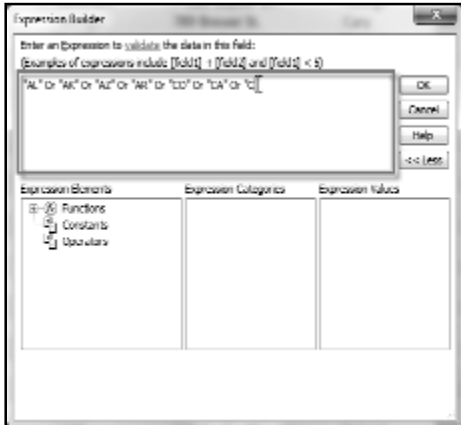
To Create a Validation Rule:

1. Select the field you wish to add a validation rule to. For our example, we'll set a rule for the **State** field.
2. On the Ribbon, select the **Fields** tab and locate the **Field Validation** group. Click the **Validation** drop-down command and select **Field Validation Rule**.

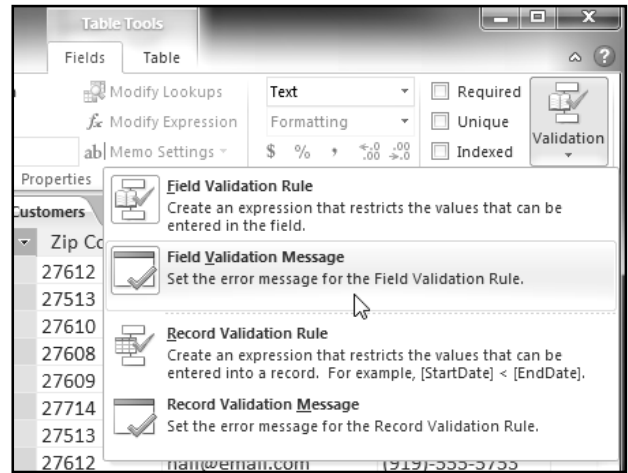


3. The **Expression Builder** dialog box will appear. Click

the text box and type in your validation rule. In our example, we want to limit data in the **State** field to actual state postal codes. We'll type each of the valid responses in quotation marks, and separate them with the word **Or**, which lets Access know that this field can accept the response "AL" or "AK" or "AZ" or any of the other terms we've entered.

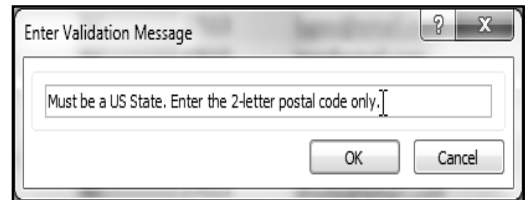


4. Once you're satisfied with the validation rule, click **OK**. The dialog box will close.
5. Click the **Validation** drop-down command again. This time, select **Field Validation Message**.
6. The **Enter Validation Message** dialog box will appear.



Type the phrase you would like to appear in an **error message** when a user tries to enter data that **violates** the validation rule. Your message should let the user know what data is permitted.

7. When you're satisfied with the error message, click **OK**.
8. The validation rule is now included in the field. Users will be unable to enter data that violates the rule.



Simple validation rules can be written exactly like **query criteria**. The only difference is that query criteria search for data, while an identical validation rule either **permits** or **rejects** data.

Calculated Fields and Totals Rows

Adding **calculated fields** and **totals rows** to your table lets you perform **calculations** using your table data. A calculated field calculates data within one record, while a totals row performs a calculation on an entire field of data. Whenever you see a **subtotal** for one record, you are looking at a calculated field. Likewise, a **grand total** at the bottom of a table is really a totals row.

This Calculated Field multiplies the data in the Quantity and Price fields

Product	Quantity	Unit	Price	Subtotal
Chocolate Chip	2	Single	\$1.50	\$3.00
Fudge Brownie	1	Single	\$2.00	\$2.00
Ginger Shortbread	1	Half-Dozen	\$10.50	\$10.50
Brownies	1	One Dozen	\$19.00	\$19.00
Black Forest	5	Single	\$22.00	\$110.00
Coconut	2	Single	\$22.00	\$44.00
Carrot Cake	1	Single	\$22.00	\$22.00
Fudge Chocolate	2	Single	\$22.00	\$44.00
Carrot Cake	1	Single	\$22.00	\$22.00
Black Walnut	3	Single	\$22.00	\$66.00
Cheesecake	1	Single	\$26.00	\$26.00
Total				\$368.50

The Totals Row adds up all of the subtotal amounts to create a grand total

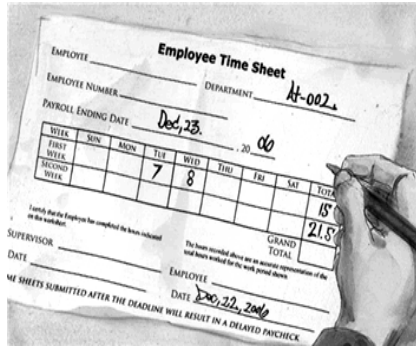
Lesson: 4

Working with Forms

While you can always enter data directly into database tables, you might find it easier to use forms. Using a form to enter data lets you be certain that you're entering the right data in the right location and format. This can help keep your database accurate and consistent.

Why Use Forms?

Many of us fill out forms so often that we hardly even notice when we're asked to use them. Forms are so popular because they're useful for both the person asking for the information and the person providing it. They are a way of requiring information in a specific format, which means the person filling out the form knows exactly which information to include and where to put it.



Filling out a paper form

This is just as true of forms in Access. When you enter information into a form in Access, that data goes exactly where it's supposed to go-- into one or more related tables. While entering data into simple tables is fairly straightforward, data entry becomes more complicated as you start populating tables with records from elsewhere in the database. For instance, the orders table in a bakery's database might link to information about customers, products, and prices drawn from related tables. A record with information about a single order might look like this:

ID	Customer ID	Paid	Pre Order	Notes	Pickup Date
13	139	Yes	Yes	For a kindergarten party.	12/16/2011

In fact, in order to see the entire order, you would also have to look at the order items table, where the menu items that make up each order are recorded.

ID	Order ID	Menu Item ID	Quantity
28	13	50	1
29	13	38	1
30	13	10	1

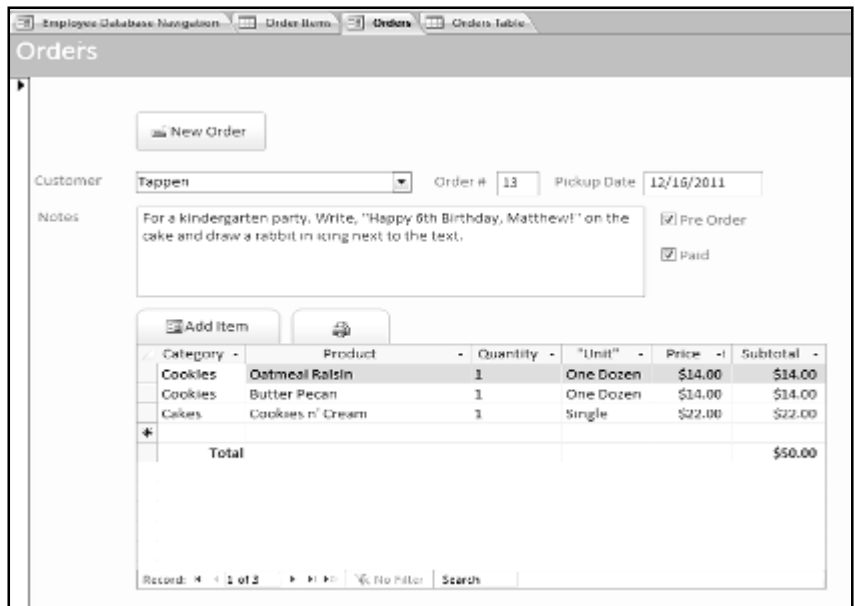
The records in these tables include ID numbers of records from other tables. You can't learn much just by glancing at these records, as the ID numbers don't tell you much about the data they relate to. Plus, since you have to look at two tables just to view one order, you might have a hard time even finding the right data. It's easy to see how viewing or entering many records this way could become a difficult

and tedious task.


A form containing the same data might look like this:

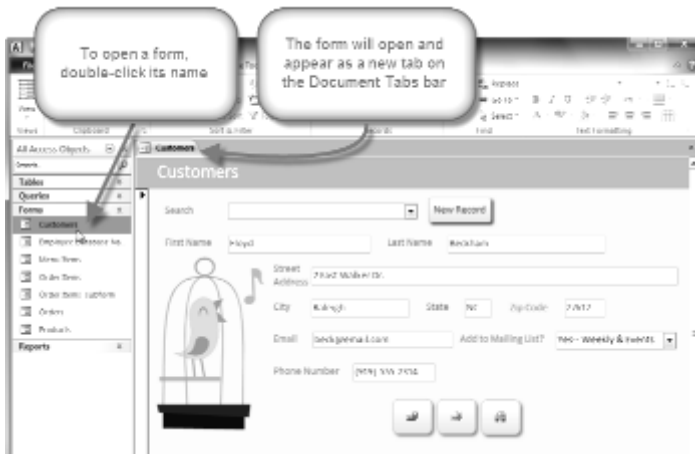
As you can see, this record is much easier to understand when viewed in a form. Modifying the record would be easier, too, since you wouldn't have to know any ID numbers to enter new data. When you're using a form, you don't have to worry about entering data into the right tables or in the right format-- the form can handle those things itself. There's no need to go back and forth between tables or search carefully within a table for a certain record, since forms let you see entire records one at a time.

Not only do forms make the data entry process easier for the user, they keep the database itself working smoothly. With forms, database designers can control exactly how users are able to interact with the database. They can even set restrictions on individual form components to ensure that all of the needed data is entered, and that it's all entered in a valid format. This is useful, as keeping the data consistent and well-organized is essential for an accurate and powerful database.



To Open an Existing Form:

1. **Open** your database and locate the **Navigation Pane**.
2. In the **Navigation Pane**, locate the form you would like to open. Forms are marked with the  icon.
3. **Double-click** the name of the form. It will open and appear as a **tab** in the **Document Tabs bar**.



To Save the Current Record:

1. Select the **Home** tab and locate the **Records** group.
2. Click the **Save** command. The current record will be saved.

To Delete the Current Record:

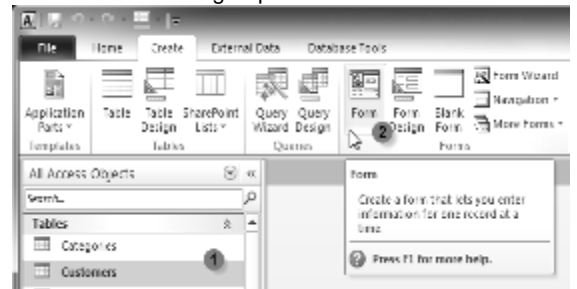
1. Select the **Home** tab and locate the **Records** group.
2. Click the **Delete** command. The record will be permanently deleted.

Creating Forms

Access makes it easy to create a form from any table in your database. Any form you create from a table will let you view the data that's already in that table and add new data. Once you've created a form, you can also modify it by adding additional fields and design controls such as combo boxes.

To Create a Form:

1. In the **Navigation Pane**, select the table you would like to use to create a form. You do not need to open the table.
2. Select the **Create** tab on the Ribbon and locate the **Forms** group. Click the **Form** command.



3. Your form will be created and opened in **Layout View**.



4. To **save** the form, click the **Save** command on the **Quick Access Toolbar**. When prompted, type a **name** for the form and then click **OK**.

Entering and Modifying Data

Depending on the database you're using, the forms you work with may include special tools and features that let you do common tasks with one click of a button. You'll see examples of these tools in the interactive on the next page. However, no matter what type of form you're working with, you can follow the same procedures for carrying out certain basic tasks.

To Add a New Record:

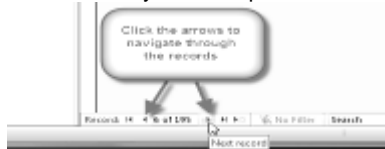
There are two ways to add a new record to a form:

- In the **Records** group on the **Home** tab of the **Ribbon**, click the **New** command.
- On the **Record Navigation bar** at the bottom of the window, click the **New Record** button.

To Find an Existing Record to View or Edit:

There are two ways to find and view an existing record using a form, and they both use the **Navigation Bar** at the bottom of the screen:

- To look through records one at a time, click the **navigation arrows**. The right arrow will take you to the next record, and the left arrow will take you to the previous one.



- To **search** for a record, type a word that you know is contained in that record in the **navigation search box**.



About Subforms

If you created a form from a table whose records are linked to another table, your form probably includes a **subform**. A subform is a **datasheet form** that displays linked records in a table-like format. For instance, the subform included in the **Customers** form we just created displays linked customer **orders**. We probably don't need to include this subform, since we really just want to use the Customers form to enter and review contact information. If you find that you don't need a subform, you can easily **delete** it. Simply click it and press the **delete** key.

Customers

First Name: Haliee
 Last Name: Auden
 Street Address: 921 Dawson St.
 State: NC
 Zip Code: 27609
 Email: hauden@email.com
 Phone Number: 919-555-0045
 City: Raleigh

Add to Mailing List? Yes- Special Offers Only

ID	Paid	Pre Order	Notes	Pickup Date
9	Yes	No		12/14/2010
(New)	No	No		

However, subforms aren't always useless. Depending on the content and source of your form, you might find that the subform contains useful information, as in the example below. In our **Orders** form, the subform contains the name, quantity, and price of each item contained in that order, which is all very useful information.

Orders

Customer: Allenton Order # 63

Notes: For a St. Patrick's Day party. Make everything we can green. food coloring to cake and cookie dough, green filling in cream and add on green sprinkles where appropriate.

Add Item

Category	Product	Quantity	"Unit"	Price	Subtotal
Pastries	Cream Puffs	2	One Dozen	\$14.00	\$28.00
Cookies	Lemon Sugar	1	One Dozen	\$14.00	\$14.00
Pies	Key Lime	2	Single	\$17.00	\$34.00
Cookies	Ginger Shortbread	1	One Dozen	\$19.00	\$19.00
Cakes	French Vanilla	1	Single	\$22.00	\$22.00
Total					\$117.00

Adding Additional Fields to a Form

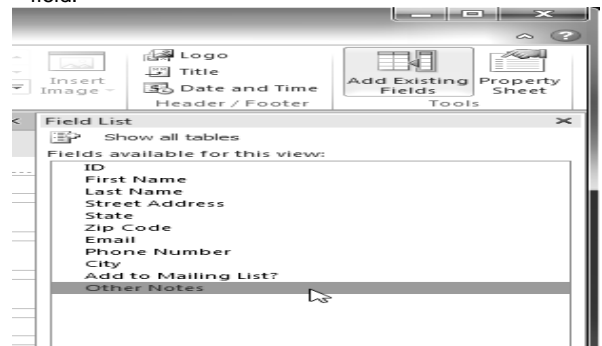
When you use the **Form** command on an existing table, all of the fields from that table are included in that form. However, if you later add additional fields to that table, those fields will **not** automatically show up in existing forms. In situations like this, you can **add** additional fields to a form.

To Add a Field to a Form:

1. Select the **Form Layout Tools Design** tab, then locate the **Tools** group on the right side of the Ribbon.
2. Click the **Add Existing Fields** command.

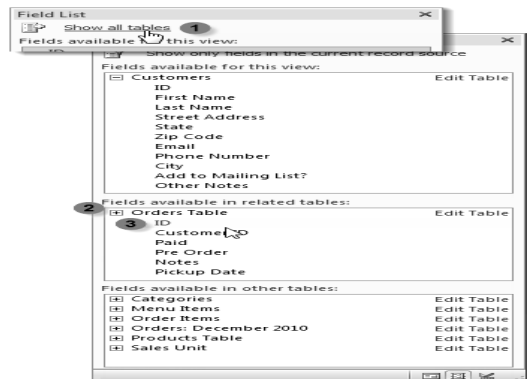


3. The **Field List** pane will appear. Select the field or fields to add to your form.
 - o If you want to add a field from the **same** table you used to build the form, simply **double-click** the name of the desired field.



To add a field from a different table:

1. Click **Show All Tables**.
2. Click the plus sign **+** next to the table that contains the field you wish to add.
3. Double-click the desired field.



4. The new field will be added.

You can also use the above procedure to add fields to a totally blank form. Simply **create a form** by clicking the **Blank Form** command on the **Create** tab, then follow the above steps to add the desired fields.

Adding Design Controls

Design Controls set restrictions on the fields in your forms. This helps you better control how the data is entered into your forms, which in turn helps keep the database consistent.

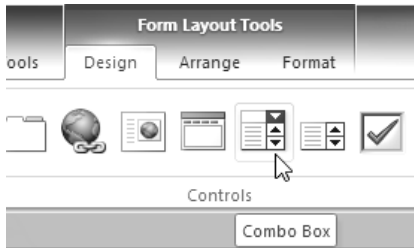
Combo Boxes

A **combo box** is a drop-down list that you can use in your form in place of a field. Combo boxes **limit** the information that a user can enter by forcing them to select only the **options** that you have specified.

Combo boxes are useful for fields that have a limited number of possible valid responses. For instance, you might use a combo box to make sure that people only enter a valid U.S. state while entering an address, or that they only choose products that already exist in your database while placing an order.

To Create a Combo Box:

1. In **Form Layout** view, select the **Form Layout Tools Design** tab and locate the **Controls** group.
2. Select the **Combo Box** command, which looks like a drop-down list.



3. Your cursor will turn into a tiny **crosshairs and drop-down list** icon. Move the cursor to the place where you would like to insert the combo box, and click. A yellow line will appear to indicate the location where your combo box will be created. In our example, the combo box will be located **between the City field and the Add to Mailing List? field**.

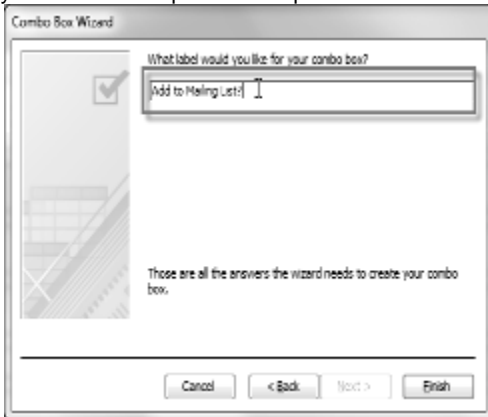
4. The **Combo Box Wizard** dialog box will appear. Select the second option, **I will type in the values I want**, then click **Next**.

5. Type in the choices you would like to appear in your drop-down list. Each choice should be on its own row. In our example, we are creating a combo box for the **Add to Mailing List?** field in our form, so we will enter all of the possible valid responses for that field. Users will be able to select one of three choices from our finished combo box: "No," "Yes- Weekly," and "Special Offers Only."

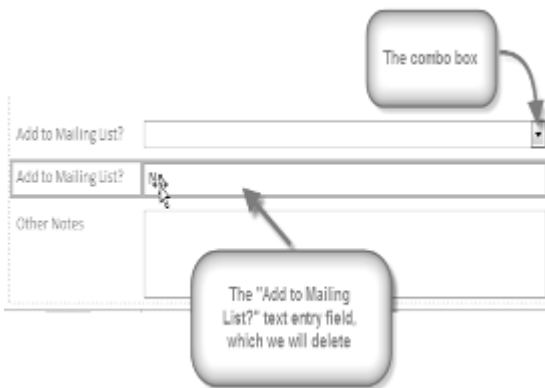
6. If necessary, **resize** the column so that all your text is visible. Once you are satisfied with your list, click **Next**.

7. Select **Store that value in this field**, then click the drop-down arrow and **select the field** where you would like selections from your combo box to be recorded. After making your selection, click **Next**.

8. Enter the **label**, or **name** that will appear next to your combo box. Generally, it's a good idea to use the name of the field that you chose in the previous step.



9. Click **Finish**. Your combo box will appear on the form. If you created your combo box to **replace** an existing field, you should **delete** the first field. In our example, you might notice that we now have two fields with the same name. These two fields send information to the same place, so we don't need them both. We'll **delete** the one without the combo box.



10. Switch to **Form** view to **test** your combo box. Simply click the drop-down arrow and verify that the list contains the correct choices. The combo box can now be used to enter data.

Phone Number: 919-555-2314

City: Raleigh

Add to Mailing List? [No]

Other Notes: Yes- Weekly, Yes- Special Offers Only

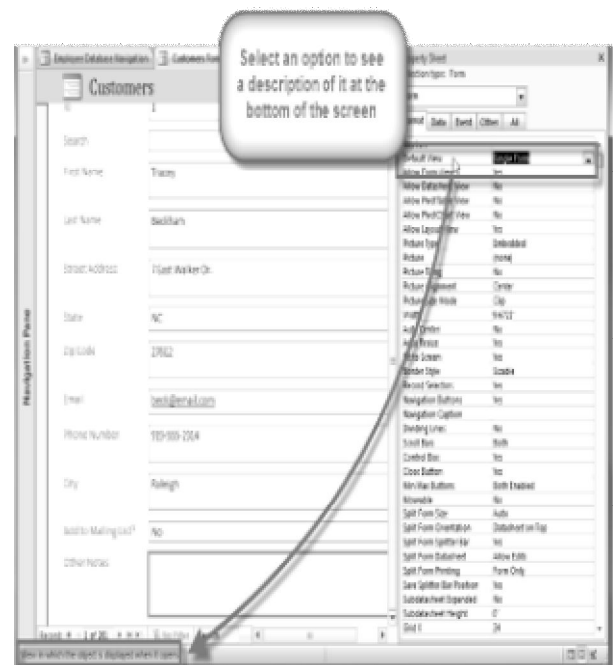
If you want to include a drop-down list with a long list of options and don't want to type them all out, create a combo box and choose the first option in the combo box wizard, **I want to get the values from another table or query**. This will allow you to create a drop-down list from a table field.



Some users report that Access malfunctions while working with forms. If you have a problem performing any of these tasks in Layout view, try switching to Design View.

Customizing Form Settings with the Property Sheet

The **Property Sheet** is a pane containing **detailed information** about your form and each of its components. From the Property Sheet, you can make changes to every part of your form, both in terms of function and appearance. The best way to familiarize yourself with the property sheet is to **open** it and **select** various options. When you select an option, Access will display a brief description of that option on the **bottom left border** of the program window.

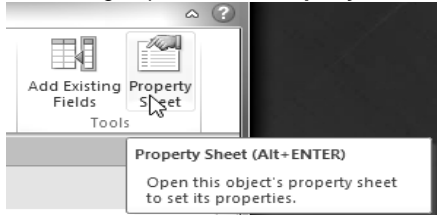


Modifying Form Settings

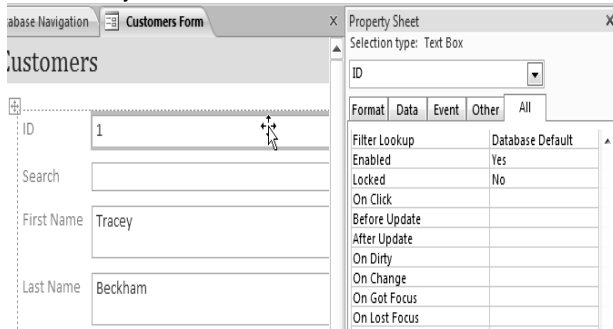
There are far too many options in the Property Sheet to discuss them all in detail. We'll review two useful ones here: **hiding** fields, and setting fields with **dates** to **automatically fill in the current date**. Practicing these procedures should give you a sense of how to work with other Property Sheet settings, as well.

To Hide a Field:

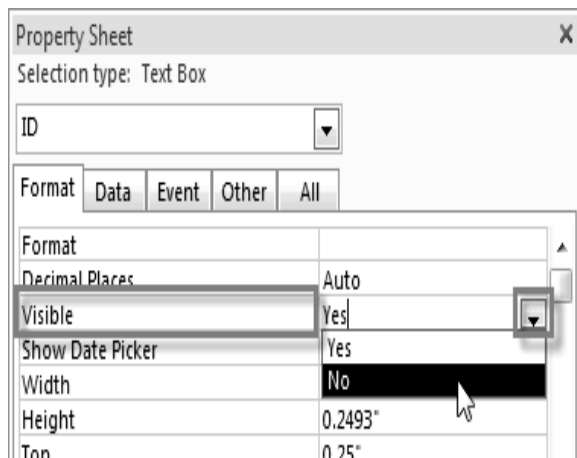
1. In either **Layout** or **Design** view, select the **Design** tab and locate the **Tools** group. Click the **Property Sheet** command.



2. The **Property Sheet** will appear in a pane on the right. On the form, **select** the field you wish to hide. In our example, we'll hide the **Customer ID** field, since we don't want any of our users to try to edit it.




3. In the **Property Sheet**, click the **Format** tab and locate the **Visible** option on the third row.
4. Click the drop-down arrow in the column to the right, and select **No**.



5. Switch to **Form** view to verify that the field is hidden.

To Set a Field to Auto-fill with the Current Date

1. In either **Layout** or **Design** view, select the **Design** tab and locate the **Tools** group. Click the **Property Sheet** command.
2. The **Property Sheet** will appear in a pane on the right. On the form, **select** the field you would like to automatically fill in the current date. This **must** be a field with the **date** data type. For our example, we'll select the **Pickup Date** field on our **Orders** form.
3. In the **Property Sheet**, click the **Data** tab and select the **Default Value** field in the fourth row. Click the **Expression Builder** button  that appears in the column to the right.
4. The **Expression Builder** dialog box will open. In the **Expression Elements** list, click the words **Common Expressions**.
5. In the **Expression Categories** list, double-click **Current Date**.
6. The expression for Current Date will be added. Click **OK**.
7. Switch to **Form** view to verify that the expression works. When you **create a new record** with that form, the date field that you modified will automatically fill in the current date.

Formatting Forms

Access offers many options that let you make your forms look exactly the way you want. While some of these options, like command buttons, are unique to forms, others may be familiar to you.

Command Buttons

If you want to create a way for users of your form to quickly perform specific actions and tasks, consider adding **command buttons**. When you create a command button, you specify an action for it to carry out when clicked. By including commands for common tasks right in your form, you're making the form easier to use.

Access offers many different types of command buttons, but they can be divided into a few main categories, including:

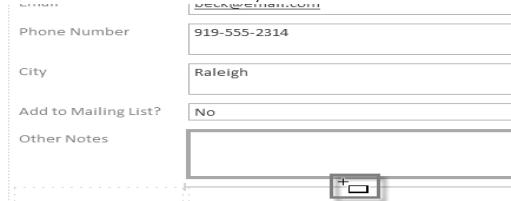
- **Record Navigation** command buttons, which easily allow your user to move among the records in your database.
- **Record Operation** command buttons, which let your user do things like save or print a record.
- **Form Operation** command buttons, which give your user the ability to quickly open or close a form, print the current form, and other actions.
- **Report Operation** command buttons, which offer the user a quick way to do things such as preview or mail a report from the current record.

To Add a Command Button to a Form:

1. In **Form Layout** view, select the **Form Layout Tools Design** tab and locate the **Controls** group.
2. Select the **Button** command.



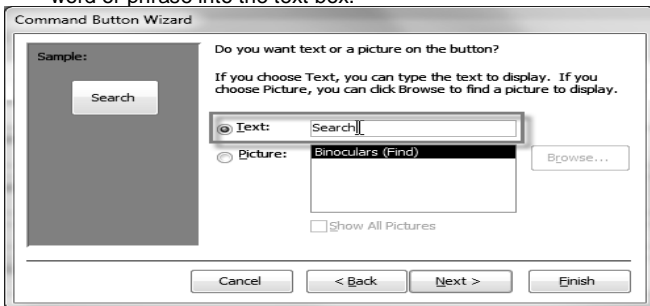
3. Your cursor will turn into a tiny **crosshairs with a button icon**. Place it in the spot where you would like your command button to be, and click.



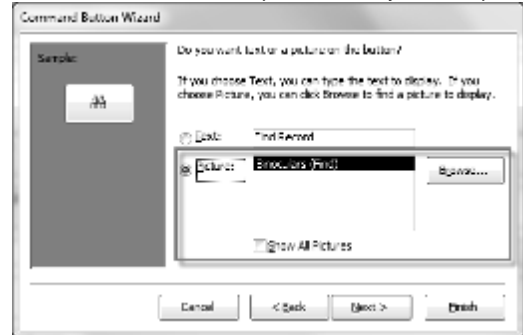
4. The **Command Button Wizard** will appear. In the **Categories** pane, select the category of button you want to add. We want to find a way to move more quickly to specific records, so we'll choose the **Record Navigation** category.
5. The list in the **Actions** pane will update to reflect your chosen category. Select the action you would like the button to perform, then click **Next**. For our example, we'll choose **Find Record**.



6. You can now decide whether you want your button to include **text** or a **picture**. A live preview of your button appears on the left.
 - o To include **text**, select the **Text** option and type the desired word or phrase into the text box.



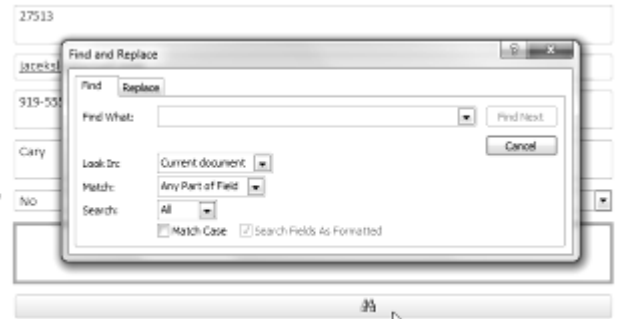
- o To include a **picture**, select the **Picture** option. You can decide to keep the default picture for that command button, or select another picture. Click **Show All Pictures** to choose from another command button icon, or **Browse...** to choose a picture from your computer.



2. When you are satisfied with the appearance of your command button, click **Next**.
3. Type a **name** for the button. This name won't appear on the button, but knowing the name will help you quickly identify the button if you ever want to **modify** it with the **Property Sheet**. After typing the button name, click **Finish**.



4. Switch to **Form** view to test the new button. Our **Find Record** button opens the **Find and Replace** dialog box.



Some users report that Access malfunctions while formatting forms. If you have a problem performing any of these tasks in Layout view, try switching to Design View.

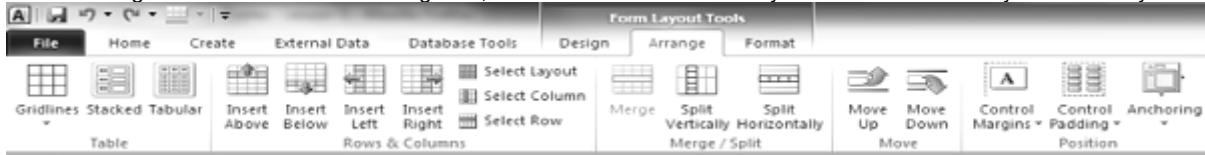
Modifying Form Layout

When you create a form, Access arranges the form components in a default layout where the fields are neatly stacked on top of each other, all exactly the same width.

While this layout is functional, you might find that it doesn't best fit your information. For instance, in the form below, most of the fields are almost completely empty, since the data stored there doesn't take up much room.

The form would fit the data a little better if we made the fields and command buttons smaller, and even put some of them side by side. However, with the default layout, you won't be able to put two fields next to each other or resize one field or button without resizing them all. This is because Access lines up form components in rows and columns. When you resize a field, you're really resizing the column that contains it.

We can do this using the command on the Arrange tab, which contains all the tools you need to customize your form's layout.



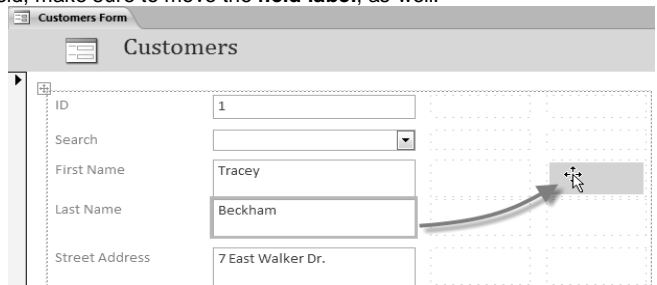
To Resize Form Components:

1. Switch to **Layout** view.

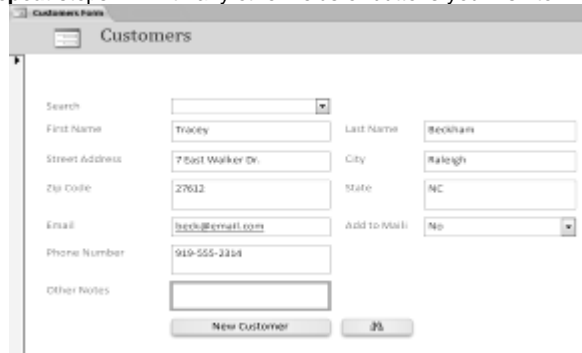


2. Select the field or button you would like to resize, and **hover your mouse** over the edge. Your cursor will become a double-sided arrow.
3. **Click and drag** the edge to resize, and release when the field or button is the desired size.
4. The field or button, as well as every other item in line with it, will be resized.

2. **Click and drag** the field or button to its new location. If you're moving a field, make sure to move the **field label**, as well.

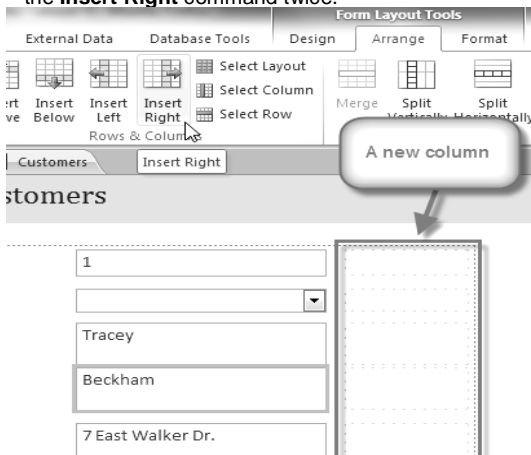


3. **Repeat** steps 1-2 with any other fields or buttons you wish to move.

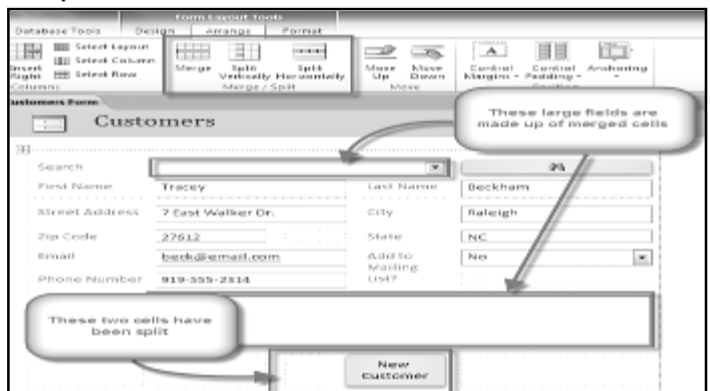


To Move Form Components:

1. If necessary, **add columns or rows** to make room for the field or button you wish to move, by using the **Insert** commands in the **Rows & Columns** group. In our example, we want to move the **Last Name** field to the right of to the **First Name** field, so we'll have to create two new columns to the right: one for the field label, and one for the field itself. To do this, we'll click the **Insert Right** command twice.



If you would like to make a field take up **more** or **less** space than one column, you can use the **Merge** and **Split** commands. The Merge command **combines** two or more cells, while the **Split** command **divides** a cell.



Lesson: 5

Sorting & Filtering Records

Access 2010 gives you the ability to work with enormous amounts of data, which means it can be hard to learn anything about your database just by glancing at it. Sorting and filtering are two tools that let you customize how you organize and view your data making it more convenient to work with. Essentially, sorting and filtering are tools that let you organize your data. When you sort data, you are putting it in order. Filtering data lets you hide unimportant data and focus only on the data you're interested in.

Sorting Records

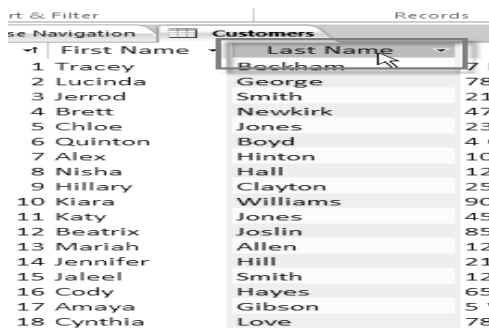
When you **sort** records, you are putting them into a **logical order**, with **like data grouped together**. As a result, sorted data is often simpler to read and understand than unsorted data. By default, Access sorts records by their **ID numbers**. However, there are many other ways records can be sorted. For example, the information in a database belonging to a bakery could be sorted in a number of ways:

- Orders could be sorted by **order date** or by the **last name** of the customers who placed the orders.
- Customers could be sorted by **name** or by the **city** or **zip code** where they live.
- Products could be sorted by **name**, **category** (e.g., pies, cakes, cupcakes, etc.), or **price**.

You can sort both text and numbers in two ways: in ascending order or descending order. "**Ascending**" means "**going up**," so an ascending sort will arrange numbers from smallest to largest and text from **A to Z**. "**Descending**" means "**going down**," or largest to smallest for numbers and **Z to A** for text. The default ID number sort that appears in your tables is an ascending sort, which is why the lowest ID numbers appear first. In our example, we will be performing a sort on a table. However, you can sort records in any Access object. The procedure is largely the same.

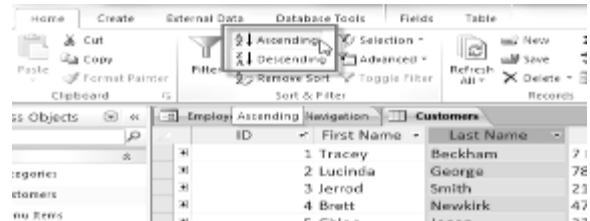
To Sort Records:

1. Select a field in the cell you wish to sort by. In this example, we will sort by customers' last names.




ID	First Name	Last Name	...
1	Tracey	Beckham	71
2	Lucinda	George	78
3	Jerrold	Smith	21
4	Brett	Newkirk	47
5	Chloe	Jones	23
6	Quinton	Boyd	41
7	Alex	Hinton	10
8	Nisha	Hall	12
9	Hillary	Clayton	25
10	Kiara	Williams	90
11	Katy	Jones	45
12	Beatrix	Joslin	85
13	Mariah	Allen	12
14	Jennifer	Hill	21
15	Jaleel	Smith	12
16	Cody	Hayes	65
17	Amaya	Gibson	51
18	Cynthia	Love	78

2. Click the **Home** tab on the Ribbon and locate the **Sort & Filter** group.
3. **Sort** the field by selecting the **Ascending** or **Descending** command.
 - Select **Ascending** to sort text A to Z or to sort numbers from smallest to largest. We will select this in our example, since we want the last names to be in A to Z order.
 - Select **Descending** to sort text Z to A or to sort numbers from largest to smallest.



4. The table will now be sorted by the selected field.



ID	First Name	Last Name	...
102	Theodore	Achi	...
195	Kris	Ackerman	...
78	Michiko	Akiwana	...
188	Nathan	Albee	...
13	Mariah	Allen	...
37	Carol	Allenson	...
38	Zoey	Altman	...
163	Franz	Angelou	...
87	Robert	Armisen	...
47	Hakim	Auden	...
129	Yann	Augerot	...
40	Vig	Aurelio	...
1	Tracey	Beckham	...
124	Andrew	Bedinger	...
136	Xy'nya	Bell	...
187	Samantha	Bell	...
190	Matt	Benson	...
41	Jeffery	Bergman	...

5. To save the new sort, click the **Save** command on the Quick Access toolbar.

After you save the sort, the records will stay sorted that way until you perform another sort or remove the current one. To remove a sort, simply click the **Remove Sort** command.

Filtering Records

Filters allow you to view **only the data you want to see**. When you create a filter, you set **criteria** for the data you want to display. The filter then **searches** all of the records in the table, **finds** the ones that meet your search criteria, and **temporarily hides** the ones that don't.

Filters are useful, as they allow you to **focus in** on specific records without being distracted by the data you're uninterested in. For instance, if you had a database that included customer and order information, you could create a filter to display only customers living within a certain city, or only orders that contain a certain product. Viewing this data with a filter would be far more convenient than searching for it in a large table.

In our examples and explanations, we will be applying filters to tables. However, you can apply filters to any Access object. The procedure is largely the same.

To Create a Simple Filter:

1. Click the **drop-down arrow** next to the field you would like to filter by.
2. A drop-down menu with a checklist will appear. Only checked items will be included in the filtered results. Use the following options to determine which items will be included in your filter:
 - **Select** and **deselect** items one at a time by clicking their checkboxes.
 - Click **Select All** to include every item in the filter. Clicking **Select All** a second time will deselect all items.
 - Click **Blank** to set the filter to find only the records with no data in the selected field.
3. Click **OK**. The filter will be applied.

Toggling your filter allows you to turn it on and off. To view the records without the filter, simply click the **Toggle Filter** command. To restore the filter, simply click it again.

Creating a Filter from a Selection

Filtering by selection allows you to **select specific data** from your table and find data that is **similar** or **dissimilar** to it. For instance, if you were working with a bakery's database and wanted to search for all products whose names contained the word "chocolate," you could select that word in one product name and create a filter with that selection. Creating a filter with a selection can be more convenient than setting up a simple filter if the field you're working with contains many items.

To Create a Filter from a Selection:

1. **Select** the cell or data you would like to create a filter with. If *We want to see a list of all of our products that contain the word "chocolate" in their names, so we'll select the word "chocolate" in the Product Name field.*
2. Select the **Home** tab on the Ribbon and locate the **Sort & Filter** group.
3. Click the **Selection** drop-down arrow.
4. Select the type of filter you would like to set up:
 - Selecting **Equals** will include only records with data that is identical to the selected data.
 - Selecting **Does Not Equal** will include all records **except** the data that is identical to the selection..
 - Selecting **Contains** will include only records with cells that contain the selected data. We'll select this, since we want to see records that contain the word "chocolate" anywhere in the title.
 - Selecting **Does Not Contain** will include all records **except** those with cells that contain the selected data.
5. The filter will be applied. Our table now displays only products with the word "chocolate" in their names.

Creating a Filter from a Search Term

You can also create a filter by entering a **search term** and specifying the way Access should match data to that term. Creating a filter from a search term is similar to creating a filter from a selection.

Filtering Text by a Search Term

When filtering text by entering a search term, you can use some of the same options you use when filtering by a selection, like **Equals**, **Does not Equal**, **Contains**, and **Does Not Contain**. You can also choose from the following options:

- **Begins With**, which includes only records whose data for the selected field **begins** with the search term
- **Does Not Begin With**, which includes all records **except** those whose data for the selected field begins with the search term
- **Ends With**, which includes only records whose data for the selected field **ends** with the search term
- **Does Not End With**, which includes all records **except** those whose data for the selected field ends with the search term

To Filter Text by a Search Term:

1. Click the **drop-down arrow** next to the field you would like to filter by. If We want to filter the records in our orders table to display only those that contain notes with certain information, so we'll click the arrow in the **Notes** field.
2. In the drop-down menu, hover your mouse over the words **Text Filters**. From the list that appears, select the way you would like the filter to match the term you enter. In this example, we want to view only records whose notes indicate the order was placed for a party. We'll select **Contains**, so that we can search for records that contain the word "party."
3. The **Custom Filter** dialog box will appear. Type in the word you would like to use in your filter.
4. Click **OK**. The filter will be applied.

Filtering Numbers with a Search Term

The process for filtering numbers with a search term is very similar to the process for filtering text. However, different filtering options are available to you when working with numbers. In addition to the **Equals** and **Does not Equal**, you can also choose:

- **Greater Than** to include only records with numbers in that field **greater than or equal to** the number you enter
- **Less Than** to include only records with numbers in that field **less than or equal to** the number you enter
- **Between** to include records with numbers that fall within a certain range

Lesson: 6

Designing A Query

The real power of a relational database is in the ability to quickly retrieve and analyze your data by running a query. Queries allow you to pull information from one or more tables based on a set of search conditions you define.

Running a query is like asking a detailed question of your database. When you build a query in Access, you are defining specific search conditions to find exactly the data you want.

How are Queries Used?

Queries are far more powerful than the simple searches or filters you might use to find data within a table. This is because queries can draw their information from multiple tables. For example, while you could use a search in the customers table to find the name of one customer at your business or a filter on the orders table to view only orders placed within the past week, neither of those would let you view both customers and orders at once. However, you could easily run a query to find the name and phone number of every customer who's made a purchase within the past week. A well-designed query can give information that you might not be able to find out just by examining the data in your tables.

When you run a query, the results are presented to you in a table, but when you design one, you use a very different view. This is called Query Design view, and it lets you see how your query is put together.

One-Table Queries

Let's familiarize ourselves with the query-building process by building the simplest query possible: **a one-table query**.

We will run a query on the Customers table of our bakery database. Imagine that our bakery is having a special event, and we want to invite our customers who live nearby, since they are the most likely to come. This means we need to see a list of all the customers who live close by, and only those customers.

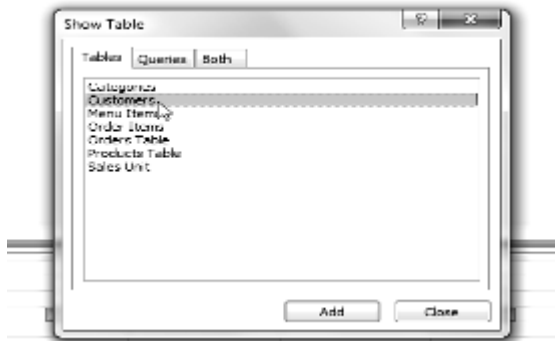
If you think this sound a little like applying a filter, you're right. A **one-table query** is actually just an advanced filter applied to a table.

To Apply a Simple One-Table Query:

1. Select the **Create** tab on the Ribbon and locate the **Queries** group.
2. Select the **Query Design** command.



3. Access will switch to **Query Design view**. In the **Show Table** dialog box that appears, select the table you would like to run a query on. Click **Add**, then click **Close**. We are running a query about our customers, so we will add the **Customers** table.



4. The selected table will appear as a small window in the **Object Relationship Pane**. In the table window, double-click the **field names** you would like to include in your query. They will be added to the **Design Grid** in the bottom part of the screen.

In our example, we want to mail invitations to customers who live in a certain area, so we'll include the **first name** and **last name**, **street address**, **city**, **state**, and **zip code** fields. We aren't planning on calling or emailing our customers, so we don't have to include the **telephone** or **email** fields.

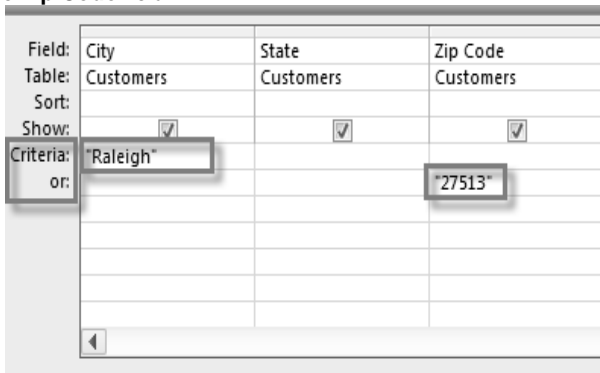


5. Set the **search criteria** by clicking on the cell in the **Criteria:** row of each field you would like to filter.

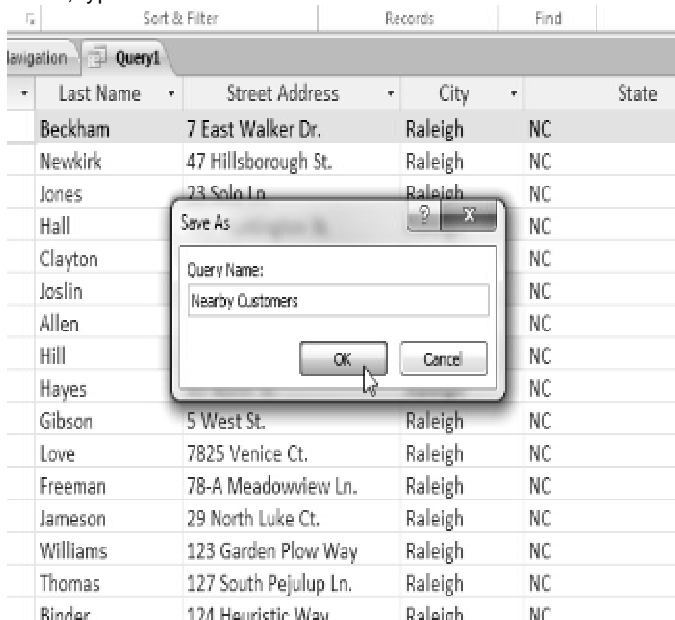
Typing criteria into more than one field in the Criteria: row will set your query to include only results that meet all the criteria. If you want to set multiple criteria, but don't need the records shown in your results to meet them all, type the first criteria in the Criteria: row and additional criteria in the **Or: row** and the rows beneath it.

For this one-table query, we'll use very simple search criteria.

- We want to find our customers who live in a city called **Raleigh**, so in our **City** field; we'll type "**Raleigh**." Typing "Raleigh" in **quotation marks** will retrieve all records with an **exact match** for "Raleigh" in the City field.
- Some customers who live in the suburbs live fairly close by, and we'd like to invite them as well. We'll add their **zip code, 27513** as another criterion. Since we want to find customers who either live in Raleigh **or** the 27513 zip code, we'll type "27513" in the **or:** row of the **Zip Code** field.



6. After you have set your criteria, **run** the query by clicking the **Run** command on the **Query Tools Design** tab.
7. The query results will be displayed in the query's **Datasheet View**, which looks like a table. If desired, **save** your query by clicking the **Save** command in the Quick Access Toolbar. When prompted to name it, type in the desired name and click **OK**.



To Design a Multi-Table Query

Queries can be hard to understand and build if you don't have a good idea of what you're trying to find and how to find it. A one-table query can be simple enough to make up as you go along, but to build anything more powerful, you'll need to plan the query in advance.

Planning a Query

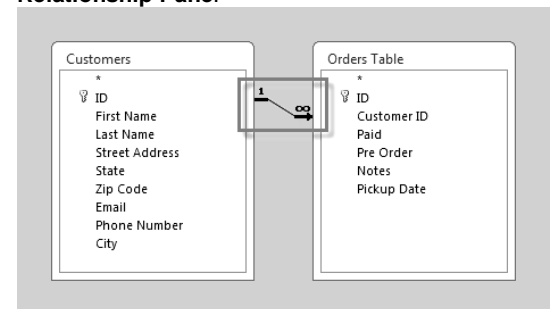
When planning a query that uses more than one table, you should go through these four steps:

1. **Pinpoint** exactly what you want to know. If you could ask your database any question, what would it be? Building a query is more complicated than just asking a question, but knowing precisely what question you want to answer is essential to building a useful query.
2. **Identify** every type of information you want included in your query results. Which fields contain this information?
3. **Locate** the fields you want to include in your query. Which tables are they contained in?
4. **Determine** the criteria the information in each field needs to meet. Think about the question you asked in the first step. Which fields do you need to search for specific information? What information are you looking for? How will you search for it?

This process might seem abstract at first, but as we go through the process of planning our own multi-table query, you should start to understand how planning your queries can make building them a lot easier.

Joining Tables in Queries

The final thing you need to consider when designing a query is the way you link, or **join**, the tables you're working with. When you add two tables to an Access query, this is what you'll see in the **Object Relationship Pane**:



The line connecting the two tables is called the **join line**. See how the join line is actually an arrow? This is because it indicates the order in which the query looks at data from the two tables. In the image above, the arrow is pointing from **left to right**, which means that the query will look at data in the **left** table first, then look at only the data in the

right table that **relates** to the records it's already seen in the left table.

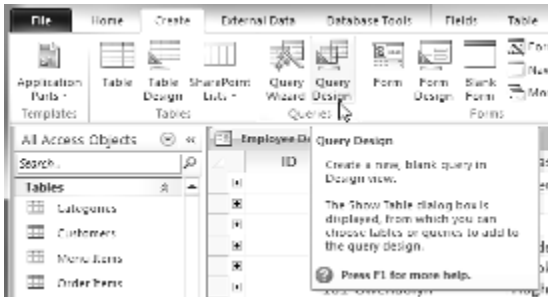
Your tables won't always be joined this way-- sometimes Access will join them **right to left**. In either case, you might need to **change the direction** of the join to make sure your query includes the correct information. The join direction can affect **which information** your query retrieves.

Creating a Multi-Table Query

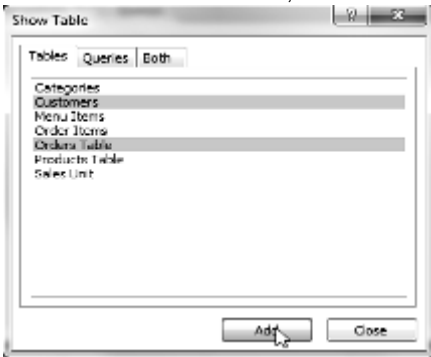
Now that we've planned our query, we're ready to design and run it. If you have created written plans for your query, be sure to reference them often throughout the query design process.

To Create a Multi-Table Query:

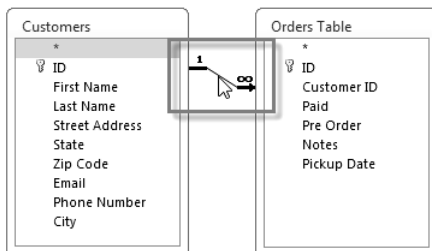
1. Select the **Query Design** Command from the **Create** tab on the Ribbon.



2. In the **Show Table** dialog box that appears, select each table you would like to include in your query and click **Add**. After you have added all of the tables you wish, click **Close**. When we planned our query, we decided we needed information from the **Customers** and **Orders** table, so we'll add those.



3. The tables will appear in the **Object Relationship Pane**, linked by a **join line**. Double-click the thin section of the join line between two tables to edit its **join direction**.

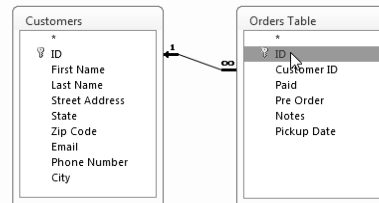


4. The **Join Properties** dialog box will appear. Select an option to choose the direction of your join.

- o Choose option **2**: for a **Left to Right** join. In our query, the **left** table is the **Customers** table, so choosing this would mean that all of the customers who met our location criteria, whether or not they had placed an order, would be included in our results. We don't want to choose this option for our query.
- o Choose option **3**: for a **Right to Left** query. Since our **right** table is our **Orders** table, selecting this option will let us work with records for **all** of the orders and **only** the customers who've placed orders. We'll choose this option for our query, since this is exactly the data we want to see.



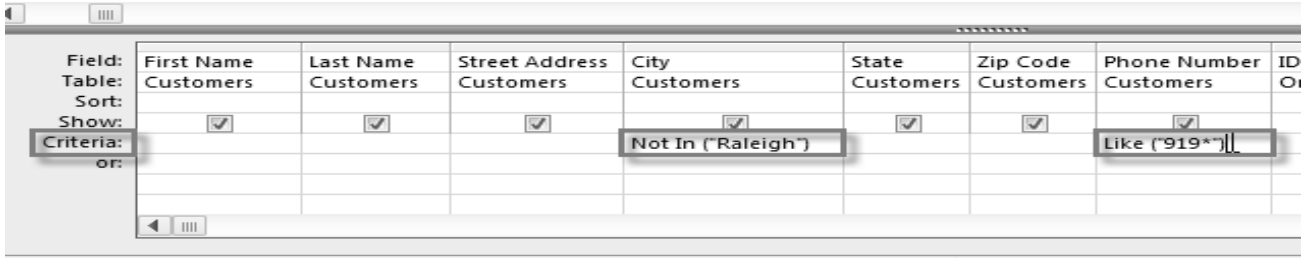
5. In the table windows, double-click the **field names** you would like to include in your query. They will be added to the **Design Grid** in the bottom part of the screen. In our example, we'll include most of the fields from the **Customers** table: **First Name**, **Last Name**, **Address**, **City**, **State**, **Zip Code**, and **Phone Number**. We'll also include the **ID number** from the **Orders** table.



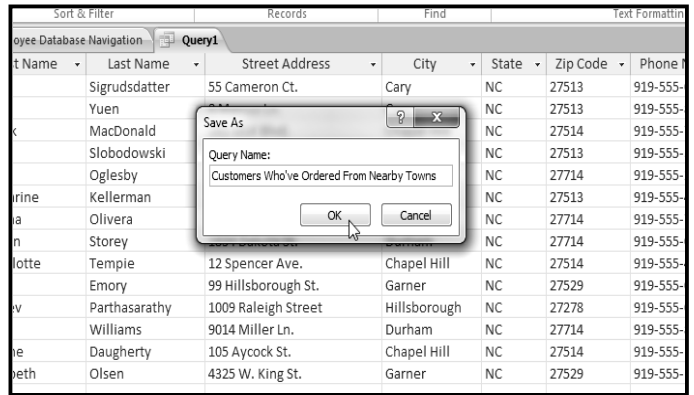
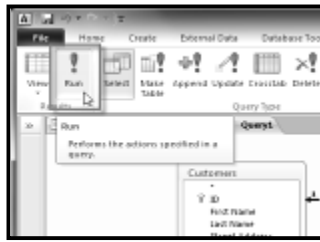
Field:	First Name	Last Name	Street Address	City	State	Zip Code	Phone Number	ID
Table:	Customers	Customers	Customers	Customers	Customers	Customers	Customers	Orders Table
Sort:								
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:								
or:								

6. Set **field criteria** by entering the desired criteria in the criteria row of each field. We want to set two criteria:

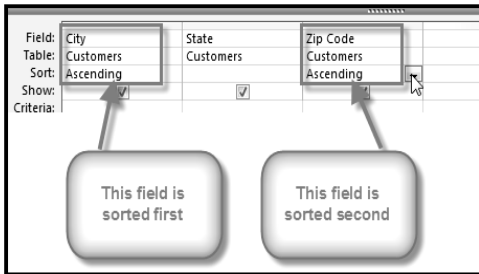
- First, to find customers who do **not** live in Raleigh, we'll type **Not like ("Raleigh")** in the **City** field.
- Second, to find customers who have a phone number beginning with the area code **919**, we'll type **Like ("919*")** in the **Phone Number** field.



7. After you have set your criteria, **run** the query by clicking the **Run** command on the **Query Tools Design** tab.
8. The query results will be displayed in the query's **Datasheet View**, which looks like a table. If desired, **save** your query by clicking the **Save** command in the Quick Access Toolbar. When prompted to name it, type in the desired name and click **OK**.



To Sort Queries



Access allows you to apply multiple sorts at once while you're designing your query. This allows you to view your data exactly the way you want; every single time you view it. A sort that includes more than one sorted field is called a **multi-level sort**. A multi-level sort allows you to apply an initial sort, then further organize that data with additional sorts. For instance, if you had a table full of customers and their addresses, you might choose to first sort the records by city, then further sort them alphabetically by last name. When more than one sort is included in a query, Access reads the sorts from **left to right**. This means that the leftmost sort will be applied first. So for instance, in the below example, the customers will be sorted first by the **City** they live in and then by the **Zip Code** within that city.

To Apply a Multi-Level Sort:

1. **Open** the query, and switch to **Design View**.
2. Locate the field you would like to sort first. In the **Sort:** row, click the drop-down arrow to select either an **ascending** or **descending** sort.
3. Repeat the process in the other fields to add additional sorts. Remember, the sorts are applied from left to right, so any additional sorts must be applied to fields located to the **right** of your primary sort. If necessary, you can **rearrange** the fields by **clicking** a field and **dragging** it to a new location.
4. To apply the sort, click the **Run** command.
5. Your query results will appear with the desired sort.

You can also apply multi-level sorts to tables that don't have queries applied to them. On the **Home** tab on the Ribbon, select the **Advanced** drop-down command in the **Sort & Filter** group. Select **Advanced Filter/Sort**, and create the multi-level sort as you normally would. When you're finished, click the **Toggle Filter** command to apply your sort.

Hiding Fields within Queries

Sometimes you might have fields that contain important criteria, but you might not need to actually see the information from that field in the final results. For example, take one of the queries we built in our last lesson-- a query to find the names and contact information of customers who had placed orders. We included Order ID numbers in our query, since we wanted to make sure that we only pulled customers who had placed orders. However, we really didn't need to see that information in our final query results. In fact, if we were just looking for customer names and addresses, seeing the order number mixed in there too might have even been distracting. Fortunately, Access makes it very easy to **hide** fields while still including any criteria they contain.

To Hide a Field within a Query:

1. Open the query, and switch to **Design View**.
2. Locate the field you would like to hide.
3. Click the **checkbox** in the **Show**: row to uncheck it.
4. To see the updated query, select the **Run** command.
The field will be hidden.

To **unhide** a hidden field, simply return to Design View and click the checkbox in the field's **Show**: row again.

More Types of Queries

By this point, you should understand how to create a simple one- or multi-table query using multiple criteria. Additional queries offer you the ability to perform even more complex actions with your database. One of these is the totals query, which lets you perform calculations with your data.

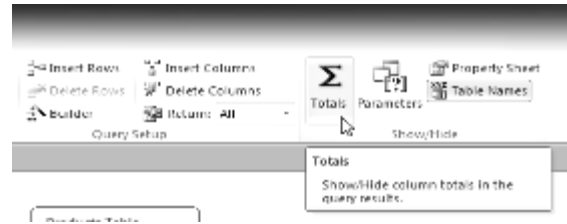
Totals Queries

Sometimes, setting simple criteria won't give you the results you need, especially when you're working with numbers. You may want to see your query results grouped or counted in some way. Access 2010 offers several options that make these functions possible. Perhaps the easiest of these is the **Totals** command. When you use the Totals function in your query, the data in your fields will be grouped by value, meaning that all items of one type are listed together. For instance, in a totals query about the items sold at our bakery, each type of item sold would be listed on a single row, no matter how many times that item had been sold. Once your records are grouped, you can perform calculations with them. **These calculations include:**

- **Count**, which counts the number of the same items in a field
- **Sum**, which adds the numbers in that field
- **Average**, which finds the average of the numbers that occur in that field
- **Maximum**, which returns the highest value that has been entered in that field
- **Minimum**, which returns the lowest value that has been entered in that field
- **First**, which returns the first, or earliest, value that has been entered in that field
- **Last**, which returns the last, or most recent, value that has been entered in that field

To Create a Totals Query:

1. Create or open a query you would like to use as a **totals query**. For our example, we want to find the total number we've sold of each of our menu items, so we'll use a query showing us all of the menu items we've sold. If you want to follow along in our database, open the **Menu Items Ordered** query.
2. In the **Query Design** tab, locate the **Show/Hide** group and select the **Totals** command.



3. A row will be added to the table in the **Design Grid**, with all values in that row set to **Group By**. Select the cell in the **Total**: row of the field you would like to perform a calculation on, and click the drop-down arrow that appears.

Field:	Product Types	Product Name	Product Name	Quantity
Table:	Categories	Products Table	Sales Unit	Order Items
Total:	Group By	Group By	Group By	Group By
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				
or:				

4. Select the calculation that you would like to be performed in that field. In our example, we want to **add** the quantities of products we've sold, so we'll select the **Sum** option.

Field:	Product Types	Product Name	Product Name	Quantity
Table:	Categories	Products Table	Sales Unit	Order Items
Total:	Group By	Group By	Group By	Sum
Sort:				Group By
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				
or:				

5. When you are satisfied with your query design, select the **Run** command on the **Query Tools Design** tab to **run** the query.

6. The query results will be displayed in the query's **Datasheet View**, which looks like a table. If desired, **save** your query by clicking the **Save** command in the Quick Access Toolbar. When prompted to name it, type in the desired name and click **OK**.

Other Types of Query**Parameter Query**

A **parameter query** allows you to create a query that can be updated easily to reflect a new criterion, or **search term**. When you open a parameter query, Access will prompt you for a search term, and show you query results that reflect that search.

Find Duplicates Query

A **find duplicates query** lets you find all **duplicate records** in your database, so that you can **delete** them. Duplicate records can negatively affect the **integrity** of your database.

Lesson: 7

Creating A Report

Creating Reports

If you need to share information from your database with someone, but don't want them actually working with your database, you should consider creating a **Report**. Reports allow you to organize and present your data in a reader-friendly, visually appealing format. Access 2010 makes it easy to create and customize a report using data from any query or table in your database.

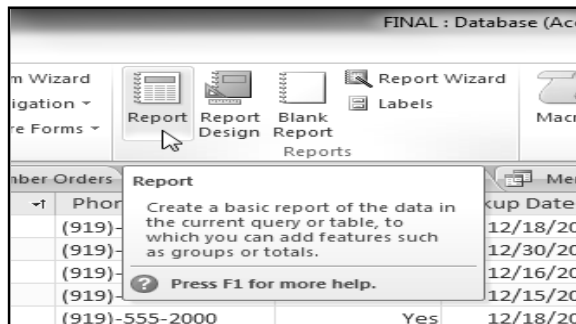
Reports give you the ability to present components of your database in an easy-to-read, printable format. Access 2010 lets you create reports from both **tables** and **queries**.

To Create a Report:

1. Open the table or query you would like to use in your report. We want to print out a list of last month's orders, so we'll open up our **Orders Query**.

First Name	Last Name	Phone Number	Paid	Pickup Date	Zip Code
Xiaoxi	Zheng	(919)-555-2786	Yes	12/10/2010	27603
Andrzej	Wujek	(919)-555-0450	Yes	12/4/2010	27606
Carson	Woolf	(919)-555-0440	Yes	12/18/2010	27615
Kiara	Williams	919-555-8975	Yes	12/23/2010	27714
Janie	Widby	(919)-555-1025	Yes	12/23/2010	27615
Dick	Whitman	(919)-555-5042	Yes	12/24/2010	27607
Dick	Whitman	(919)-555-5042	Yes	12/4/2010	27607
Lashaunda	White	(919)-555-7895	Yes	12/19/2010	27607
George	Wein	(919)-555-3302	Yes	12/23/2010	27615
Lebron	Wade	(919)-555-1520	Yes	12/23/2010	27605
Xiaolin	Tu	(919)-555-2005	Yes	12/31/2010	27609

2. Select the **Create** tab on the Ribbon and locate the **Reports** group. Click the **Report** command.



3. Access will create a new report based on your object.
4. It's likely that some of your data will be located on the other side of the **page break**. To fix this, **resize** your fields. Simply select a field, then **click** and **drag** its edge until the field is the desired size. **Repeat** with additional fields until all of your fields fit.

Last Name	First	Phone Number	Paid	Pickup Date	Zip Code
Whitman	Dick	(919)-555-5042	True	12/4/2010	27607
Bell	Xy'm ya	(919) 555 0758	True	12/9/2010	27615
Wujek	Andr zej	(919) 555 0450	True	12/4/2010	27606
Zheng	Xiao xi	(919)-555-2786	True	12/10/2010	27603
Auden	Hald in	(919) 555 0045	True	12/14/2010	27609
Altman	Zoe'y	(919)-555-6688	True	12/15/2010	27605
Duvalier	Raphi elle	(919)-555-1547	True	12/15/2010	27609

5. To **save** your report, click the **Save** command on the **Quick Access Toolbar**. When prompted, type a **name** for your report and then click **OK**.

Just like tables and queries, reports can be **sorted** and **filtered**. Simply **right-click** the field you wish to sort or filter. Then, select the desired sorting or filtering option.

Deleting Fields

You might find that your report contains some fields you don't really need to view. For instance, our report contains the **Zip Code** field, which isn't really necessary in a list of orders. Fortunately, you can **delete** fields in reports without affecting the table or query you got your data from.

To Delete a Field in a Report:

1. Click any cell in the field you would like to delete.
2. Press the **delete** key.

When you delete a field, be sure to delete its header as well. Simply select the header and press the **delete** key.

Printing and Saving Reports in Print Preview

While you can print reports using commands in the **Backstage** view, you can also use **Print Preview**. Print Preview shows you how your report will appear on the **printed page**. It also allows you to modify the way your report is displayed, print it, and even save it as a different file type.

To Print a Report:

1. On the **Home** tab of the **Ribbon**, click the **View** command and select **Print Preview** from the drop-down list. Your report will be shown as it will appear on the printed page.
2. If necessary, modify the **page size**, **margin width**, and **page orientation** using the related commands on the Ribbon.
3. Click the **Print** command.
4. The **Print** dialog box will appear. Set any desired print options, then click **OK**.

Saving Reports

You can save reports in other formats so that they'll be viewable outside of Access. This is called **exporting** a file, and it allows you to view and even modify reports in other formats and programs.

Access offers options to save your report as an **Excel file**, a **Text** file, a **PDF**, an **XPS** file, an **email attachment**, a **Rich Text** file, or an **HTML document**. Experiment with the different export options to find the one that best suits your needs.

To Export a Report:

1. On the **Home** tab of the **Ribbon**, click the **View** command and select **Print Preview** from the drop-down list.
2. Locate the **Data** group on the Ribbon.
3. Select one of the file type options on the Ribbon, or click **More** to see options to save your report as a **Word** or **HTML** file.
4. Save your file.
 - If you're saving the report as a **PDF** or **XPS** file:
 1. Select the location where you wish to save the report.
 2. Place your cursor in the **file name** text box and type a name for your report if you wish to name it something other than the report title.
 3. In the **Save as Type** drop-down menu, select either **PDF** or **XPS**.
 4. Select the file **quality** by clicking either **Standard** for reports you plan on printing or **Optimized** for reports you plan to share primarily online.
 5. Once you are satisfied with your settings, click **Publish** to save your report.
 - If you're saving the report as any other type of file:
 1. Click **Browse** to specify your file location and name, then click **Save**.
 2. In the **Export** dialog box, click the checkboxes to select desired saving options where applicable.
 3. Click **OK** to export your report.
5. A dialog box will appear to notify you that your file has been successfully saved. Click **Close** to return to your report.

Lesson: 8

Designing Your Own Database

Designing Your Own Database

Now that you know how to use and modify existing databases, you might be interested in designing your own. Database design can be very complicated-- so complicated, in fact, that people take extensive courses just to learn how to plan databases. For that reason, we haven't focused on creating a database from scratch in this course. However, we can help you get started.

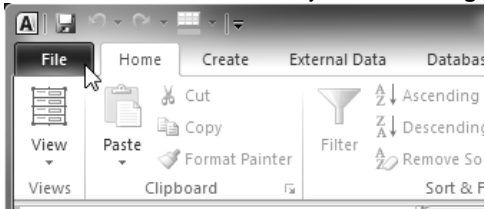
In this lesson, you will learn how to **create** a database from an existing **template**. You will also learn about **other resources** you can use to learn database design.

Creating a Database from a Template

Before deciding to build your own database, you may want to look at the **templates** included in Access to see if any of them match your needs. When you select a template, Access creates a **new database** based on that template. Once it's created, you can fill the database with your own information, or modify it to suit your needs.

To Create a Database from a Template:

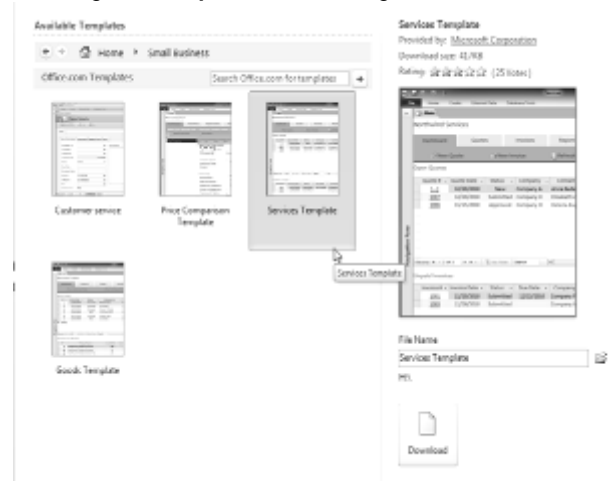
1. Select the **File** tab. This will take you to **Backstage View**.



2. On the sidebar, click **New**.
3. Template options will appear. Under the **Office.com Templates** heading, you can see a list of templates grouped by type. Select the template type that best fits your needs.



4. Access will display all of the available templates of that type. **Select** a template to see more information about it, including a **visual preview**, on the right.



5. When you have found the template you'd like to use, click **Download**. The template will open automatically once it's finished downloading.



Unit-VI- Internet

Lesson: 1

Introduction to Internet

Introduction to Internet

In 1970 the Defence Department of USA, set up a network called **ARPANET** (Advanced Research Projects Agency Network). The main objective was to provide aid to military research and to test and develop network technologies. In order to share information and research results, scientific teams at Defence Ministry of US and a few selected universities and research laboratories collaborated. Slowly word spread about the advantages of collaborative work and more research teams and equipment manufacturers started forming network teams. As the network started growing, newer protocols like **TCP/IP** protocol (a set of protocols that help in communication over the Internet) evolved in which communication could take place between machines of different configurations and types. **In 1983**, APRAnet disintegrated into:

1. **MILnet** (Military Network which integrated with Defence Data Network)
2. **APRAnet** (Network for research and educative purposes).

Organizations in this period generally had Local Area Networks and were UNIX based systems, which could communicate very well with the **APRAnet** as they supported IP protocol. In late 1980s, the NSF (National Science Foundation) created five regional super computer centers to share resources for research. Now these centers were not only connected to each other but also had to provide support to all the clients. Slowly this system started suffering from bureaucratic problems, and finally, in 1990, this system was abandoned.

NSF constructed its own network, namely, **NSFnet** based on **ARPAnet's** IP technology. In the new network, the centers were connected and each of the sites were connected to their nearest neighbor. This chain continued up till on of the regional super computers. As the success of communication and sharing of network resources spread, more and more users joined it and soon the network became overloaded.

In 1987, NSF signed a cooperative agreement with Merit Network Inc. to maintain and upgrade the system. IBM, MCI and Merit together later founded the ANS (American National Standards). The original network lines were now replaced by faster telephone lines. In 1988, on 1st November, the Internet worm destroyed about 6,000 of the 60,000 hosts on the Internet, thus causing major damage. Since more and more countries were getting hooked onto the NSFnet, the NSFnet backbone was replaced by T1 NSFnet in 1988 and later on by T3 NSFnet backbone in 1991, and finally even that was retired in April 1995 and was replaced by Network Access Points. In 1992, **Internet Society** (ISOC) was founded. It is a non-profit professional organization that facilitates and supports the technical evolution of the Internet.

Meaning of Internet

The term Internet has been coined by the combination of two words namely "**interconnectivity**" and "**networks**". Therefore, it is called the network of networks. It is a vast pool of resources that offers different opportunities to different people. In fact so much is its vastness that is cannot be explained by one single definition. **A few common concepts about the Internet are:**

- It is an ocean of information waiting to be dived into.
- It is a place where you can show your company's presence all over the world.
- It provides an opportunity to communicate with near and dear ones all over the world at the least cost.
- It offers employment opportunities all over the world.
- It is a source of entertainment to the young and old in all walks of life.

Internet Disadvantage-

- However, not everything said about the Internet is positive. There are some taboos about it, namely:
- Hackers and miscreants may create havoc by destroying system securities and injecting viruses.
- Children may be exposed to topics censored at their ages.
- It can be a time waster if not properly utilized.
- There may be loss of privacy.
- Addiction to Internet surfing is leading not only to social problems but medical ailments like weak eyes, backaches etc.

Administration and Ownership of Internet

One thing is certain that nobody owns the Internet, nobody funds it. In fact, every person who get connected to the Internet becomes a part of the family. The Internet is not administered by any central body. Many committees are working in teams to

constantly maintain the integrity of the Internet. **ISOC** consists of a group of people who maintain the Internet and promote communication on the Internet. It appoints the Internet Architecture Board, which authorizes standards and allocates and keeps a record of Internet resources (like IP addresses). Internet Engineering is another voluntary group, which handles technical problems. Coordination functions are performed by Internet NIC which charges a fee for registration of domain names to help cover administrative costs. Computer Emergency Response Team (**CERT**) looks after security matters. There are many more voluntary bodies and the objective of all is to preserve the Internet and prevent it from crashing.

Internet Advantages-

1. Employment Opportunities:

The Internet opens up a Web of employment opportunities. As e-commerce is making rapid strides in India, and more and more companies are logging on to the Internet, many career opportunities have been created like that of web administrator, web designer, web developer, web page hosting, e-commerce and consultation groups

2. High Speed and Accurate Information and Data Flow:

An MBA graduate was looking for job opportunities in marketing. By 11 am., she had identified five interested jobs to which she e-mailed her resume and faxed some additional material the companies required. Within two hours, she received from two companies information regarding personal interview. Had conventional methods been used, the entire process would have taken a few days to a few weeks.

3. Round the Clock Availability:

Though during office hours, employees cannot search for information of personal interest, e.g., search for jobs or do personal correspondence, during leisure time, the Internet can be well utilized for pleasure, work or for chat and mail.

4. Ocean of Knowledge:

Information about a vast variety of subjects is available on the Internet all under one roof. The Internet could be considered as a vast encyclopedia containing the latest information of the old as well as latest products. All sorts of queries from gold rates to travel reservations to medical services to share prices etc., can be obtained on the Net.

5. Interactive Communication:

Communication is the keyword today. Infact, due to this capability the world seems to get smaller all the time. Letters, telegrams, faxes are all one way communication but the Internet offers a huge variety in the types of information exchange, namely interactive, offline, one-to-one communication, one to many communication, and so on.

6. Business on the Internet:

E-commerce is the killing application of the Internet, where all sorts of business functions like ordering of items, making quotations, payment of bills, exchange of business documents take place. The only thing that is not possible on the Internet is the actual supply of goods apart from documents and software.

7. No Biased ness of the Internet:

The Internet treats all people connected to it equally. No access permission is required apart from valid passwords and identity on the Internet. As a result of this feature, communication takes place all over the world without preference being given to a specific person, organization, or country

8. Direct Contacts between Customers and Organizations:

The role of intermediaries had declined with the arrival of Internet, especially in the service industry. Direct reservation, sale/purchase of shares, downloading of software information regarding particular topics, are all easily available. Popularity of direct shopping by giving the product code is gaining importance these days.

9. Reduction of Uncertainty:

Faster access to information brings the latest techniques and technologies at your doorstep thus increasing productivity. Uncertainty in mailing addresses etc., have diminished as an organizational or a residential address may change but the person can still be contacted, as e-mail identity remains the same. Of course, if the e-mail address is abandoned, then tracing a person would be next to impossible.

10. Curtailment of Unnecessary Expenditure:

In an organization, unnecessary expenditure can be reduced in the following ways:

- No stationary or printing charges as orders and messages travel electronically.
- Mailing is done at the cost of a telephone call.
- No deliver charges.
- Cost of filing is reduced.
- Reduction of clerical costs like that of peons.

11. Internet supports different Machine Configurations:

Different people are connected to different configuration machines and use different operating systems. The Internet provides connectivity to heterogeneous machines, therefore not only communication is possible between these machines but documents and files can also be shared.

12. Source of Entertainment:

The Internet provides a wide range of entertainment like movies, music and games. Infact, there are certain screen savers that provide good quality music so much so that you feel like dancing to their tunes. For a few such screen savers, try going to the website www.screensavers.com and website www.teenstation.com provides you a list of latest music albums.

13. Internet Resources:

The power and potential of the Internet is unlimited. During the past few years the Internet has grown at an exponential rate, thus providing many services. **A few of them are:**

- | | |
|---------------------------------|--------------------------------|
| 1. E-mail | 7. Internet Relay Chat |
| 2. Telnet or Remote Login | 8. Finger Service |
| 3. Usenet or Newsgroups | 9. Electronic Magazine/Journal |
| 4. World Wide Web | 10. Directories |
| 5. File Transfer Protocol | 11. Bulletin Board System |
| 6. Wide Area Information Server | 12. Mailing List of Listserv |

Types of Connections:

No matter what type of connection you go in for, it should be reliable, fast, easily available, and economical. There are no such thing as a free connection to the Internet. Someone somewhere has to pay for the equipment, software, telephone lines, and electricity.

Basically there are four types of connections to the Internet:

1. **Dial-up Connection**
2. **ISDN Connection**
3. **Leased Line Connection**
4. **Cable Modem**

The most popular type of connection for an individual is the dial-up connection as it is easily available and economical.

1. Dial- Up Connection

As the name suggests, dial-up link means you have to dial into a modem over a telephone line before you can get connected to the Internet. A modem (modulator demodulator) is a device, which converts digital signals emitting from the computer into analog signals so that the data is easily transmitted over analog telephone lines. At the receiving end, there is another modem, which converts these transmitted analog signals back to the digital form, which are received by the target computer.

2. Integrated Services Digital Network Connection (ISDN)

This is a very high-speed connection to the Internet over normal telephone lines. It combines both voice and digital information in a single medium, making it possible to provide the Customers with digital as well as voice connections. In **ISDN** connection, the information which is sent from your computer to the Internet is digital. Here we do not use a normal modem. As no conversion from analog to digital or vice versa is required, so we use an **ISDN** modem which is merely a terminal adapter. Another difference lies in the fact that the **ISDN** lines, in order to work, require power from outside. When there is a power shutdown, **ISDN** lines will not work. **ISDN** service has many variations but we follow Basic Rate Interface (BRI) service. Here **ISDN** line is divided into two logical channels, namely. **(a) Two 64Kbps B (bearer) channels. (b) One 16Kbps D (data) channels.** Thus **ISDN** is commonly referred to as **2B+D3**.

3. Leased Line Connection (Dedicated Connection)

As the name suggests, a leased line connection is permanent connection laid down between you and a modem. As it is permanently linked, you have a 24-hour access to the Internet, seven days in a week. A leased line connection is very useful especially when frequent information has to be accessed from the Internet and also when the volume of data transfer is high. It is also useful if the Internet is to be used for more than 12 hours a day.

4. Cable Modem

In case of cable modem the Internet can be accessed through the normal coaxial television cables with the help of cable modems. Speed of cable modems is 10 to 100 times faster than normal dial-up connection modems. The only catch is that the local operator should have the capability to access the internet over cable TV wires and that cable modems are slightly more expensive than normal modems. One advantage of cable modem connection is that you need not have a telephone line if you want this type of connection to the Internet.

Internet Service Providers (ISP)

An **ISP** sells monthly/hourly connections to the Internet. Initially, **VSNL** was the only **ISP** in India but as surfing the Internet became popular, many Indian companies have come forward. Some popular Indian **ISPs** are:

1.	System Online	www.sify.com
2.	Dishnet DSL	www.ddsl.net
3.	Cal Tiger	www.calltiger.com
4.	Pacific Internet	www.pacific.co.in
5.	Power Surfer	www.powersurfer.net
6.	BPL Net	www.bplnet.com
7.	Roltanet	www.roltanet.com
8.	Net 4 Indians	www.net4india.com
9.	Zee Next	www.zeenext.com
10.	Now	www.now.com
11.	MTNL	www.mtnl.com
12.	VSNL	www.vsnl.com

The registration forms are available on the Internet itself on the web sites of the ISPs.

Internet Application

Browser

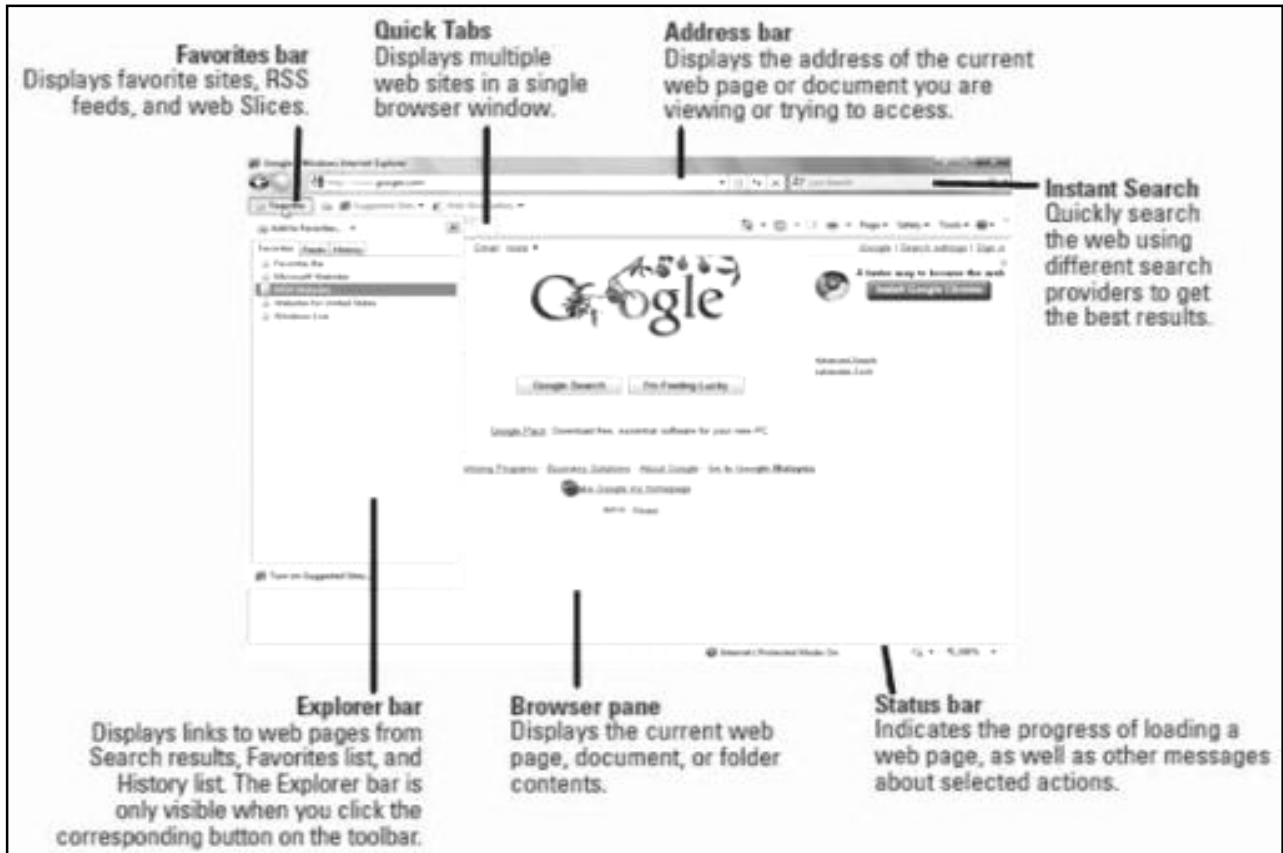
A web browser is computer program/software that has to be loaded in the memory. A browser is an interface between the user and the internal working of the Internet. Browsers are referred as web clients or universal clients as they follow the principle of client server technology where the browser is the client. On typing in a URL in the address window or by following hyperlinks, the browser contacts the server by sending a request for the required information. After receiving this information the browser displays it on the web page in the user's window. **Browsers have different type-** we can get this information from website (www.browsers.com). Here we discussed features of browsers mainly about Microsoft Explorer:

Features of a Good Browser-

- The most important feature of a web browser is the presentation of web pages without distortion.
- The browser should support multimedia features like sound, video etc.
- It should also support forms and frames, divide web pages into sections, thus improving readability.
- A good browser should have the ability to open multiple windows.
- Latest browser support Active X technology, Java, VRML and other plug- in-supports.
- E-mail, News, and FTP support should also be extended.

Microsoft Internet Explorer (MIE)

Microsoft Internet Explorer is a user friendly browser for the Internet. In other words, all multimedia resources (i.e. text, images sound and video) can be accessed by simply pointing and then clicking the mouse on full down menus, toolbar buttons and hyperlinks. Internet Explorer is the primary internet browser for American Online.



Internet Explorer-8

- Beginning exploring the Internet by clicking an item icon on the Internet Explorer main window. The following features are available in **Internet Explorer 6.0**.
For more convenient Web browsing, you can now download files from the Internet in a separate window while you continue browsing other Web pages.
- The new resizable toolbar provides you with Links, which give you fast and easy access to great Internet pages with content that is updated regularly.
- With the industry standard Internet ratings support, parents can filter out Web sites that could be inappropriate for their children.
- Internet Explorer provides support for all of the latest **HTML** (Hypertext Markup Language) authoring features, including some features that are unique to Internet Explorer, such as borderless frames, floating frames, and **HTML** style sheets.
- Internet Explorer also provides support for **ActiveX** documents. This means that you can view documents such as Microsoft Office files right in Internet Explorer, without starting another program, such as Microsoft Word.
- **SSL 2.0**, **SSL 3.0**, and **PCT** security provide ultra-secure transactions over the Internet, **For example**, now you can make secure credit card purchases from a catalog on a Web page.

To view a page on the Internet, click any hyperlink on your start page. A hyperlink can be a picture, a **3D** image, or colored text (usually underlined). If you want to go to the next page, click the forward button on the toolbar, if you want to return to the previous page, click the back button on the toolbar.

To go to a specific place or page in the address bar, type the address of the page you want to open, or click the down arrow to select it from the list, and then press **ENTER**.

To search the Internet, click the button on the toolbar. The search programs that are available vary depending on your Internet service provider.

To return to a page you have already seen on the File menu, click the page in the list that you want to go to. This list is emptied when you quit Internet Explorer. For a complete list of all the pages you have viewed in all sessions, click the View menu, click Option, click the Navigation tab, and then click View History. Then double click the page you want to open.

To return to the start page, click the home button on the toolbar. To use the Link bar to visit preselected Web pages, click the word Links on the toolbar and then click one of the links on it.

To send a shortcut to a Web page in e-mail, on the File menu, point to Send Link To. Click the destination you want. To include this shortcut in an e-mail message, you must have an e-mail program installed.

Viewing and organizing pages

You can speed up the time it takes to display a page by not displaying pictures, sounds, or video. You can cancel a page that is taking too long to display by clicking the stop button on the toolbar. Internet Explorer keeps track of the last five pages you viewed. They are added to the Go menu so that you can easily return to them. If you plan to view a page often, you might want to add it to your collection of favorite pages, or create a shortcut to it on your desktop. You can save the current page to a file on your computer by clicking the file menu and then clicking **Save As**.

Netscape Navigator

The Netscape Navigator is an example of a full feature World Wide Web browser. Developed by Netscape Communications Corporation, it offers an intuitive graphical interface; you must have domain access to the Internet. Once you establish your connection to the Internet, launch the Netscape Navigator by double clicking its icon.

The first time you use the Netscape Navigator, you will see the Netscape Home page. Like most browsers, the Netscape Navigator allows you to specify any Web page to load when you start the browser. Access the Preferences dialog box under the Options menu to set a preference for a different Home Page.

Netscape's browser offers many custom features under Preferences. You can select fonts, colors, and image display options. The middle section of the Options pull down menu allows you to control the appearance of the screen. Click on the selections in the pull down menu for additional information. After hyper linking to a new page, you can continue navigating the Web by a activating additional links you can also press the back button to return to the last Web page that was displayed

Links that you have already activated appear in a different color. Unless you change the setting in the preference dialog box, Netscape retains your link history for thirty days. After that time, a link to a site you have already visited reverts to the color of unflawed links.



The Netscape Navigator has many features that make browsing the Web simple and quick. It offers multiple windows for viewing one page while another one is loaded. It uses progressive rendering to enable you to view Web pages while they are still downloading. In addition, you can create your own menus of favorite Web sites by arranging your bookmarks in hierarchies.

Lesson: 2

Electronic Mail

An important application of Internet is e-mail. E in e-mail stands for electronic mail. When we transfer mail/messages from our computer to another computer electronically via telephone lines, it is called as e-mailing.

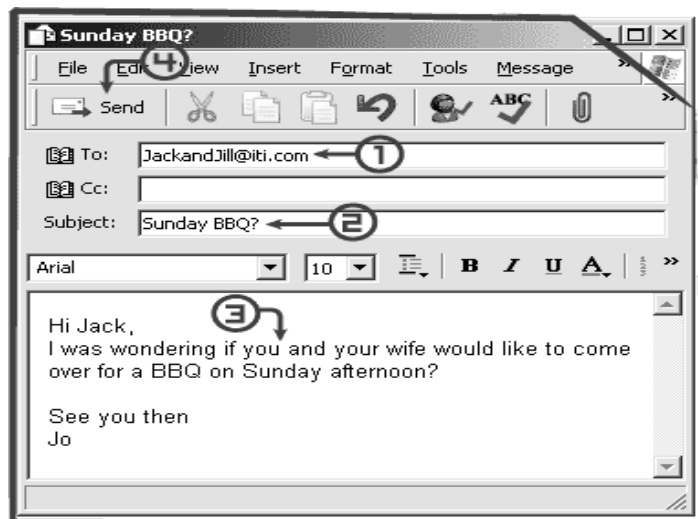
Electronic mail is a widely used Internet service. It is a system for sending messages availability of the receiving host. With e mail one can or files to other computer users based on mailbox address, and supports mail exchange between users on the same or different computers. Unlike other client-server applications, e-mail lets users send anything from short letters to big files without problem current. **With Email one can:**

- Send a single message to many recipients.
- Send messages that include text, voice, video, or graphics.
- Send messages to users on networks outside the Internet.
- Send messages calling for a response from a computer program rather than a user.

E-mail system is like the postal system. Addresses are used to identify both the recipient and sender of a message. Messages that cannot be delivered within a specified amount of time are returned to the sender. Every user on the network has a private mailbox. Received mail is stored in the mailbox until the recipient removes or discards it.

Electronic Mail Address

Electronic mail addresses have two parts. The first part is the mailbox identifying name followed by an @ symbol and the domain name of the destination (e.g. **samit @ vsnl.com**)



Anybody around the world can get a personal e-mail address. An e-mail address comprises arjun@yahoo.com, shiv@vsnl.com or ashok@hotmail.com, preeti@cisco.com etc. These are all e-mail addresses. Note the presence of @ (at the rate) symbol. **There are two parts of e-mail address.**

- part before @
- part after @

The name or the word written **before** @ is the unique name of the user having the address. **After** @ is the name of the domain (or URL) from which e-mail services are hired.

The name before @ is unique for a specified domain i.e. yahoo.com domain can have one arjun. But Arjun can have various arjun e-mail address at various domains e.g.

arjun@hotmail.com, arjun@rediffmail.com etc.

This, however, depends upon the availability of that name on the specific server.

E-mail has become very popular because of various reasons, which are:

- **Free of cost** It is almost free of cost. The cost incurred is the cost of connecting to Internet.
- **Almost instant-** The message is almost sent instantly. The only constraint is the heavy traffic on the URL on which the data has to be sent.
- **Various ways of making it possible-** e-mail address can be obtained at various domains. So it is possible to send the message to various addresses at the same time in a single stroke to avoid loss of data.
- **Reduction of paper work** the letter is not required to be typed on the paper rather it can be sent in the soft copy, so it reduces the paper work.
- **Increases efficiency** - no time is wasted in typing, printing out, going to market to get tickets or in posting the letter. Everything is virtually instant so it is very efficient.
- **Global accessibility-** Another main feature of e-mail is that you can receive the mail from your house, office, cyber cafe or any other place around the world. Your mail box is global and you can access it from anywhere. Interesting, isn't it?
- **Facility to resend-** if you send an e-mail and user says he has not got it, it is very easy to send him the mail again as well as it is very easy to send the same mail to some body else.
- **Easy maintenance** of address book of friends-maintaining records like addresses and phone numbers is quite easy through the address book.
- **Better than phone-** Communicating with a phone can not be used to transfer documents. However, using e-mail, you can send documents (text), pictures etc. With ease.
- **No transportation cost-** Since you can e-mail from your desktop, you need not go to the post office.

Types of E-mail addresses

E-mail addresses provided by ISPs

When you get a connection ticket from an ISP, there is a default address provided to you by the ISP. This is generally the mail address in which domain name (part after @) is the name of ISP's server) e.g. abcd@vsnl.com it is the mail address provided by the service provider VSNL Or 1234@satyamonline.com this is the mail address provided by **satyam**.

Most of the time these e-mail addresses are configured on the user's computer. This can be done through special software like MS Outlook, etc. The mail can also be accessed through the web sites of the ISP. The VSNL mail can be checked from their e-mail site named as internet.vsnl.net.in

Using e-mail Websites

There are plenty of sites which are only developed to provide FREE e-mail services to users. Most of the portals have e-mail as one of their important features. Some of the popular e-mail sites are: **hotmail.com, email.com, yahoo.com, rediffmail.com, indya.com etc.** When you get the e-mail address on these sites, that has the name of the server as domain name, the mail address would be:

ashok@yahoo.com preeti@hotmail.com etc.

Some Common Terms Related To E-Mail:

- **Login:** For logging into the mailbox each user has to have a unique name. This is the name by which you get a mail box in a mail server. Ashok and Preeti are login names in the above examples.
- **Password:** There is a hidden key attached to your mail box, which should only be known to you. Type the password (note you will see only * symbol when you type your password). This is the key of the lock on your mail box.
- **Send:** After typing the mail, when you want to send it, click on send and then it will go to the destination server.
- **Receive:** The mail somebody sends you are the received mails. You get various alert messages, when you get a new mail.
- **To:** This holds the address of the person, to whom you are sending the mail.
- **Cc:** Carbon copy same mail can be sent to another person by typing his address in cc column.
- **Bcc:** Blind carbon copy this column is also used to send the copy of the mail. However, the main difference is that the name of other users to whom mail has been sent would not be visible.
- **From:** This holds the e-mail address of the sender that is you.
- **Attachment:** In addition to the letter typed, you can also send pictures, or other files along with the mail, called as attachments. There is a size limitation on attachments that files not more than 1 MB in size can be sent.
- **Inbox:** All the mails you receive are stored at a place called as inbox.
- **Outbox:** All the mails you want to send are stored at a place called as Outbox. Reduction of paper work the letter is not required to be typed on the paper.
- **Send box:** All the mails you have already sent are stored at a place called as sent box.
- **Reply:** When you get a mail from your friend and wish to respond is called reply.
- **Forward:** Sending a received mail to somebody else is forwarding.
- **Deleted:** When you do not want to keep mail in inbox, outbox and send items folder, these are transferred to the deleted folder and from there these are deleted permanently.
- **Send to:** When you want to transfer mail to some specific folders for different users, send to is used.
- **Folders:** Different areas are defined on the mail box under different names, where mail pertaining to some related topics are stored, like mail from a friend named paul soddy are stored in folder paul.

Outlook Express

Double click on the "Outlook Express" icon on the desktop to start the program. The screen is shown below. The screen is divided into five main parts:

- The pull-down menus on the top portion of the screen.
- A toolbar containing buttons for commonly used tasks (such as Compose Message, Reply etc.)
- A message index on the right-top of the frame.
- A message index on the right-top of the frame.
- Message text on the right-bottom of the frame

The Above Main Parts Are Shown As Below:

Click on the "**Compose Message**" button on the toolbar to open up a new message window. Where the e-mail contents are typed. This helps to work offline and later connect to the Internet in order to send the typed e-mail.

Type in the "**To:**", "**Cc:**" and "**Bcc:**" e-mail addresses. Multiple addresses can be entered in each of these fields and should be separated by commas. Enter a subject in the "**subject**" field. **TAB key** can be used to move quickly from one field to the other.

The screen below shows the typical Outlook Express - New Message screen. After composing the message in the main message area, **press the Send button** on the toolbar to send the message. The send button does not actually send your message. It only moves the message to a folder called "**Outbox**". This way it becomes convenient to first type in all the messages to be sent and later

send them in one go when you are connected online with the Internet. When the message is not to be sent immediately, we choose the **"Send Later"** command from the **"File"** menu. This moves the message to the **"Drafts"** folder that you may later edit or delete.

Sending And Receiving E-Mail Messages

Click on the **"Send and Receive"** button on the toolbar. It does the following:

- Checks for the new mail on your mail server.
- Sends the messages waiting to be sent in your **"Outbox"** folder All the received messages are placed on the **"Inbox"** folder and all the messages sent are placed in the **"Sent Items"** folder.

Receiving Incoming Mail

To read your incoming mail, first click on the **"Send and receive"** button on the toolbar to check for new messages on the mail server. Choose the **"Inbox"** folder in the folder index on the left side frame. The list of message within this folder is displayed in the right-top frame. Entries for unread messages are displayed in the bold font.

Click on the **"message entry"** in this window. The message is displayed in the right bottom frame. We can double-click on it to open it in the full screen form.

Replying To Mail

We may choose to reply to a message while reading it. Click on **"Reply to the Author"** button on the toolbar to reply to the author of the message. The button **"Reply to all"** can be used to reply to the author and to all its recipients.

Forwarding A Message

To forward or send the message(s) received by us click on the **"Forward Message"** button on the toolbar.

Deleting A Message

To delete a message from any folder, highlight the message in the message index (right top frame) and click on the delete button on the toolbar. This will move the deleted message to the **"Deleted Items"** folder. Choose Empty Folder.

Printing A Message

Message can be printed by choosing Print from the File menu or by using the keyboard shortcut which is Ctrl + P together.

Managing File Attachments

Files can be attached to your e-mail messages. These files can be text files, word processing files, spreadsheets, databases, programs, images etc.

Sending File Attachments

To attach a file to a message that is being composed click on the **"Insert File"** icon while within the **"New Message"** composition window. This will bring up a browse window. Browse to the drive and directory containing the file and click **"Attach"**. This process may be repeated if multiple files are to be attached to the same message. Finally click on **"Send"** to send the message with the attached file(s).

Receiving File Attachments

If the incoming message contains one or more attached files, it is indicated by a **"paper clip"** symbol in the message header. To save this attachment to a location of your choice, click on the **"paper clip"** icon to display a list of filenames and file size. Click on the filename. This brings up a dialog box. Choose **"Save it to disk"** and choose **"OK"**. This will again bring up a **"Browse"** dialog box. Choose a folder to save the file. You can give a different filename. Click on Save to save the file.

Working with Folders

E-mails can be organized into different files or folders. By default, messages in Outlook Express are organized into the following folders:

INBOX	For all incoming messages.
OUTBOX	For messages to be sent
SENT ITEMS	For messages previously sent.
DELETED ITEM	For messages marked for deletion.
DRAFTS	For messages which are pending.

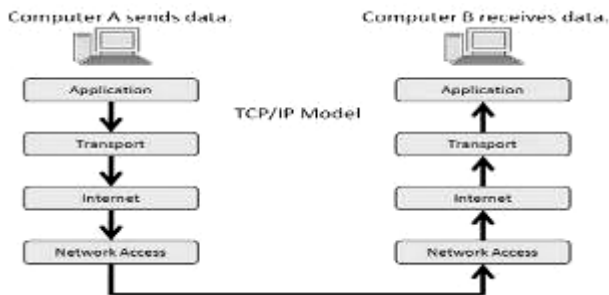
Messages can be kept in new folders also. To make a new folder, first choose the top level folder **"Outlook Express"**. Choose File menu then choose **"Folder"** and then choose **"New Folder"**. Type in the name for the folder. Click **"OK"**.

Lesson: 3

Internet Protocols, Intranet, Extranet & Telnet

TCP/IP

Transmission Control Protocol/Internet Protocol. A protocol or communication between computers, used as a standard-for transmitting data over networks and as the basis for standard Internet protocols. "**Transmission control protocol/Internet protocol.**" TCP/IP is a comb combined set of protocols that perform the transfers of data between two computers. Transmission Control Protocol/Internet Protocol, a set of rules that establish the method with which data is transmitted over the Internet between two computers.



UDP

User Datagram Protocol is a transmission protocol which transfers data through individual messages (so called datagram). It does not establish new connections nor it provides reliable and sequential data delivery, nor it enables error correction or data stream control. It is used for transfer of small-sized data (i.e. DNS queries) or for transmissions where speed is preferred from reliability (i.e. real-time audio and video files transmission).

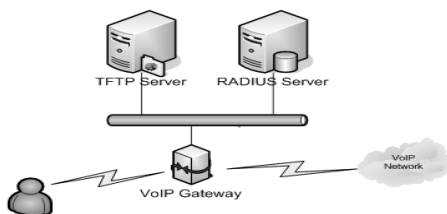
FTP

File Transfer Protocol is a method to transfer files from one location to another, either on local disks or via the Internet.

File Transfer Protocol. A common method of moving files between two Internet sites. FTP is a special way to log into another Internet site for the purposes of retrieving and/or sending files. **File transfer protocol;** the method by which files are transferred. A protocol used to transmit files between computers on the Internet.

TFTP

Trivial File Transfer Protocol A simplified version of FTP that transfers files but does not provide password protection or user-directory capability. It is associated with the TCP/IP family of protocol. TFTP depends on the connectionless datagram delivery service, UDP.

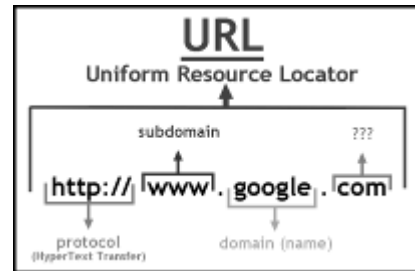


A network of servers linked together by a common protocol, allowing access to millions of hypertext resources. It is also known as **WWW (World Wide Web)** the Web and the World a collection of documents on computers located throughout the world that are connected to each other by clickable hyperlinks. You need to run a browser program to access the Web. The highly interconnected network of hypertext servers (**HTTP servers**) that allow text, graphics, sound and video files to be displayed. Computer network consisting of a collection of internet sites that offer text, graphics, sound and animation resources through the hypertext transfer protocol.

U.R.L.

The address identifies the location of a Web page on the World Web.

To access a Web page one requires an address. For easy access of document distributed all over the world **www** uses the concept of locate. The **uniform resource locator (URL)** is a standard for defining any kind of information on the internet. URL defines only things. Method, host computer, and pathname. **URL: <http://www.google.com>**



Method

The method is the protocol used to retrieve the document. There are several different protocols that can retrieve a document. Gopher, FTP, HTTP, NEWS, and TELNET, are such protocols.

Host

The host is the computer at which the information is available. However, the name of the computer can be an alias. Web pages are usually stored in computers given alias names (Sub domain) that mostly begin with **www**

Path

Path is the pathname, of the file where the information is located. Path can contain slashes that separate directories from subdirectories and files in the UNIX operating system.

HTTP

Hypertext Transport Protocol used to transfer HTML documents of the **World Wide Web (www).**

The Hypertext Transfer Protocol. HTTP is the primary protocol on which the World Wide Web operates. HTTP is the primary protocol on which the World Wide Web operates. HTTP is an application protocol.

DNS (Domain Name System)

An Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they are easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address.

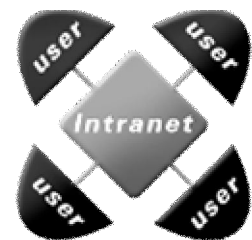
GD (Generic Domain)

The generic domain (also called the organization domain), divides registered hosts as per their generic behaviors. Generic domain names, read left to right, start with the most particular information about the host (e.g., the name of the computer) and become more and more general with each label until they reach the right most labels. This describes the larger group affiliations of the named **host**: the nature or the organization (e.g. **edu** for educational).

gTLD	intended use	gTLD	intended use
aero	the air transport industry.	net	originally for network infrastructures, now unrestricted
asia	companies, organizations and individuals in the Asia-Pacific region	org	originally for organizations not clearly falling within the other gTLDs, now unrestricted
biz	business use	pro	certain professions
cat	Catalan language/culture	tel	services involving connections between the telephone network and the Internet
com	commercial organizations, but unrestricted	travel	travel agents, airlines, hoteliers, tourism bureaus, etc.
coop	cooperatives	xxx	pornography
edu	U.S. post-secondary educational establishments	jobs	employment-related sites
gov	U.S. government entities at the federal, state, and local levels	mil	the U.S. military
info	informational sites, but unrestricted	mob	sites catering to mobile devices
int	international organizations established by treaty	museum	museums
name	families and individuals		

Intranet

An intranet is a private network that is contained within an enterprise. It may consist of many interlinked local area networks and also use leased lines in the wide area network. Typically, an intranet encloses connection through one or more gateway computers to the outside internet. The main purpose of an intranet is to share company information and computing resources among employees. An Intranet can also be used to facilitate working in groups and for teleconferences.



There is several definition of intranet some of them are as follow:

A private network of various computers with an organization. An intranet is used to share company information and computing resources among employees. An intranet uses regular internet protocols and in general look like a private version of the internet.

- A private network inside a company or organization.
- A private network based in internet technology that is designed to meet the internal needs for sharing information within a single organization of company.

The difference between Intranet and Internet Design:

Your intranet and your public website on the open internet are two different information spaces and should have two different user interface design. Intranet and Internet differ along several dimensions.

- **User differ:** Intranet users are your own employees who know a lot about the company, its organization structure and special terminology and circumstances. Your internet site is used by customer who will know much less about your company and also

careless about it.

- **The Task differ:** The intranet is used for everyday work inside the company including some quit computer applications the internet site is mainly used to find out information about your products.
- **The type of information differs:** The intranet will have many draft reports, project progress reports; human resource information and other detailed information whereas the internet site will have marketing information and customer support information.
- **Bandwidth and cross platform needs differ:** Intranet often run between hundred and thousand times faster than most internet users. Web access, which is stuck at low-band of mid-band. It is sometimes possible to control what computers and s/w versions are supported on an intranet. Meaning that designs need to be less cross-platform compatible.

Extranet

This is a network where people from outside an organization can connect to a company's internal intranet. This is often used when external suppliers need to communicate with your databases or remote business offices need to be setup. Generally these kinds of users require authentication in the form of usernames and passwords.

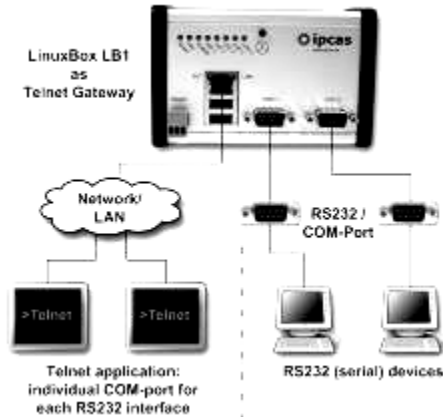


Telnet

Telnet is short for Telecommunication Network. It is a virtual terminal protocol allowing a user logged on to one TCP/IP host to access other hosts on the network.

One of the remarkable features of the Internet is the way it lets you use the resources of a distant computer somewhere else in the world. From your own home or office, you can log on to another computer, issue commands as if you were at that computers key board, and then gain access to all the computers resources. You do this with an Internet resource called **Telnet**. Telnet follows a client/server model, which means that you run a piece of software on your PC (the client) to use the resources of a distant server computer. This distant computer is called the host.

The host allows many different clients to access its resources at the same time, It is not devoted to a single user. To use Telnet and the host's resources, you will need to know the address of the Internet host whose resources you want to access.



Bitnet

City University of New York and University of Yale established **BITNET** basically to exchange information between universities. The basic series provided by BITNET are:

- Exchange of electronic messages
- Electronic student admission
- Remote job entry and storing research information

A counterpart of BITNET in India is ER Net, which is established for educational and research purposes.

Lesson: 4

E-Commerce

E-Commerce is a name given to making business possible through Internet. It can be referred to as selling to customers electronically and improving the way business is conducted by a company. It can be business-to-business, business-to-consumer, and consumer-to-consumer transactions of information, goods, and funds.



Working with E-Commerce

It is possible to order the goods online through Internet. The payment of the goods you purchase can be done in various ways:

- **Cash:** When you receive the goods at home, pay for it.
- **Credit cards:** Payment can be done through Credit Cards i.e. the name, number and expiry date of the card is entered and accordingly transaction is done.
- **E-cash:** some organizations work as online buying agencies. You can purchase payment coupons by paying them cash. The coupon number is entered on the purchase form, and goods are delivered at your doorstep.

Types of E-Commerce

There are 4 types of E-Commerce transactions:

1. B2B (Business to Business):

It is the online selling association between two business enterprises, selling to each other. **(a)** Purchase of raw materials, components and service for the production of goods and services that are to be sold. **(b)** Purchase of goods for consumption **(c.)** Purchases of capital equipment **(d.)** Construction of custom-built assets such as factories and refineries.

Not only the commercial organizations fall in this category, even the non-profit organizations are the part of this group e.g. Co-operatives societies, industry associations, Chambers of commerce, unions, trusts, charities, NGO's, Community associations like sports club etc.

2. B2G / G2B (Business to Government / Government to Business):

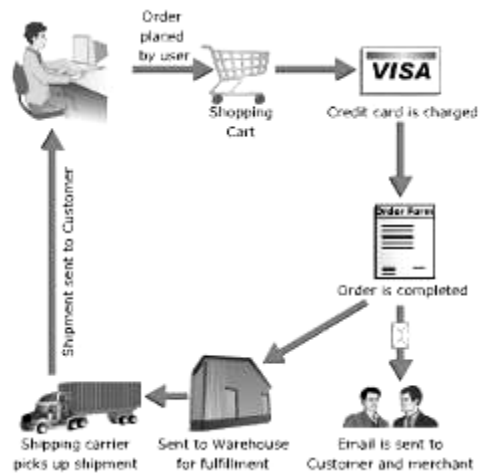
It is same as B2B, but the only difference is that one of the parties in this case is a government organization. B2G refers to service delivery by government to business enterprises also referred to as 'G2B1'.

3. B2C (Business to Consumer):

The term B2C is commonly used to refer to sale by a business enterprise to a Consumer. In this case Consumer is a person or an organization consuming the goods not for commercial benefit. The sample site is Lycos.com for online book purchases.

4. C2C (Consumer to Consumer):

This refers to online selling of goods from one consumer to another. A typical example is online Auctions. The sample site is **baazi.com** and other auction sites.



Benefits of E-Commerce

E-Commerce is used to conduct online selling and purchasing of transaction of following:

- (a)** Documents, including articles and books. **(b)** Data, including statistics **(c)** Reference information, including dictionaries and encyclopedias **(d)** News **(e)** Weather & Astrological forecast **(f)** Various sound files, such as speeches and musical performances **(g)** Video and Audio files, including television, video-conferencing and video-clips **(h)** Interactive voice, such as telephone conversations and tele-conferencing **(i)** Images & graphics such as diagrams and photographs **(j)** Entertainment via music, infotainment like informative articles, edutainment and education via multi-media etc. **(k)** Bookings and tickets for events like movies, plays and shows, **(L)** Software **(m)** Bank transfers of amount across countries **(n)** Stock based transactions **(o)** Bank loans etc.

One important point to be noted is that transactions related to bank, stock, etc. are executed for the clients who are registered members with the concerned authorities. Alternatively, such registrations have to be carried out through electronic payments (credit card). However, transactions involving the purchase of a book or music CD etc are instant and can be done by using any of the payment modes discussed earlier.

Types of products: There are mainly two types of products which can be sold through e-commerce:

- (a) Physical goods:** Physical goods are products which are identified as the service or good to be provided to the person. **(b) Digital goods:** Digital goods can be delivered or performed entirely through a telecommunications network. **The goods can be:** **(a)** An item a book or an mp3 sound file **(b)** A service to be provided like teaching offline or online.

Unit-VII

HYPERTEXT MARKUP LANGUAGE (HTML)

INTRODUCTION

Hyper Text Markup Language is the most important aspect in web site development. We write web pages that contain codes written in this particular language. As name implies this is a language like other high level languages, though much easier than those. We shall discuss broadly about different features of html in this chapter in order to get acquainted with writing simple web pages.

CONCEPT OF HYPERTEXT

Web pages are written in a relatively easy computer language. It is known as HTML, short for Hypertext Markup Language. The hypertext concept stems from the Apple Macintosh world. It means mutually connecting text, graphics and other data in a computer file. Simply pointing your mouse to a link and clicking on it, will bring up a different part of the document on your screen as you can see one specimen in figure. This method is very popular for documenting software. You can think HTML as the help files coming with almost all software's.

VERSIONS OF HTML

After the emergence of HTML, several versions came with some upgrading as follows:

- **HTML 2.0** - It was developed under the supervision of IETF (Internet Engineering Task Force). It came into practice in late 1994.
- **HTML 3.0** - It was a richer version of HTML. Despite never receiving consensus in standard discussion, it was continuously changing with the new features.
- **HTML 3.2** - In 1996, it came into existence by the efforts of World Wide Web.
- **HTML 4.0** - It extends with mechanisms for style sheet scripting, frames, richer tables, forms etc. It is the most current version of HTML.

HTML EDITORS

HTML documents are plain-text (also known as ASCII) files that can be created using any text editor (e.g., Emacs or vi on UNIX machines; SimpleText on a Macintosh; Notepad on a Windows machine). You can also use word-processing software if you remember to save your document as "text only with line breaks".

Some WYSIWYG editors are also available (e.g., Claris Home Page or Adobe PageMill, both for Windows and Macintosh). You may wish to try one of them after you learn some of the basics of HTML tagging. WYSIWYG is an acronym for "What You See Is What You Get"; it means that you design your HTML document visually, as if you were using a word processor, instead of writing the markup tags in a plain-text file and imagining what the resulting page will look like. It is useful to know enough HTML to code a document before you determine the usefulness of a WYSIWYG editor, in case you want to add HTML features that your editor doesn't support.

ELEMENTS OF HTML

An HTML element is a fundamental component of the structure of a text document. Some examples of elements are heads, tables, paragraphs, and lists. Elements can contain plain text, other elements, or both.

TAGS

A web page consists of various types of tags. To denote the various elements in an HTML document, we use tags. HTML tags consist of a left angle bracket (<), a tag name, and a right angle bracket (>). Tags are usually paired (e.g., <Tag> and </Tag>) to start and end the tag instruction. The end tag looks just like the start tag except a slash (/) precedes the text within the brackets?

ATTRIBUTES

Some elements may include an attribute, which is additional information that is included inside the start tag. *For example*, you can specify the alignment of text (right, left or center) by including the appropriate attribute with the image source HTML code.

- **HTML is not case sensitive.** <title> is equivalent to <TITLE> or <TiTIE>.
- **Not all tags are supported by all World Wide Web browsers. If a browser does not support a tag, it will simply ignore it. Any text placed between a pair of unknown tags will still be displayed, however.**

TO WRITE A HTML DOCUMENT

To write a web document, follow the instructions as follows:

- Load a text editor like Notepad. To open Notepad click **Start --- Programs --- Accessories --- Notepad**.
- Write codes and save it with a HTML file. HTML files are the files having extensions **.htm** or **.html**.
- View it in a browser of your choice e.g., Internet Explorer or Netscape Navigator.

MINIMUM REQUIRED TAGS IN AN HTML DOCUMENT

Every HTML document should contain certain standard HTML tags. They are as follows-

- **HTML tag • Head tag • Title tag • Body tag**

HTML Tag

The HTML element tells your browser that the file contains HTML-coded information. The file extension .html also indicates this HTML document and must be used. It comes in a pair: **<HTML>** and **</HTML>**

Syntax: **<HTML>**

</HTML>

HEAD Tag

The Head element identifies the first part of your HTML-coded document that contains the title. It contains title tag. It also comes with opening and closing tags: **<HEAD>** and **</HEAD>**

Syntax: **<HTML>**
<HEAD>

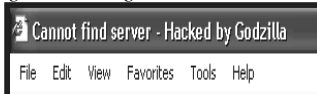
</HEAD>
</HTML>

TITLE Tag

The Title element contains your document title and identifies its content in a global context. The title is typically displayed in the title bar at the top of the browser window, but not inside the window. The title is also what is displayed on someone's hot list or bookmark list, so choose something descriptive, unique, and relatively short. A title is also used to identify your page for search engines. Generally you should keep your titles to 64 characters or fewer.

Syntax: **<HTML>**
<Head>
<TITLE>
 DESCRIBE YOUR TITLE
</TITLE>
</HEAD>
</HTML>

After implementing the Title tag as above results like this-



If you leave blank between the title tags, some browsers display either UNTITLED or URL.

BODY Tag

The second—and largest—part of your HTML document is the body, which contains the content of your document (displayed within the text area of your browser window). The tags explained below are used within the body of your HTML document.

Syntax: **<HTML>**
<HEAD>
<TITLE>
 My First Web Page
<TITLE>
<HEAD>
<BODY>

</BODY>
</HTML>

A SAMPLE HTML DOCUMENT:

Each HTML document contains some certain standard HTML tags. It has been illustrated in example given below that shows what a minimal document contains.

```
<HTML>
<HEAD>
<TITLE>
A Basic HTML Page
</TITLE>
</HEAD>
<BODY>
I AM LEARNING HOW TO CREATE A WEB PAGE
</BODY>
</HTML>
```

I AM LEARNING HOW TO CREATE A WEB PAGE

For implementing the above mentioned example, save it with .htm or .html extension and see the result on the browser. The effects should match with one in figure given below.



HEADINGS

Headings are used to arrange the contents in a systematic way. HTML has six levels of headings, numbered 1 through 6, with 1 being the largest. Headings are typically displayed in larger and/or bolder fonts than normal body text. The first heading in each document should be tagged <H1>.

The syntax of the heading element is:

```
<Hn>Heading/Sub-Heading</Hn>
```

Where n is a number between 1 and 6 specifying the level of the headings. You can see the effects of different headings in example given below-


```
<HTML>
<HEAD>
<TITLE>
A Web Page Showing Different Level of Headings.
</TITLE>
</HEAD>
<BODY>
<H1> Sunday </H1>
<H2> Monday </H2>
<H3> Tuesday </H3>
<H4> Wednesday </H4>
<H5> Thursday >/H5>
<H6> Friday </H6>
<H7> Saturday </H7>
</BODY>
</HTML>
```

The result should appear like one in figure given below-

Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

PARAGRAPHS

Paragraph may consist of a single sentence or more than one sentence including punctuation marks and blank space. Paragraph is represented by <P>...</P> tags. End tag </P> is not essential to add as the browsers assume the start of paragraph when <P> tag is given. See example 6.3 to understand the tag well.

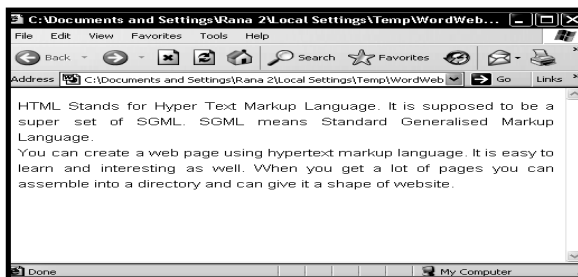
```
<HTML>
<HEAD>
<TITLE>
A Page Showing Two Paragraphs
</TITLE>
</HEAD>
<BODY>
<P>
```

HTML Stands for Hyper Text Markup Language. It is supposed to be a super set of SGML. SGML means Standard Generalized Markup Language.

You can create a web page using hypertext markup language. It is easy to learn and interesting as well. When you get a lot of pages you can assemble into a directory and can give it a shape of website.

```
</P>
</BODY>
</HTML>
```

After implementing the example, the browser displays the result like one in figure below-



LINE BREAK

This tag is used to change lines with no extra blank spaces. It can be used for short lines of text such as postal addresses. This tag is represented by
. See example -

```
<HTML>
<HEAD>
<TITLE>
A PAGE WITH BR TAG.
</TITLE>
</HEAD>
<BODY>
<PR>
National Informatics Centre <BR>
Chanakya Puri <BR>
New Delhi <BR>
</BODY>
</HTML>
```

The example results on the browser like this-

National Informatics Centre
Chanakya Puri
New Delhi

LISTS

HTML supports unnumbered, numbered, and definition lists. You can also nest lists.

NUMBERED LIST

Numbered list is also called ordered list. It is shortened as OL from which the tag name! derives. It is identical to an unnumbered list, except it uses instead of . The items are tagged using the same tag. See example-

```
<OL>
<LI> Computer
<LI> Modem
<LI> Internet Connection
<LI> Telephone Line
</OL>
```

After running the example 6.5, the browser displays result like this-

1. Computer
2. Modem
3. Internet Connection
4. Telephone Line

UNNUMBERED LISTS

Unnumbered list can be referred to as unordered list. To make an unnumbered or bulleted list, do the followings-

1. Start with an opening list (for unnumbered list) tag
2. Enter the (List Item) tag followed by the individual item; no closing tag is needed.
3. End the entire list with a closing list tag

See example to understand how it is written.

```
<UL>
<LI> Computer
<LI> Modem
<LI> Internet Connection
<LI> Telephone Line
</UL>
```

Example results on the browser like this-

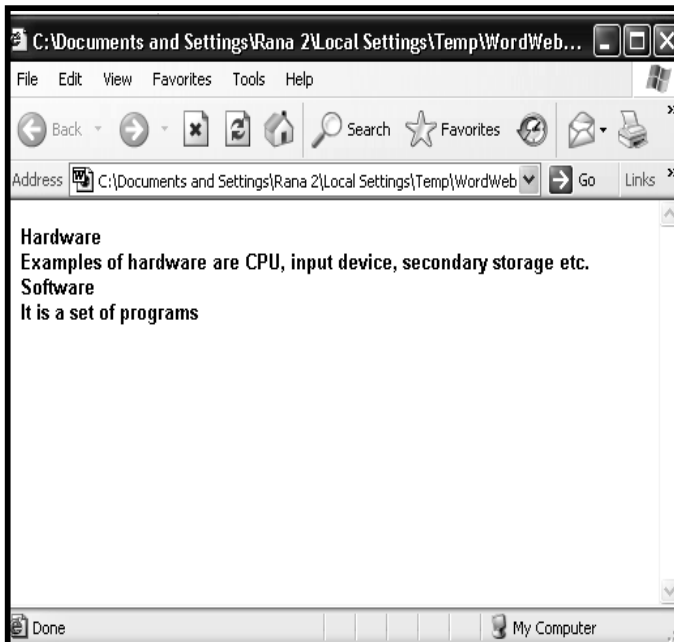
- Computer
- Modem
- Internet Connection.
- Telephone Line

DEFINITION LISTS

A definition list (coded as <DL>) usually consists of alternating a definition term (coded as <DT>) and a definition description (coded as <DD>). Web browsers generally format the definition on a new line and indent it.

```
<HTML>
<HEAD>
<TITLE>
Definition List
</TITLE>
</HEAD>
<BODY>
<DL>
<DT> Hardware
<DD>Examples of hardware are CPU, input device, secondary storage etc.
<DT> Software
<DD> It is a set of programs
</DL>
</BODY>
</HTML>
```

Codes written in example will affect like one in figure on browser:-

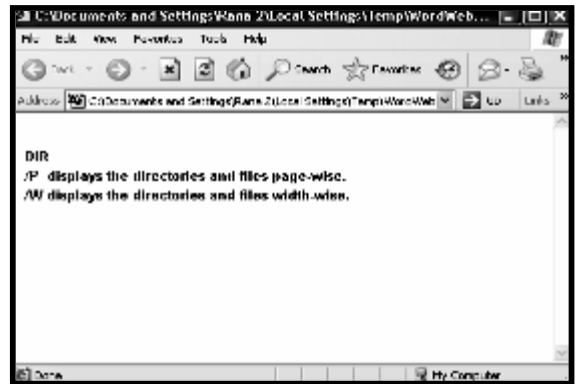


COMPACT ATTRIBUTE

The COMPACT attribute can be used routinely in case your definition terms are very short. If, for example, you are showing some computer options, the options may fit on the same line as the start of the definition.

```
<P> DIR </P>
<DL COMPACT>
<DT> IP
<DD> displays the directories and files page-wise.
<DT> /w
<DD> displays the directories and files width-wise.
</DL>
```

See its output in figure below-

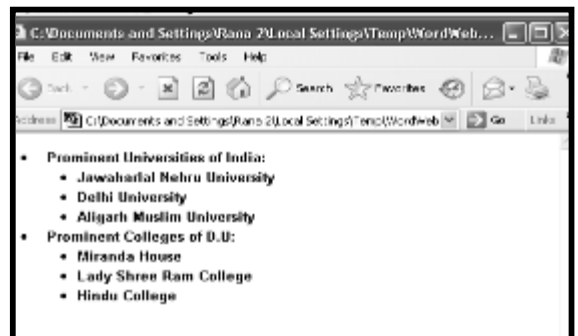


NESTED LIST

Lists can be nested. You can also have a number of paragraphs, each containing a nested list, in a single list item.

```
<UL>
<LI> Prominent Universities of India:
<UL>
<LI> Jawaharlal Nehru University
<LI> Delhi University
<LI> Aligarh Muslim University
</UL>
<LI> Prominent Colleges of D.U:
<UL>
<LI> Miranda House
<LI> Lady Shree Ram College
<LI> Hindu College
</UL>
</UL>
```

See output in figure below-



TYPE ATTRIBUTE

Type attribute is used with tag. Using this, you can manipulate the way ordered list displays the effects.

```
<HTML>
<HEAD>
<TITLE>
My first web page
</TITLE>
</HEAD>
<BODY>
<OLTYPE = "I">
<LI> Level One Outline
<OLTYPE = "A">
<LI> Level Two Outline
<OLTYPE = "1">
<LI> Level Three Outline
</OL>
</OL>
</OL>
</BODY>
</HTML>
```

See output in figure-



PREFORMATTED TEXT

The PRE (Preformatted text) tag is used to display a block of "preformatted" text in a monospace, fixed-pitch font. You use the PRE tag to display a block of text "as it is", including all spaces and hard returns. One of the primary uses of the PRE tag is to display text in a tabular or columnar format in which you want to make sure that the columns remain properly aligned.

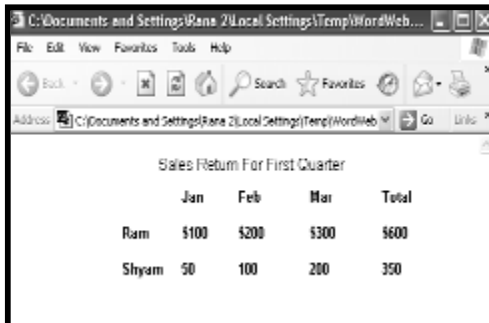
```
<HTML>
<HEAD>
<TITLE>
My First Web Page
</TITLE>
</HEAD>
<BODY>
<PRE>
Sales Return for First Quarter

    Jan   Feb   Mar   Total
    $100  $200  $300  $600
    50    100   200   350
```

Ram
Shyam
Gopal

```
</PRE>
</BODY>
</HTML>
```

See output in figure:



COMMENT TAG

The comment tag is a stand-alone tag that enables you to include messages for your own or anyone else's future references. A comment always begins with a <!-- and ends with a -->.

Example: <!-- Type your comments here -->

EXTENDED QUOTATION

Use the <BLOCKQUOTE> tag to include lengthy quotations in a separate block on the screen. Most browsers generally change the margins for the quotation to separate it from surrounding text.

```
<P> Note: </P>
<BLOCKQUOTE>
<P>
```

This page is meant for no commercial purpose. Therefore, no claims whatsoever can be entertained regarding any information published on it.

```
</P>
Authority
</BLOCKQUOTE>
```

After implementing the above mentioned example, the result will be like this-Note:

This page is meant for no commercial purpose. Therefore, no claims whatsoever can be entertained regarding any information published on it.

Authority

USING LINKS

The chief power of HTML comes from its ability to link text and/or an image to another document or section of a document. A browser highlights the identified text or image with color and/or underlines to indicate that it is a hypertext link (often shortened to hyperlink or just link). HTML's single hypertext-related tag is <A>, which stands for anchor.

Hypertext links can be used to move from one page to the other or to a specific location within the same document or different one. For instance, you can use links to-

- display an image
- download a program
- send e-mail
- use a database
- execute a script

Hyperlinks are mainly of three kinds –

LINKS TO DIFFERENT WEB PAGES

This type of link is frequently used in web pages. It takes you from one page to the other one.

Links to Specific Sections of Current Web Pages

This type of link helps navigation in the current web page. It takes you from one section to another section of the page. Several pages are so big that you can not see it at once and browsing may take time. In that situation, it is found very helpful. Clicking the concerned link available in the beginning directly takes you to the specified section.

Links to Specific Sections of Different Web Pages

This is very much identical to the above link except it takes you to a specific section in a different web page directly.

U.R.L.

The *World Wide Web* uses Uniform Resource Locators (URLs) to specify the location of files on other servers. A URL includes the type of resource being accessed (e.g., Web, gopher, FTP), the address of the server, and the location of the file. *The syntax is:*

scheme://host. domain [:port]/path/ filename

where scheme is one of-

file	- a file on your local system
ftp	- a file on an anonymous FTP server
http	- a file on a World Wide Web server
gopher	- a file on a Gopher server
WAIS	- a file on a WAIS server
news	- a Usenet newsgroup
telnet	- a connection to a Telnet-based service

The port number can generally be omitted. (That means unless someone tells you otherwise, leave it out.)

To include an anchor in your document:

1. Start the anchor with <A (include a space after the A)
2. Specify the document you're linking to by entering the parameter HREF="filename" followed by a closing right angle bracket (>)
3. Enter the text that will serve as the hypertext link in the current document
4. Enter the ending anchor tag: (no space is needed before the end anchor tag) Here is a sample hypertext reference in a file called introduction.html:

```
<AHREF="introduction.html">Introduction</A>
```

This entry makes the word Introduction the hyperlink to the document Introduction.html, which is in the same directory as the first document. You can link to documents in other directories by specifying the relative path from the current document to the linked document. For example, a link to a file introduction.html located in the subdirectory Sarva would be:

```
<AHREF="Sarva/introduction.html">Introduction</A>
```

These are called relative links because you are specifying the path to the linked file relative to the location of the current file.

LINKS TO SPECIFIC SECTIONS

Anchors can also be used to move a reader to a particular section in a document (either the same or a different document) rather than to the top, which is the default. This type of an anchor is commonly called a named anchor because to create the links, you insert HTML names within the document. You can also link to a specific section in another document. That information is presented first because understanding that helps you understand linking within one document.

LINKS BETWEEN SECTIONS OF DIFFERENT DOCUMENTS

Suppose you want to set a link from Sarva (sarva.html) to a specific section in another document (books.html).

Enter the HTML coding for a link to a named anchor:

```
sarva.html:
<a href="sarva.html#SITED">Internet & E-Commerce</a>
```

Think of the characters after the hash (#) mark as a tab within the sarva.html file. This tab tells your browser what should be displayed at the top of the window when the link is activated. In other words, the first line in your browser window should be the Internet & E-Commerce heading. Next, create the named anchor (in this example "SITED") in introduction.html:

```
<H2><A NAME="SITED">Internet & E-Commerce</A></H2>
```

With both of these elements in place, you can bring a reader directly to the Internet reference in introduction.html.

LINKS TO SPECIFIC SECTIONS WITHIN THE CURRENT DOCUMENT

The technique of Links to specific sections within different a document is very much identical to the technique of links to specific sections within the current document except the filename is omitted. For example, to link to the IEC anchor from within Sarva, enter:

```
<A HREF="#SITED">Internet & E-Commerce</A>
```

After this include the tag at the place in your document where you want the link to jump to (Internet & E-Commerce). Named anchors are particularly useful when you think readers will print an entire or when you have a lot of short information you want to place online in one file.

MAILTO

You can make it easy for a reader to send electronic mail to a specific person.

```
<A HREF="mailto:emailinfo@ host">Name</a>
```

For example, enter:

```
<A HREF="mailto:mansoor37 76@ rediffmail.com">
Contact Me</a>
```

To create a mail window that is already configured to open a mail window for the editor.

INLINE IMAGES

Most Web browsers can display inline images (that is, images next to text) that are in X Bitmap (XBM), GIF, or JPEG format. Other image formats are also being incorporated into Web browsers [e.g., the Portable Network Graphic (PNG) format]. Each image takes additional time to download and slows down the initial display of a document. Carefully select your images and the number of images in a document.

To include an inline image, enter:

```
<IMG SRC=Image Name>
```

Where *ImageName* is the URL of the image file.

Specifying Size of Inline Images

You should include two other attributes on tags to tell your browser the size of the images it is downloading with the text. The **HEIGHT** and **WIDTH** attributes let your browser set aside the appropriate space (in pixels) for the images as it downloads the rest of the file.

For example, to include an image named computer in a file along with the image's dimensions, enter:

```
<IMG SRC=computer. if HEIGHT=100 WIDTH=65>
```

After running the above command, you can see a big picture shrunk to the size (very small) as specified. See figure given below:



Links to Images

We can link images with the text in a hypertext link. This link appears in a blue border. For example:

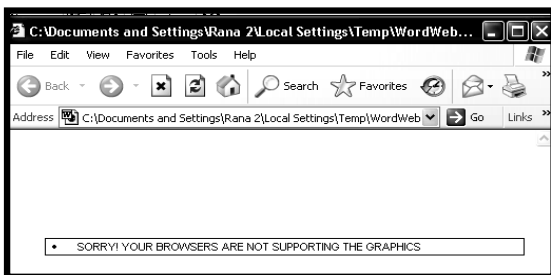
```
<A HREF="SUB.HTM"> <IMG SRC="FLOWERS.GIF"></A>
```

Using ALT Attribute

Sometimes browsers used by your users may not be supporting the graphics available on your web page. In this situation, you must pass an alternative message to the users that makes the users understand what really the matter is. For example, see the following code

```
<IMG SRC="COMPUTER.GIF" ALT="SORRY! YOUR BROWSERS ARE NOT SUPPORTING THE GRAPHICS">
```

In case you confront the same situations as mentioned above, you should see the result in figure below:



HORIZONTAL RULE

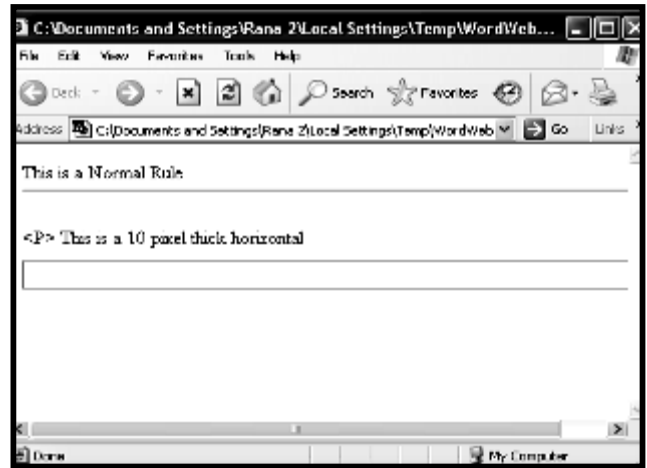
The HR (Horizontal Ruler) tag is a stand-alone, or empty, document element that allows you to add horizontal rules to your Web pages.

CHANGE THE HEIGHT OF A HORIZONTAL RULE

To change the height of a horizontal rule, the SIZE attribute value in the HR tag may be used. The value you set is the rule's height, or thickness, in pixels. The following example is used for creating a horizontal rule that is 10 pixels thick. See example:

```
<P> This is a Normal Rule  
<HR>  
<P> This is a 10 pixel thick horizontal  
<HR SIZE="10">
```

The result will be shown as one in figure below:

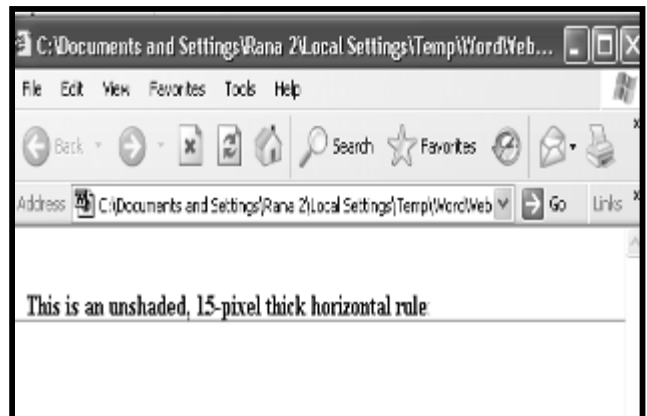


REMOVING SHADES FROM THE RULE

The default setting for a rule is "shaded". To set an "unshaded" horizontal rule, add the NOSHADE attribute to the HR tag.

```
<P>This is an unshaded, 15-pixel thick horizontal rule:  
<HR SIZE="15" NOSHADE>
```

The produced result may be seen in figure below:



CHARACTER FORMATTING

We use some specific formatting attributes to highlight words, phrases or entire sentences in a paragraph or in a page. Some of them are as follows-

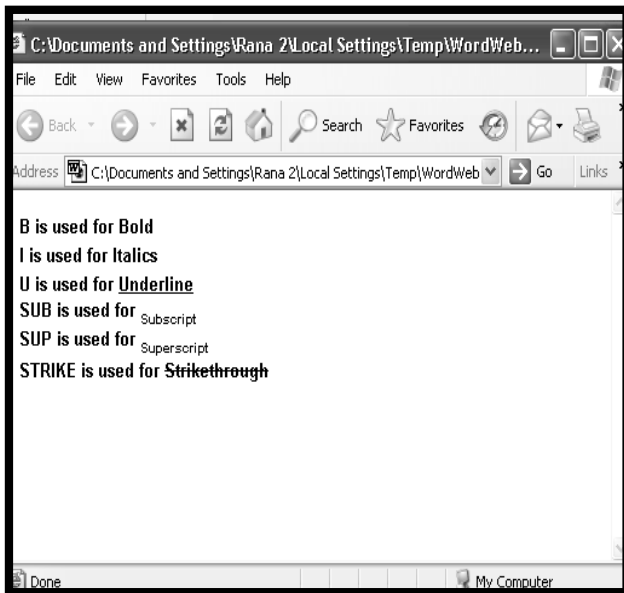
- **...** - This tag is used to set the text bold. For example **Computer**
- **<U>...</U>** - This tag is used to set the text underlined. For example Computer
- **<I>...</I>** - This tag is used to set the text italics. For example *Computer*
- **_{...}** - This tag is used to set the text in a subscript form. For example in O₂, 2 is in subscript form
- **^{...}** - This tag is used to set the text in a superscript form. For example in a², 2 is in superscript form
- **<STRIKE>...</STRIKE>** - This tag is used to set the text in a Strikethrough form.

For example: *Computer*

The usage of different formatting in example given below:

```
<HTML>
<HEAD>
<TITLE> Character Formatting </TITLE>
</HEAD>
<BODY>
<P> B is used for <B> Bold </B>
<P> I is used for <I> Italics </I>
<P> U is used for <U> Underline </U>
<P> SUB is used for <SUB> Subscript </SUB>
<P> SUP is used for <SUP> Superscript </SUP>
<P> STRIKE is used for <STRIKE> Strikethrough</STRIKE>
</BODY>
</HTML>
```

The result will be shown as one in figure below:



Paragraph, headings or other texts can be aligned using ALIGN attribute. They can be aligned in three ways-

- Center
- Right
- Left

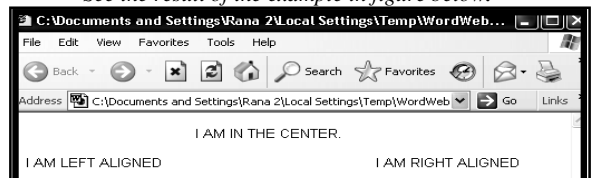
The syntax for this is as follows-

```
ALIGN="value"
```

Where value can be replaced with left, right or center.

```
<HTML>
<HEAD>
<TITLE>
Different Alignments
</TITLE>
</HEAD>
<BODY>
<P ALIGN="CENTER"> I AM IN THE CENTER.
<P ALIGN="LEFT"> I AM LEFT ALIGNED.
<P ALIGN="RIGHT"> I AM RIGHT ALIGNED.
</BODY>
</HTML>
```

See the result of the example in figure below:



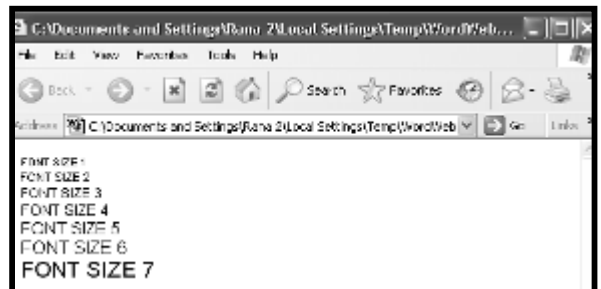
CHANGING FONT SIZE AND COLOURS

You can set or change the size and colors of the font as desired. It can be done using tag.

To specify size of the fonts, Size attribute is used with Font tag. Normally fonts are seven in size. It can be given a number 1 being the smallest through 7 being the largest. By default the font size is 3.

```
<HTML>
<HEAD>
<TITLE>
My web page
</TITLE>
</HEAD>
<BODY>
<FONT SIZE = "1"> FONT SIZE 1 </FONT> <BR>
<FONT SIZE = "2"> FONT SIZE 2 </FONT> <BR>
<FONT SIZE = "3"> FONT SIZE 3 </FONT> <BR>
<FONT SIZE = "4"> FONT SIZE 4 </FONT> <BR>
<FONT SIZE = "5"> FONT SIZE 5 </FONT> <BR>
<FONT SIZE = "6"> FONT SIZE 6 </FONT> <BR>
<FONT SIZE = "7"> FONT SIZE 7 </FONT> <BR>
</BODY>
</HTML>
```

See the result in figure below:



SPECIFYING FONT COLOURS

To change font colour, we use COLOR attribute with the FONT tag. We can set sixteen different colors to make fonts look attractive. They are:

(i) Black (ii) White (iii) Aqua (iv) Blue (v) Fuchsia (vi) Grey (vii) Green (viii) Lime (ix) Maroon (x) Navy (xi) Olive (xii) Purple (xiii) Red (xiv) Silver (xv) Yellow (xvi) Steal

For Example:

```
<P><FONTSIZE = 7>
<FONT COLOR = "AQUA">
This is aqua.
</FONT>
```

When you will run the above mentioned example, you will see the text in aqua colour.

SETTING THE COLOUR OF BODY BACKGROUND, TEXT AND LINK

You change the color of text, links, visited links, and active links (links that are currently being clicked on) using further attributes of the <BODY> tag.

Syntax:

```
<BODY BGCOLOR="colorname/code" TEXT="colorname/code" LINK="colorname/code">
```

For example:

```
<BODY BGCOLOR="#000000" TEXT="#FFFFFF" LINK="#9690CC">
```

This creates a window with a black background (BGCOLOR), white text (TEXT), and silvery hyperlinks (LINK).

The six-digit number and letter combinations represent colors by giving their RGB (red, green, blue) value. The six digits are actually three two-digit numbers in sequence, representing the amount of red, green, or blue as a hexadecimal value in the range 00-FF. **For example:** 000000 is **black** (no color at all), FFOOOO is **bright red**, OOOOFF is **bright blue**, and FFFFFFFF is **white** (fully saturated with all three colors).

You can use the color name also instead of codes that are a bit difficult like:

```
<BODYBGCOLOR="BLACK"TEXT="WHITE"LINK="SILVER">BACKGROUNDGRAPHICS
```

BACKGROUND GRAPHICS

Newer versions of Web browsers can load an image and use it as a background when displaying a page. Some people like background images and some don't. In general, if you want to include a background, make sure your text can be read easily when displayed on top of the image. Background images can be a texture (linen finished paper, for example) or an image of an object (a logo possibly). You create the background image as you do any image. The tag to include a background image is included in the <BODY> statement as an attribute:

Syntax:

```
<BODY BACKGROUND="filename">
```

For example:

```
<HTML>
<HEAD>
<TITLE>
MY BIRD
</TITLE>
</HEAD>
<BODY background=format.gif>
</BODY>
</HTML>
```



(See the result in figure)

Unit-VIII

DATABASE HYPERTEXT MARKUP LANGUAGE (DHTML)

INTRODUCTION

In the last unit we had discussed some basics about HTML including different tags and attributes. This Unit discusses mainly table, form and frame that are indispensable in building web pages.

TABLE

Table is used to arrange data especially when it is a combination of text and number. It is based on rows and columns and each column and row has a heading. *For instance*, Sales-Report of a company or a table presenting information like post, address, phone no. etc.

TABLE TAG

Tag is usually used to instruct the browser what it should do. Like other tags, Table tag is written. The syntax is as follows:

```
<TABLE>
..... Contents of table.....
</TABLE>
```

The <TABLE> tag begins the table, you place what you want inside, and end the table with the </TABLE> tag. To begin adding contents to your table, you will need the <TD> tag. The TD stands for table data, which is what you will place after this tag. You end a table data section with the </TD> tag. Example given below illustrates HTML codes for a basic table with just one cell.

```
<HTML>
<HEAD>
<TITLE>
<TABLE>
<TD>
This is one-cell table.
</TD>
</TABLE>
```

Example results like this:

This is one cell table

The above example does not show clearly whether it is a table or not. To make it look like a table we add border.

ADDING BORDER TO A TABLE

To get the border, we just add the border command to the <TABLE> tag, like this-

```
<TABLE BORDER = "number">
See example to know how it works -
<TABLE BORDER = "2">
<TD>
This is one-cell table.
</TD>
</TABLE>
```

The result will be like this-

This is one-cell table.

The previous result clearly shows that a border has been added around a table. You can set the border width as desired by increasing or decreasing the number like –

```
<TABLE BORDER = "0"> adds no border.
<TABLE BORDER = "1"> adds border.
```

The result something like this

This is one-cell table.

ADDING CELLS TO A TABLE

You can add cells as desired to your table. Just add <TD> as many as the number of cells you want in the table. See example.

```
<TABLE BORDER = "2">
<TD>
This is first cell.
</TD>
<TD>
This is the second cell.
</TABLE>
```

Browser will display the output like this –

This is first cell.	This is the second cell.
---------------------	--------------------------

ADDING ROWS TO A TABLE

Like adding cells to a table, you can add rows using <TR> tag. TR stands for Table Row. Example shows addition of one row to a table.

```
<TABLE BORDER = "2">
<TD>
This is the first cell.
</TD>
<TD>
This is the second cell.
</TD>
<TR>
<TD>
This is 1st cell and 2nd row.
</TD>
<TD>
This is 2nd cell and 2nd row.
</TD>
</TR>
</TABLE>
```

Run it on a browser. You will get the result like this:

This is the first cell.	This is the second cell.
This is 1st cell and 2nd row.	This is 2nd cell and 2nd row

ADDING SPACES TO A TABLE

There are a couple of commands you can add to the <TABLE> tag to get more spacing between cells. They are as follows –

Cellspacing = “ ”

Use this command to add more space around each cell. Place a number inside the double quotation marks.

To see how it affects, replace the first line of above mentioned example with this one-

```
<TABLE BORDER = "2" CELLSPACING = "12">
```

You will see the result like this –

This is the first cell	This is the second cell
This is 1st cell and 2nd row	This is 2nd cell and 2 nd row

Cellpadding = " "

This command is used to add more space inside each cell. You can place the number as required with double quotation marks.

Again replace the first line with the one to see the result of the cell padding command.

```
<TABLE BORDER = "2" CELLPADDING = "12">
```

The table will look like this –

This is the first cell	This is the second cell
This is 1st cell and 2nd row	This is 2nd cell and 2 nd row

You can also add both commands together inside <TABLE....> tag this way –

```
<TABLE BORDER = "2" CELLSPACING="15" CELLPADDING="15">
```

Which you can replace with the first line of above mentioned example .It will result like this –

This is the first cell	This is the second cell
This is 1st cell and 2nd row	This is 2nd cell and 2 nd row

You can add anything inside the cell of a table. You can add a link, an image, heading or paragraph.

EXAMPLE shows a hyperlink having added inside the cell.

```
<TABLE>
<TD>
<A HREF = "http://www.yahoo.com"> Go Yahoo!</A>
</TD>
</TABLE>
```

You will see the result like this – [Go Yahoo!](http://www.yahoo.com)

DETERMINING THE TABLE SIZE

Sometimes, you need your table in a specific size. You can define the width of your table to help you get the table in the size you would like it to be. To do this, add the width = " " command to your <TABLE> tag. Place the number of pixels wide you would like the table to be between the double quotation marks. So, if you wanted a table 600 pixels long, you would do this:

```
<TABLE WIDTH = "600" BORDER = "2">
```

The above command makes table 600 pixels long.

See example:

```
<TABLE WIDTH = "600" BORDER = "2">
```

```
<TD>
```

The Table is 600 pixels long.

```
</TD>
```

```
</TABLE>
```

Example Result Below –

The Table is 600 pixels long.

The above output clearly illustrates your table border is much longer than the text it contains.

ALIGNING THE CONTENTS OF THE TABLE

Contents in a table can be arranged from right side, from left side or in the centre with the help of **ALIGN=" " "command**. We add this command in <TD> tag.

This command can be used in the following three ways -

Align = "left" sets the contents in a table from left side.

Align = "right" sets the contents in a table from right side.

Align = "center" sets the contents in a table in the center.

See Example:

```
<TABLE WIDTH="450" BORDER="2"
```

```
CELLSPACING="7" CELLPADDING="7">
```

```
<TD ALIGN = "CENTER">
```

This cell is in the center.

```
</TD>
```

```
<TD ALIGN = "RIGHT">
```

This cell is right aligned.

```
</TD>
```

```
<TD ALIGN = "LEFT">
```

This cell is left aligned.

```
</TD>
```

```
</TABLE>
```

Example results like this -

This cell is in the Center.	This cell is right aligned	This cell is left aligned
-----------------------------	----------------------------	---------------------------

In the above picture, text in the first cell is quite centered while second and third cells are arranged from right and left side respectively.

Apart from the command mentioned above, there are a few more commands that align the contents vertically. For this, add **VALIGN = " "** command inside **<TD>** tag. Commands that align vertically are as follows –

```

valign = "top"
arranges the contents quite at the top in the cell.
valign = "middle"
arranges the contents in the centre of the cell.
valign = "bottom"
arranges the contents at bottom in the cell.
You can see the use of these commands in example below:
<TABLE WIDTH="550" BORDER="2" CELLSPACING="7" CELLPADDING="0">
<TD ALIGN = "CENTER" VALIGN = "TOP">
The cell is at the top. <BR>
Really! It is top.
</TD>
<TD ALIGN = "CENTER" VALIGN = "MIDDLE">
The cell is in the middle.
</TD>
<TD ALIGN = "CENTER" VALIGN = "BOTTOM">
The cell is at bottom.
</TD>
</TABLE>

```

Table as a result of example will display like this –

This cell is at the top. Really! It is top.	This cell is in the middle	This cell is at bottom.
--	----------------------------	-------------------------

The vertical alignment commands only come in useful if your table cells do not have the same number of lines inside each cell. Since the first cell has 2 lines and others have one line, the vertical alignment makes difference in how the table looks. Had all the cells contained one line only, there would have been no use of VALIGN at all.

SPANNING ROWS AND COLUMNS

You can span rows and columns. It is mainly used to write a title of rows or columns. There are two commands for this as follows –

Rowspan = " "

Defines the number of vertical table rows the cell should take up. Place the number as required inside the double quotation marks.

Colspan = " "

Defines the number of horizontal columns the cell should take up.

For instance, the following type of table can be prepared using the codes written in example:

{Hello! Mr..... How are you?	Microsoft.Press
---------------------------------	------------------------

```

<TABLE BORDER = "2">
<TD ALIGN = "CENTER">
Hello! Mr .....
</TD>
<TD ROWSPAN = "2" ALIGN = "CENTER">
<IMG SRC = "PIC1.GIF">
</TD>
<TR>
<TD ALIGN = "CENTER">
How are you?
</TD>
</TR>
</TABLE>

```

Similarly, to make a table. We write html codes as written in example.

SPRIDE OF CRICKET		
SACHIN TENDULKAR	BRIAN LARA	IMRAN KHAN

EXAMPLE:

```
<TABLE BORDER = "2" CELLPADDING = "5">
<TD COLSPAN = "3" ALIGN = "CENTER">
<B> PRIDE OF CRICKET </B>
</TD>
<TR>
<TD ALIGN = "CENTERS"
SACHINTENDULKAR
</TD>
<TD ALIGN = "CENTERS"
BRIAN LARA
</TD>
<TD ALIGN = "CENTERS"
IMRAN KHAN
</TD>
</TR>
</TABLE>
```

In example colspan is used. We use the colspan command and set *colspan="3"*. We get the first cell to stretch across the other three on the second row below it.

SPECIFYING BACKGROUND COLOUR OF THE TABLE

You can change the background color of the entire table, each row, or each cell. To change the background colour of the table, **bgcolor=""** command is used like this –

```
<TABLE BORDER = "5" BGCOLOR = "RED">
```

In the above command **BGCOLOR** has been used in the <TABLE> tag. To understand the use, see the example:

```
<TABLE BORDER = "5" BGCOLOR = "RED">
<TD>
IT IS QUITE REDDISH !
</TD>
</TABLE>
```

Example results something like this -



The entire table gets its background red. To change color of each cell in the table. **BGCOLOR** command is used in each <TD> tag. **See example :**

```
<TABLE WIDTH = "75" BORDER = "2">
<TD BGCOLOR = "RED">
RED
</TD>
<TD BGCOLOR = "BLUE">
BLUE
</TD>
</TABLE>
```

After you run the above mentioned example, figure like this appears on the browser –



Both cells have different colors. The cell that contains RED has Sot red background while the cell that contains BLUE has got blue background. Let us see example in which a table containing two columns and two rows have been created and both rows have been provided two different colors.

```
<TABLE WIDTH = "200" BORDER = "2">
<TR BGCOLOR = "RED">
<TD>RED</TD>
<TD> AGAIN RED </TD>
</TR>
<TR BGCOLOR = "BLUE">
<TD> BLUE </TD>
<TD> BLUE AGAIN </TD>
</TR>
</TABLE>
```

You will see the effects of example like this -

RED	AGAIN RED
BLUE	BLUE AGAIN

Thus, you can prepare calendar, price-list or whatsoever using tables.

CREATING TABLES WITHIN TABLES

Suppose you had this problem: You need to put two tables on the same line on your page. Oh no! the table tag automatically sends you to the next line! Well, you can set around this by placing your two tables inside one large table, thus keeping them on the same line.

Let us start by placing one table inside another. **See example:**

```
<TABLE WIDTH = "400" BORDER = "6">
<TD ALIGN = "CENTER">
<TABLE WIDTH = "300" BORDER = "2">
<TD ALIGN = "CENTER">
This is a table within a bigger table.
</TD>
</TABLE>
</TD>
</TABLE>
```

<table border="2"> <tr> <td align="center">This is a table within a bigger table.</td> </tr> </table>	This is a table within a bigger table.
This is a table within a bigger table.	

Result of the Example on the Browser:-

This can be a bit confusing at times. Just remember to keep track of which table you are in while you are writing the code. As for the problem at the beginning of the section, all we have to do is add another table cell to the big table, and then use a second smaller table inside that cell. To hide the appearance of the big table, we set the border on the big table to zero. **See example:**

```
<TABLE WIDTH="600" BORDER="0">
<TD ALIGN = "CENTER">
<TABLE WIDTH = "275" BORDER = "4">
<TD ALIGN = "CENTER">
I am in the second small table! Ha!
</TD>
</TABLE>
</TD ALIGN="CENTER">
<TABLE WIDTH = "275" BORDER = "4">
</TD ALIGN="CENTER">
I am in the second small table! Wow!
</TD>
</TABLE>
</TABLE>
```

Now we see the two inside tables on the page side by side like this –

<table border="4"> <tr> <td align="center">I am in the first small table! Ha!</td> </tr> </table>	I am in the first small table! Ha!	<table border="4"> <tr> <td align="center">I am in the second small table! wow!</td> </tr> </table>	I am in the second small table! wow!
I am in the first small table! Ha!			
I am in the second small table! wow!			

USING FRAMES

Prior to begin using frames on your web page, you will be wanting to know how frames work. A page with frames is really a page split into 2 or more sections, each containing its own html document. As you can see in figure given below, that shows a page with two frames.

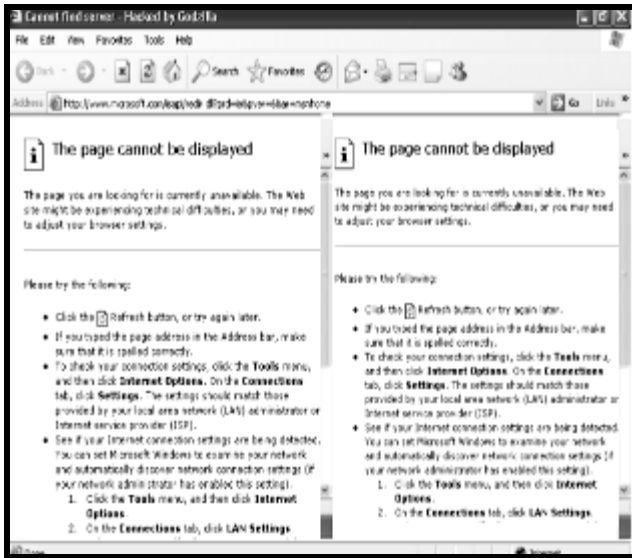


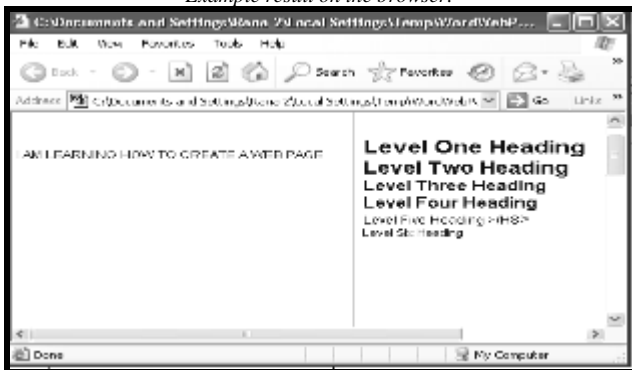
Figure: A page with two frames

As in the figure both frames are actually two different web pages. The page that keeps the two frames has also its own html document. In this section we shall discuss how to create frames. Frame is built using the <FRAMESET> tag rather than <BODY> tag at the beginning of the document.

See example:

```
<HTML>
<HEAD>
<TITLE> My First Page with Frames </TITLE>
</HEAD><FRAMESET COLS = "50%, 50%">
<FRAME SRC = "FRAME1 .HTM">
<FRAME SRC = "FRAME2.HTM">
</FRAMESET>
</HTML>
```

Example result on the browser:



Let's have a look at elements used in the above mentioned example -

<FRAMESET>

This tag tells the web browser to expect a series of frames rather than a normal page.

```
cols = "50%, 50%"
```

This command inside the FRAMESET tag tells the browser to split the page into two columns. In this case, each column would take up 50% of the space on the screen. You can change the percentage to any number you like. You can also use pixels rather than percentage if you wish. If you use percentages, be sure to keep the % sign after each number, or the browser will read the number as a pixel value.

<FRAME SRC = "FRAME1.HTM">

This tag lets you tell the browser the URL of the document in the frame farthest to the left.

<FRAME SRC = "FRAME2.HTM">

This tag will specify the URL of the next frame, going from left to right. The browser will read your FRAME SRC tags for the columns from left to right. For this everything should be in order.

Example:

```
<HTML>
<HEAD>
<TITLE> MY AGE WITH THREE FRAMES </TITLE>
</HEAD>
<FRAMESET COLS = "33%, 33%, 33%">
<FRAME SRC = "Frame1.htm">
<FRAME SRC = "Frame2.htm">
<FRAME SRC = "Frame3.htm">
</FRAMESET>
</HTML>
```

After you implement example on browser, the effects will appear on the browser like one hi figure given below:

The page now contains three columns and all are almost equal as 33% has been provided to each frame in the code. Rest 1% is made by the browser itself. If you do not want to leave it to browser, change any of the values to 34%.

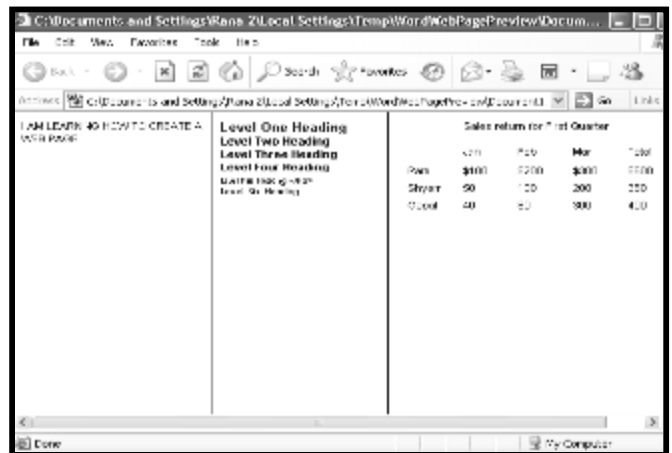


Figure: page with three different documents

ADDING COLUMNS HORIZONTALLY AND VERTICALLY

Suppose you want two frames vertically and one frame divided into two horizontal frames. For this, we use rows instead of cols for frames that go from top to bottom.

See example:

```
<HTML>
<HEAD>
<TITLE> My Page with Mixed Frames </TITLE>
</HEAD>
<FRAMESET cols = "50%, 50%">
<FRAME SRC = "FRAME1 .HTM">
<FRAMESET ROWS = "50%, 50%">
<FRAME SRC = "FRAME2.HTM">
<FRAME SRC = "FRAME3.HTM">
</FRAMESET>
</FRAMESET>
</HTML>
```

See result of the above mentioned example on the browser:

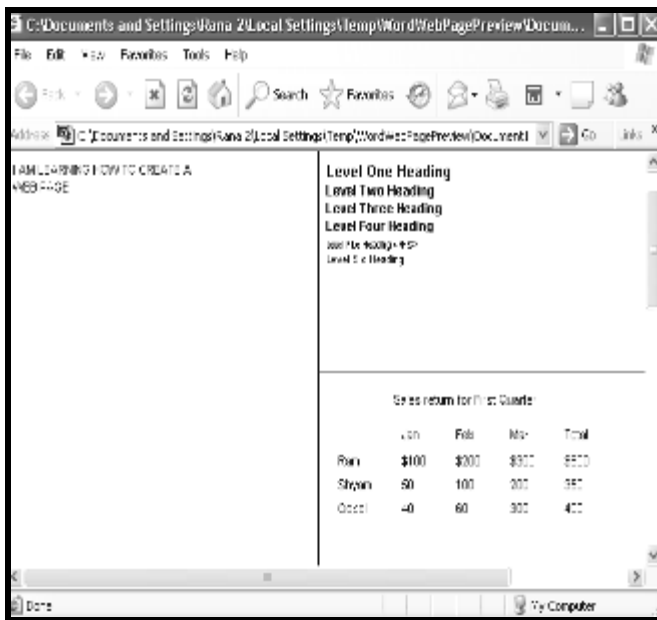


Figure: A page based on three frames of mixed structure.

The rows command reads from top to bottom, like the cols command reads from left to right. You can have as many columns or rows as you like, but be sure to nest your frameset tags the way you want the frames to appear:

- The first FRAMESET tag tells the browser to divide the page into two columns.
- The FRAME SRC tag following it tells the browser the first column should be filled with frame1.htm.
- The next FRAMESET tag is nested inside the first FRAMESET tag. This tag tells the browser to divide the second column into two rows, rather than using a single html page to fill the column.
- The next two FRAME SRC tags tell the browser to fill the two rows with frame2.htm at the topmost row and frame3.htm on the following row, moving from top to bottom.
- Be sure to close all of your FRAMESET tags after they have been used.

USING LINKING AND ATTRIBUTES ON THE FRAME

Now, you can create a page with frames. But when you place a link inside a frame, the URL you linked to will only appear in that same frame! This is because a link within a frame will default to showing the next page inside the frame the link is. In this case you would certainly like to have the link put the new page in another frame, or come up without any frames around it. For this, just name each frame, and these specify the target frame in your link.

See example:

```
<HTML>
<HEAD>
<TITLE> My Page with Linked Frames </TITLE>
<FRAMESET cols = "20%, 80%">
<FRAME SRC = "FRAME1 .HTM" NAME = "Left_frame">
<FRAME SRC = "FRAME2.HTM" NAME = "right_frame">
</FRAMESET>
</HEAD>
</HTML>
```

In example, each frame has got a name, you can use either frames name as a target inside a link tag. Indirectly, you can say you have a link inside the Left_frame (frame1.htm). If you want the new page to show up in the right_frame, you need to add the target="frame_name" command to your link tag. The following example link tag will be in the left_frame, but make the result show up in the right_frame:

```
<A HREF="sarva.htm" target="right_frame"> About Sarva </A>
```

Now the left_frame will remain unchanged, while the linked URL will show up in the right frame. You can link to any frame you want to this way. Just remember to name all of your frames so that you can target them.

IMPORTANT ATTRIBUTES USED IN THE FRAME

Some important attributes are used in the frame that you can add to your individual <FRAME> tags to help you control the design of the frames. They are as follows –

scrolling = "no"

This command will let you specify whether or not you want a scroller on the right side of the frame for users to scroll up and down. If you do not add this command, the browser will decide whether or not to add a scroller based on the length of the page inside the frame. If set to "yes", the frame will always have a scroller. If set to "no" the frame will have no scroller.

border = "2"

This command lets you specify the width of the frame border. You can set a number of your choice.

resize = "no"

This command lets you decide whether or not you want your viewers to be able to resize a frame by dragging the border across the page. If set "yes", users can resize the frame and if set to "no" the frame can not be resized. The default is yes.

More size

You may want to use this in place of `resize="no"`, as not all browsers support the `resize="no"` command. Using both commands, you can safely present the users the scroll bar.

margin width = "2" and marginheight = "2"

These commands let you determine the margins between the frame and the contents of the frame.

USING THE FORM

Forms are created on web pages to get feedback. They can also be used as order form, form for survey on a special subject or for similar purposes. You can create your own form using the techniques being discussed as ahead.

SETTING UP A FORM

To use a form on your page, you will need two things. The HTML for the form and a CGI program to handle the form when it is submitted.

To get a CGI program for you, you can see if your web server has one available for your use and find out from them how to use it in your HTML form code. Most web servers offer CGI programs for you to use for free. The most common program to handle a form is one that sends you the results via email, and this is the program most servers will provide.

To create a form, two elements are specified –

(1) **METHOD** property within `<FORM>` tag

(2) **ACTION** property within `<FORM>` tag

The **METHOD** command/property will almost always be set to "post". The other value is "get", but if you are using a program from your web server, you will likely be instructed to use `method = "post"`.

The **ACTION** command is asking for the address of a CGI program that will handle the form once it is submitted.

You will replace the:

"/cgi-bin/mansoor.PI"

with the exact address your server gives you to use their cgi program. If you are using your own program, upload the program to your server and use the address of your program. Before you upload a cgi program, be sure your server allows you to use your own cgi programs. If your server doesn't allow you to use your own cgi programs, don't do it.

Let us know how to create some basic elements used on the form. The basic elements on a form are as follows –

- **TEXT BOX**
- **CHECK BOX**
- **RADIO BUTTON**
- **MENU**
- **SUBMIT AND RESET BUTTONS**

CREATING A TEXT BOX

After writing opening tag `<FORM>`, you can insert any element as required on a form. On your form, the most used element is usually a text box. Text box lets your users enter a line of text as required. To create this, do the followings –

1. Within both form tags `<FORM>` and `</FORM>`, type the text you want to use as a label for the text box like `<P>` Name and press Enter.
2. Then, type `<INPUT TYPE = "text" and leave space.`
3. Type `Name="name"`. Replace the name within the double quotation marks with a suitable name that describes the text box.
4. Type `Size = "n"` to specify the width of the text box. Replace the n with a number required as the size of the text box. n is the number of characters used in the text box. For instance `size = "20"`
5. Type `MAXLENGTH="n"` to limit the number of maximum characters used in the text box. Change the n with a number you want maximum characters in the text box. Like `MAXLENGTH = "30"`
6. To end it, use the `>` key. To understand the entire process,

See example:

```
<FORM METHOD = "POST" ACTION =
"mailto:mansoor3176@rediffmail.com">
<P>Name
<INPUT TYPE="text" Name="text1" SIZE="20"
MAXLENGTH="30">
</FORM>
```

After you run the example, picture like this will appear on the browser.

Name

CREATING A LARGE TEXT BOX

The text box created in the earlier section has got a limit. Using that text box, You can let your users enter only one line in the text box. What about if your users need enter more than one line in the text box. In this situation, you need a text box that should be large and contains multiple lines. To create a large text box, do the followings –

1. Type the text representing a label for the text box within both form tags `<FORM>` and `</FORM>` like - `<P>` Comments/Suggestions and press Enter.
2. Type `<TEXTAREA` and press spacebar
3. Then, type `Name=" "`. Within double quotation marks type a suitable word o name the text box. **For example:** Name = "Suggestions" and leave space
4. Type `Rows = "n"` and replace n with the number you want to allow your users type the lines in the box. eg. Rows = "5"
5. Type `Cols="n"` to specify the width of text box. Replace the n with the number you want to set the width of text box like `COLS="30"`
6. Type `WRAP>` to use word wrap feature in the text box. Word wrap feature Auto-matically changes the line when the column limit of the text box is over.
7. Type `</TEXTAREA>` to close the tag.

See the example to look at the HTML codes.

```
<HTML>
<HEAD>
<TITLE> FEEDBACK FORM </TITLE>
</HEAD>
<P> Comments/Suggestions
<FORMMETHOD="POST" ACTION="mailto:mansoor3176@yahoo.com">
<TEXTAREA Name="Suggestions" Rows="5" Cols="30" WRAP>
</TEXTAREA>
</HTML>
```

After you run the example the browser will display like this –



CREATING A RADIO BUTTON

Radio button is used when your users have multiple choices to select and you allow them to choose one that is the most appropriate one. Before you create a radio button, you need provide some basic information to the browser as follows –

- Selection of a word representing the whole group of options. It can be done using Name attribute.
- Selection of a word for each radio button. Value attribute is used for this.
- Selection of a word that will work as a label for each radio button. Now follow the instructions to create a radio button –

1. Type <INPUT TYPE = "radio" between both form tags <FORM> and </FORM>
2. Type Name = " ". Name the word under double quotation marks that will represent the entire group of radio buttons.
3. TYPE VALUE = " " to specify the information for one radio button. Type the word under double quotation marks that describes the radio button.
4. Type CHECKED, if you want the radio button automatically selected. You can have this with only one radio button.
5. TYPE > to complete the radio button.
6. Type the text you want to appear beside the radio button on your web page.
7. Repeat steps from 2, 3, 5 and 6 for as many radio buttons as you want to create.

See the example to understand the HTML codes –

```
<HTML>
<HEAD>
<TITLE> Feedback Form </TITLE>
</HEAD>
<P>Marital Status
<FORM METHOD="POST"
ACTION="mailto:mansoor3176@rediffmail.com">
<INPUT TYPE="radio" Name="marital" Value="Married"> Married
<INPUTTYPE="radio" Name="marital" Value="Unmarried"
CHECKED> Unmarried
</FORM>
</HTML>
```

After you run the example on the browser, picture like this will display -

Marital Status

Married Unmarried

CREATING A CHECK BOX

You can build a set of check boxes on a form if you want visitors to be able to select one or more options. When creating check boxes, you need to specify the same information, you did while creating radio buttons. After understanding the information to be specified, do the followings to accomplish creation of check boxes –

1. Type <INPUT TYPE = "checkbox" between both form tags <FORM> and </FORM> and then leave space.
2. Type Name = " " and under double quotation marks type the word that defines the group of check boxes like Name = "sports"
3. Then type VALUE = " " to specify the information for each check box. Type the word under double quotation marks that describes the check box such as VALUE = "football".
4. Type CHECKED if you want a special check box to be selected automatically.
5. Type > to complete the check box.
6. Type the text you want to use beside the checkbox.
7. Repeat steps 1, 2, 3, 5 and 6 every time you want a check box be added in the set. See example to understand the html codes.

```
<HTML>
<HEAD>
<TITLE> Feedback Form </TITLE>
</HEAD>
<P> Hobbies
<FORMMETHOD="POST"
ACTION="mailto:mansoor3176@rediffmail.com">
<INPUT TYPE="checkbox" Name="hobbies" Value="Cricket"
CHECKED>
Cricket<BR>
<INPUT TYPE="checkbox" Name="hobbies" Value="Music">
Music<BR>
<INPUT TYPE="checkbox" Name="hobbies"
Value="Travelling">
Traveling<BR>
</FORM>
</HTML>
```

After you run the example, the picture like this comes up on the browser

Hobbies

Cricket
 Music
 Travelling

CREATING A MENU

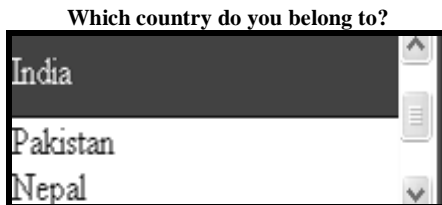
You can create a menu that offers visitors a list of options to choose from. Normally menus are used for displaying lists of products, states or age groups. While creating radio buttons, you must specify the same thing specified in the earlier radio buttons and check boxes and then proceed to the following steps –

1. Type `<SELECT NAME = " " between both form tags <FORM> and </ FORM>`. Insert a word under double quotations that describes the menu you want to create. And then press SPACEBAR. For example `<SELECT NAME = "COUNTRY"`
2. Type `SIZE = "n"` and replace n with the number of options you want readers to see in the menu without using the scroll bar. eg. `SIZE = "3"`
3. Type `<OPTION VALUE = " " and insert a word under double quotations that describe^ the menu option.`
4. Type the text you want to appear for the menu option.
5. Repeat steps 3 and 4 for each menu option you want to add.
6. Type `SELECTED` if you want a particular menu selected. You can have this with one.

See example to look through the HTML codes.

```
<HTML>
<HEAD>
<TITLE> FEEDBACK FORM </TITLE>
<P> Which country do you belong to?
<FORM METHOD = "POST"
ACTION="mailto:mansoor3176@rediffmail.com">
<SELECT NAME="Country" SIZE="3">
<OPTION VALUE = "India" Selected> India
<OPTION VALUE = "Pakistani"> Pakistan
<OPTION VALUE = "Nepal"> Nepal
<OPTION VALUE = "Bangladesh"> Bangladesh
<OPTION VALUE = "Bhutan"> Bhutan
<OPTION VALUE = "Sri Lanka"> Sri Lanka
<OPTION VALUE = "Malaysia"> Malaysia
</SELECT>
</FORM>
</HTML>
```

After implementing the codes written in example on a browser, the picture that appears will match with this –



CREATING A SUBMIT BUTTON

You can build a SUBMIT button which lets the user to click in order to store the information an your web server or on your e-mail account. To create SUBMIT button, do the followings –

1. Type `<INPUT TYPE = "Submit" between both form tags <FORM> and </ FORM>` and leave spaces.
2. Type `VALUE = " "`. Put the word under double quotation marks that appears on the button like `VALUE = "ACCEPT"`

See example:

```
<HTML>
<HEAD>
<TITLE> FEEDBACK FORM </TITLE>
</HEAD>
<FORMMETHOD="POST" ACTION="mailto:mansoor3176@yahoo.com">
<INPUT TYPE="SUBMIT" VALUE="ACCEPT">
</FORM>
</HTML>
```

After you run the example, the output on the browser will appear like this-



CREATING A RESET BUTTON

You can create a RESET button that allows your users to refresh the information entered by the user to create this button, do the followings –

1. Type `<INPUT TYPE = "reset" between both form tags <FORM> and </ FORMx`
2. Type `VALUE = " "` and put a word that will appear on this button like `VALUE = "RESET"`

See example:

```
<HTML>
<HEAD>
<TITLE> FEEDBACK FORM </TITLE>
</HEAD>
<FORM METHOD="POST"
ACTION="mailto:mansoor3176@yahoo.com">
<INPUTTYPE="RESET" VALUE="REFRESH">
</FORM>
</HTML>
```

After you run the example, the result will be shown like this on the browser -



So far, you have seen how to create various elements on a form. Now we write codes together in example to create a form incorporating all the elements discussed earlier.

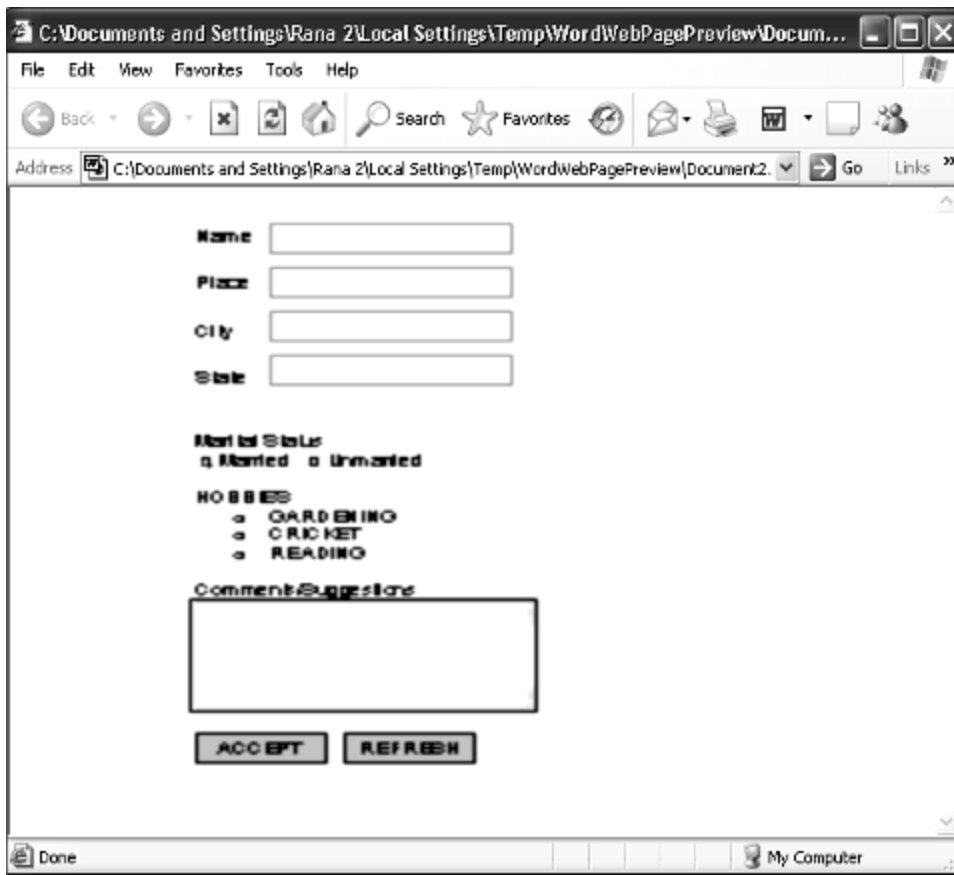
Example:

```
<HTML>
<HEAD>
</HEAD>
<FORM METHOD="POST"
ACTION="mailto:mansoor3176@rediffmail.com">
<P> Name <INPUT TYPE="TEXT" NAME="prof"
SIZE="20"
MAXLENGTH="30">
<P> Place <INPUTTYPE="TEXT» NAME="prof"
SIZE="20"
MAXLENGTH="30">
<P> City <INPUTTYPE=" TEXT" NAME="prof"
SIZE="20"
MAXLENGTH="30">
<P> State <INPUTTYPE="TEXT" NAME="prof"
SIZE="20"
MAXLENGTH="30">
<P> Marital Status<BR>
<INPUT TYPE="radio" Name="marital"
Value="Married"> Married
<INPUT TYPE="radio" Name="marital"
Value="Unmarried" CHECKED>Unmarried
```

```

<P>HOBBIES <BR>
<INPUT TYPE=>CHECKBOX" NAME="HOB" VALUE="GARDENING"
CHECKED>GARDENING<BR>
      <INPUTTYPE="CHECKBOX» NAME="HOB" VALUE="CRICKET">CRICKET<BR> <INPUTTYPE=>CHECKBOX"
NAME="HOB" VALUE="READING">READING<BR>
<P> Comments/Suggestions<BR>
<TEXTAREA Name="Suggestions" Rows="5" Cols="30" WRAP>
</TEXTAREA> <BR>
<BR>
<BR>
<INPUT TYPE="SUBMIT" VALUE="ACCEPT">
<INPUT TYPE="RESET" VALUE="REFRESH">
</FORM>
</HTML>
    
```

After you implement the example the effects on the browser can be shown in figure below:-



Unit-IX

C LANGUAGE

CHAPTER-1

INTRODUCTORY CONCEPTS

Computer Languages

The functioning of a computer is controlled by a set of instructions (called a computer program). These instructions are written to tell the computer.

**What operation to perform? Where to locate data?
How to present result? When to make certain decisions?**

The communication always needs a common language or terminology. The language used in the communication of computer instructions is known as the programming language into this language. The computer has its own language and any communication with the computer must be in its language or translated into this language.

A language is a system of communication. We communicate to one another our ideas and emotions by means of language. Similarly, a computer language is a –mean of Communication, which is used to communicate between people and the (Computer). Using some computer language a programmer can still the computer what he wants to do. Computer languages divide in three parts:-

1. Machine languages (low level languages)
2. Assembly (or symbolic) languages, and
3. High level languages

1. Machine Language

Computers are made of two-state electronic components which can understand only pulse and no-pulse (or '1' and '0') conditions. Therefore, all instructions and data should be written using binary -codes 1 and 0. The binary code is called the machine code or machine language. Computer does not understand English, Hindi or Tamil. They respond only to machine language. Added to this, computers are not identical in design. Therefore, each-computer has its own machine language. (However, the script, 1 and 0, is the same for all computers.) This poses two problems for the user. **First**, it is a traumatic experience to understand and remember the various combinations of 1 'sand O's representing numerous data and instructions. Also, writing error-free instructions is a slow process. **Secondly**, since every machine has its own machine language, the user cannot communicate with other computers (if he does not know its language). Imagine a Tamilian making his first trip to Delhi. He would face enormous obstacles as soon as he moved out for shopping. A language barrier would prevent him from communicating.

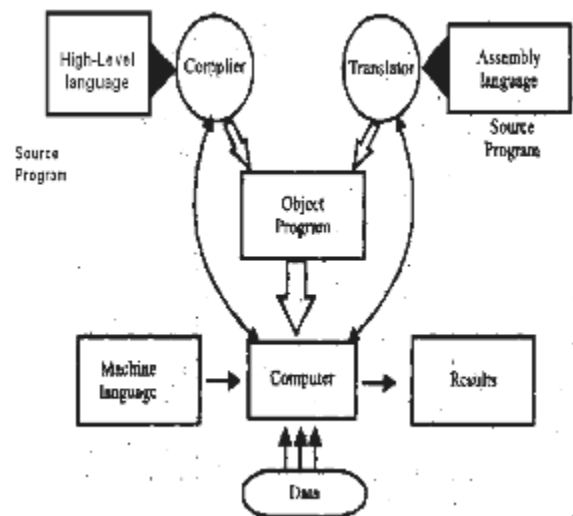
2. Assembly Language

An assembly language uses machine codes rather than numeric codes (as used in machine language). For example, ADD or A is used as a symbolic operation code to represent addition and SUB or S is used for subtraction. Memory locations containing data are given names .such as TOTAL, MARKS, TIME, MONTH, etc. As the computer understands only machine-code instructions, a program written in assembly language must be translated into machine language before the program is executed. , This translation is done by a computer program referred to as an assembler.

3. High Level Language

The assembly language is again a machine-oriented language and hence the program has to be different for different machines. The programmer should remember machine characteristics when he prepares a program. Writing a program in assembly language is still a slow and tedious task. High label languages are BASIC, COBOL, and FORTRAN etc.

These languages consist of a set of words and symbols and one can write programs using these in conjunction with certain rules like 'English' languages. These languages are oriented towards



the problem to be solved or procedures for solution rather than mere computer instructions. These are more user- centered than the machine-centered languages. They are better known as high level languages.

The most important characteristic of a high level language is that it is machine independent and a program written in a high- level language can be run on computers of different makes with little or no modification. The programmer need not know the characteristic of that machine. However, such programs are to be translated into equivalent machine-code instructions before actual implementations.

A program written in a high-level language is known as the source-program and can be run on different machines using different translators. The translated program is called the object program. The major disadvantage of high-level language is that they take extra time for conversion and thus they are less efficient compared to the machine-code languages. Figure shows the system of implementing the three levels of languages.

SUMMARY OF COMMON HIGH LEVEL LANGUAGE

Year	Language Version	Name Derived from	Developed by	Application	Latest
1957	FORTRAN	Formula	IBM	Science, Engineering	FORTRAN77
1958	ALGOL	Translation Algorithmic	International Language	Engineering	ALGOL68
1959	LISP	List Processing	MIT, USA	Artificial Intelligence	LISP 1.6
1960	APL	A Programming Languages	IBM	Science, Engineering	APLSV
1961	COBOL	Common Business Oriented Language	Defense Dept. (USA)	Business	Cobol 85
1964	BASIC	Beginner All Purpose Symbolic Instruction Code	Dartmouth College	Engineering, Science, Business, Education	Standard Basic
1965	PL/1	Programming Language	IBM	General	ANSI PL/1
1970	Pascal	Blasic Pascal	Federal Institute Of Technology,	General Switzerland'	Standard Pascal
1972	PROLOG	Programming In Logic	University of Marselie	Artificial Intelligence	Standard PROLOG
1973	C	Earlicr language	Bell Laboratory	General	ANSI C
1975	Ada	Augusta Ada	U.S. Defense	General	Ada
1983	C++	C	Bajaarne Stroustrup	OOP's	VC++
1995	Java	oak	Sun Microsystem	Internet	Java 1.4

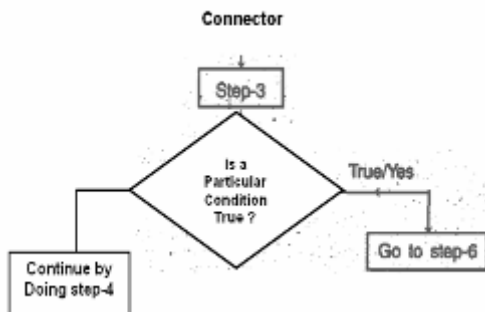
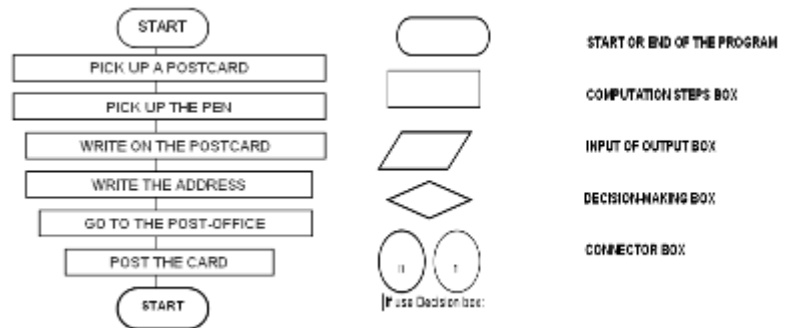
Algorithm and Flowcharts:

Algorithm: The set of instruction in a sequence manner is called algorithm.

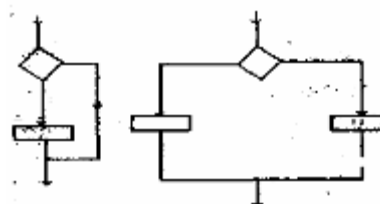
Flowcharts: The diagrammatic representation of program is called Flow chart.

ALGORITHM AND FLOW CHART TO POST A CARD:

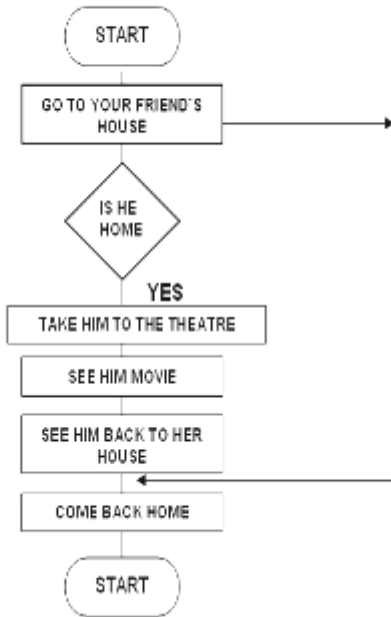
- STEP-1. START
- STEP-2. PICK UP A POSTCARD
- STEP-3. PICK UP THE PEN
- STEP-4. WRITE ON THE POSTCARD
- STEP-5. WRITE THE ADDRESS
- STEP-6. GO TO THE POST-OFFICE
- STEP-7. POST THE CARD
- STEP-8. STOP



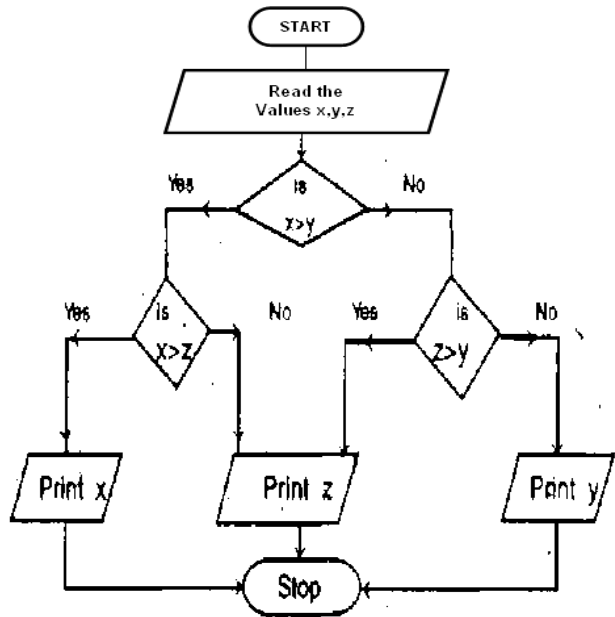
Branching: Branching refers to the process of the following one of two more optional paths of computations.



Example: Going to movies with your friend.



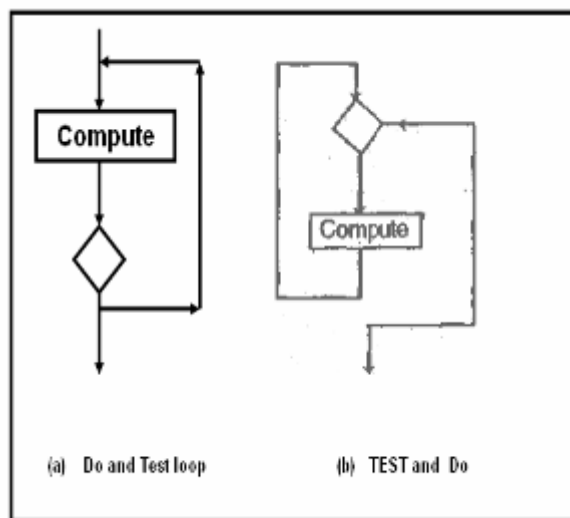
Example: Find out the greatest among three numbers



LOOPING:

Repeat the statement again and again is called **loop**. And this process is called **looping**. There are two types of loop. **First** is called **DO** and **Test loop** and **second** is called **TEST** and **DO** type loop.

- a) **DO and Test loop:** In these loop firstly, we execute the statement and then Test the condition.
- b) **TEST and DO:** In these loop firstly, we test the condition then execute the statement.



CHAPTER- 2

C FUNDAMENTALS

Introduction to 'C' Language

'C' is a general-purpose structured programming language. C has certain features which are best suited for low jobs and certain features which enable the programmer to perform high level jobs, thus bridging the gap between the machine language & high level language. Earlier there was a language 'Basic combined Programming Language' called B, which was modified by **Denis Ritchie** and was implemented, at **Bell Laboratories** in **1972**. This new language was called 'C' Language. 'C' is a middle-level language as it gives a minimal set of control and data-manipulation statements that they can use to define high-level constructs. It allows to efficiently communicating with a computer.

Features of 'C' Language

- ✓ **Small Instruction Code**
The code of C Language is very small as compared to most of the languages. It needs few instruction codes to perform a job.
- ✓ **Portable**
C Language is portable language. A language is said to be portable, if a program written in that language when taken to various other computers, runs with little or no modification.
- ✓ **No Formatting**
C does not impose any format restriction on user as in COBOL; one can start writing from any place and end it at any place.
- ✓ **Efficient & Fast**
Due to its variety of data types and powerful operators, programs written in C are fast & efficient.

Use of 'C' Language

C language is capable of system programming and application programming. System programming refers to a class of programs that either are part of or work with operating system of the computer. System programs make the computer able of performing useful work. System programs run very quickly.

C could be used for many types of application like- Developing operating system, Assemblers, Compilers, Interpreters, Editors, System Utilities, Writing TSR's, Database Application, Networks systems.

'C' as a structure programming

structure programming represents a procedure for describing the program in a series of stages or modules. It provides a clear and simple approach to program design. It is also called procedural language that is each statement in the language tells the computer to do something such as Get some input, add the numbers, display the output etc. A program in a procedural language is a list of instructions. The programmer creates the list of instructions and the computer carries them out.

Structure of 'C' Program is given below:-

```
#include directive(s)
main()
{
    declaration of constants and variables
    sequence of instructions
}
```

Explanation of abovementioned structure program is as follow-
C program is organized into routines:

Main() –

It represents the routine where program execution must begin and as the name suggests is the main or controlling routine.

{ (Opening brace) & } (closing brace)-

The declaration of constants and variables and the language statements that make up the sequence of instructions contained in with in a function are delimited by the opening brace { and closing brace }.

;(semi-colons) –

The declarations and executable statements within the function are separated by semi-colons.

The C Character Set

C uses the *uppercase letters A to Z*, the *lowercase letters a to z*, the *digits 0 to 9*, and certain special characters as building blocks to form basic program elements (e.g., *constants, variables, operators, expressions*). The special characters are listed below,

!	*	+	\	"	<
^	{	=	;	{	>
%	}	~	;	}	/
^	-	[:	,	?
&	-]	'		(blank)

Identifier

The program element is called **identifier**.

Identifiers consist of letters and digits, in any order, except that the first character must be a letter. Both upper and lowercase letters are permitted, the underscore character (_) can also be included to be a letter. An underscore is often used in the middle of an identifier.

Example: the following names are valid identifiers.

x	y12	sum1	temp
names area	tax_rate	Table1	

As per the characteristic of identifier we can .classified identifier into **variable and Constant**.

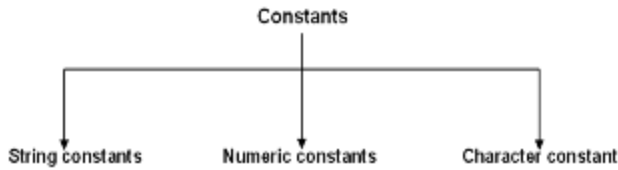
- (a) Variable
- (b) Constant

(a) Variables

The value of identifier change during the programming is called variable.

(b) Constant

The Fix the value of identifier in during the programming is called Constants. There are three types of constants; string constants, numeric constants and character constants.



1. String constants

A String constant is a sequence of alphanumeric characters enclosed in double quotation marks whose maximum length is 255 characters. *Following are the examples of valid string constants:-*

- “The result = “
- “Rs. 2000,00”
- “This is test program by Arjun”

2. Numeric Constants

Numeric constants are positive or negative numbers. There are four types of numeric constant. Integer constant, floating point constant, hex constant and octal constant. An integer constant may either be a short integer or a long integer. A floating point constant may either be of single precision or double precision.

Numeric constants	Integer Integer
	Short integer (short)
	Long integer (long)
Float	{float}
	{double}
	Long double
	Unsigned char
	Unsigned integer
Unsigned	Unsigned short integer
	Unsigned long integer
Hex	Short hexadecimal
	Long hexadecimal
Octal	Short octal
	Long octal

(a) Integer constants

Integer constants do not contain decimal points, Variables can be declared as integers in the following ways.

```

Int x, y;
Short int x,y;
Long int x,y;
    
```

In the first statement, the variables x and y take integer values. In the second statement x, y are of the short integer type. The third statement declares x, y as long integer type variables.

I Integer type data

The keyword ‘int’ stands for the integer data type in C change its size is either 16 or 32 bits.

II Short Integer data type

Normally, the ‘short int’ is used to declare the short integer data type in C whose maximum size is 16 bits longs.

III Long integer data type

Usually, the ‘long int’ stands for the long integer data type used in c and its size is 32 bits.

IV Unsigned data type

The undersigned numbers are whole numbers and always hold positive values and the sign bit also belongs to the value. The unsigned numbers may be classified into four : unsigned char, unsigned integer, unsigned short integer and unsigned long integer. The maximum size of the unsigned integer is 16 or 32 bits.

(b) Floating point constants-

Positive or negative numbers are represented in the exponential from (similar to scientific notation).

Examples-

```

9010E10
7810.11E-11
-10.990e8
-1.oole-1
    
```

The following floating point constant with their size: Float, Double, long double.

Data Types	Size in Bytes
Float	4
Double	8
long double	12 or 16

(c) Hex constants

Hexadecimal numbers are integer numbers of base 16 and their digits are 0 to 9 and A to F (a to f).

Examples-

```

0x0
0x3
22x3
    
```

(d) Octal constants

Octal numbers are integer numbers of base 8 and their digits are 0 to 7.

Data Types	Size in Bytes
Char	1
Short	2
Int	2 or 4
long	4 or 8

3. Character Constants

A character represented within single quotes denotes a character constant.

Here are some examples:-

```
'A'
'a'
','
?'
```

Declaration of the character constants

```
char x;
char x,y,z;
```

The following characters are used as non-graphic characters. The backslash(\) is used to denote non-graphic character and other special characters for specific operation.

<code>'\ a'</code>	alert a bell character
<code>'\ n'</code>	newline (line feed)
<code>'\ t'</code>	horizontal tab
<code>'\ b'</code>	backspace
<code>'\ r'</code>	carriage return ?
<code>'\ f'</code>	form feed
<code>'\ v'</code>	vertical tab
<code>'\ \'</code>	back slash
<code>'\ ''</code>	single quote
<code>'\ 0'</code>	null character
<code>'\ ?'</code>	question mark
<code>'\ 000'</code>	octal value such as \033
<code>'\ xhhh'</code>	hexadecimal value such as \x1h

The following table summarizes the data types in c.

Name	Meaning	Size in Bytes
char	character-	1
int	integer	2
long int	long integer (more digits)	4
short int	Short integer (fewer digits)	2
unsigned char	unsigned character	1
unsigned int	unsigned integer	2
unsigned short int	unsigned short integer	2
unsigned long int	unsigned long integer	4
float	floating point number	4
double	double precision-floating point number	8

Parts of C Program

1. Pre-Processor Directives,
2. Main Function.
3. Other Functions, Definition of Function etc.
4. All instructions write in tower case letter

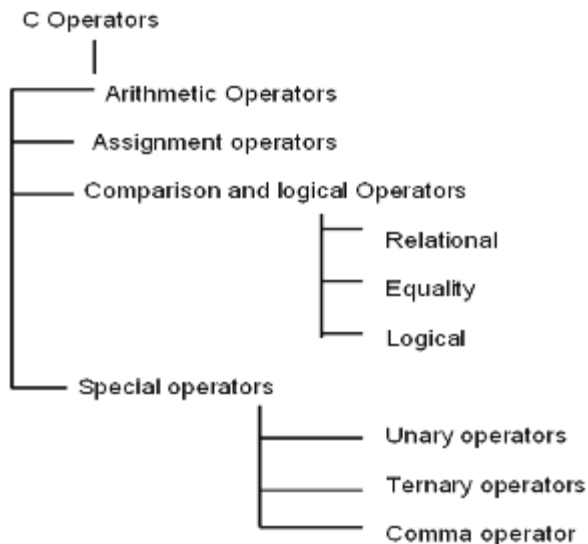
Example:

```
1. #include<stdio.h>
2. main()
3. {
4.     print("Arjun\n");
5. }
```


CHAPTER- 3

OPERATORS AND EXPRESSIONS

OPERATORS



1. Arithmetic operator

Arithmetic operator is used for arithmetic operations.

Operator	Meaning
+	Addition
=	subtraction
*	multiplication
/	division
%	modulo (remainder of an integer division)

Precedence rules for arithmetic Operators:

{ }	For grouping the variables
-	(unary for negative number)
*, /	(multiplication and division)
+, -	(addition and subtraction)

For example: if the following expression is not properly grouped using parentheses then the computer will evaluate as per the precedence.

$$\begin{aligned}
 &X + y * x - z \quad \text{where } x = 5, y = 6 \text{ and } z = 8 \\
 &5 + (6 * 5) - 8 \\
 &(5 * 30) - 8 \\
 &35 - 8 \\
 &27
 \end{aligned}$$

The result is 27

Suppose, if we intended to evaluate the above expression as $(x + y) * (x - z)$

Then the parentheses will be evaluated because it has the highest priority and the result will be different from the previous expression.

$$\begin{aligned}
 &(5 + 6) * (5 - 8) \\
 &11 * -3 \\
 &-33
 \end{aligned}$$

2. Assignment Operators

An assignment is used to assign back to a variable, a modified value of the present holding.

OPERATOR	MEANING
=	Assign right hand side (RHS) value to the left hand side(LHS)
+=	Value of LHS variable will be added to the value of RHS and assign it back to the variable in LHS.
-=	Value of RHS variable will be subtracted from the value of LHS and assign it back to the variable in LHS
*=	Value LHS variable will be multiplied by the value of RHS and assign it back to the variable in LHS
/=	Value of LHS variable will be divided by the value of RHS and assigning it back to the variable in LHS
%=	The remainder will be stored back to the LHS after integer division is carried out between the LHS variable and the RHS variable

For Example:

$$\begin{aligned}
 X += y &\text{ is equal to } x = x + y \\
 X -= y &\text{ is equal to } x = x - y
 \end{aligned}$$

3. Comparison and Logical Operators

The comparison operators and logical operator can be grouped into three. They are relational operators, equality operators and logical operators.

OPERATORS	MEANING
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
==	Equal to
!=	Not equal to
&&	Logical AND
	Logical Or
!	Not

a) Relational Operators

Relational operator is used to compare the values

OPERATOR	MEANING
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to

For Example:

EXPRESSION	RESULT
3 > 4	false
6 <= 2	false
10 > -32	true
(23*7) >= (-67 + 89)	true

b) Equality Operators:

These operator is use to check the value is equal or not.

OPERATOR	MEANING
==	Equal to
!=	Not equal to

For Example: a = 4, b = 6, and c = 8

EXPRESSION	RESULT
A == b	False
(a*b) != c	True
"s" == "y"	false

c) Logical Operators:

OPERATOR	MEANING
&&	Logical AND
	Logical Or
!	Not

SPECIAL OPERATORS

1. Unary Operators

OPERATOR	MEANING
*	Contents of the storages field to which a pointer is pointing.
&	Address of a variable
-	Negative value (minus sign)
!	Negation
~	Bitwise complement
++	Incrementer
--	Decrementer
type	Forced type of conversion
sizeof	Size of the subsequent data type or type in byte.

2. Ternary operator (?:):

These operators are used for three expressions.

The Syntax:

```
expression1?expression2:expression3
```

if the expression1 is true then expression2 is evaluate otherwise expressions will be evaluate.

For Example:

```
c=a>5:3:20
```

If c is greater than 5 than c store 3 otherwise c store 20 values.

3. Comma Operator :

This operator is used as a separator in variable declaration.

```
int a, b, c;
Float x, y, z;
```

Operator, Purpose & Example

Operator	Purpose	Example
*	Multiplication	movlw 4*33
+	Addition	bra \$+1
-	Subtraction	DB 5-2
/	Division	movlw 100/4
= or eq	Equality	IF inp eq 66
> or gt	Signed greater than	IF inp > 40
>= or ge	Signed greater than or equal to	IF inp ge 66
< or lt	Signed less than	IF inp < 40
<= or le	Signed less than or equal to	IF inp le 66
<> or ne	Signed not equal to	IF inp <> 40
low	Low byte of operand	movlw low(inp)
high	High byte of operand	movlw high(1008h)
highword	High 16 bits of operand	DW highword(inp)
mod	Modulus	movlw 77 mod 4
&	Bitwise AND	clrf inp&0ffh
^	Bitwise XOR (exclusive or)	movlw inp^80
	Bitwise OR	movlw inp 1
not	Bitwise complement	movlw not 055h
<< or shl	Shift left	DB inp>>8
>> or shr	Shift right	movlw inp shr 2
rol	Rotate left	DB inp rol 1
ror	Rotate right	DB inp ror 1
float24	24-bit version of real operand	DW float24(3.3)
nul	Tests if macro argument is null	

Operators & Associativity

Operators	Associativity
() [] -> .	left to right
! ~ ++ -- + - * (type) sizeof	right to left
* / %	left to right
+ -	left to right
<< >>	left to right
< <= > >=	left to right
== !=	left to right
&	left to right
^	left to right
	left to right
&&	left to right
	left to right
?:	right to left
= += -= *= /= % = & = ^ = = << = >> =	right to left
,	left to right

Summary of Operator

Operator	Meaning	Example
Assignment (=)	Assigns a value to a variable	T = 2; D = E = F = 3;
Addition (+)	Addition	5 + 5;
Subtraction (-)	Subtraction	4-2;
Multiplication (*)	Multiplication	4*8;
Division (/)	Division	10/2;
Modulo (%)	Remainder of a division	11%3;
Value += increase	Value = Value + increase	B += 1;
Value -= decrease	Value = Value - decrease	B -= 2;
Value /= b	Value = Value / b	B /= 2;
Value *= b + 1	Value = Value*(b+1)	Value *= 3+1;
Increase (++)	Value = Value + increase	B += 1;
Decrease (--)	Value = Value - decrease	B -= 2;
Equal to (==)	Equal to	A == 5;
Not equal to (!=)	Not equal to	4 != 2;
Greater than (>)	Greater than	5 > 4;
Less than (<)	Less than	8 < 9;
Greater than or equal to (>=)	Greater than or equal to	A >= B;
Less than or equal to (<=)	Less than or equal to	C <= d;
Inverse boolean (!)	Inverse value of logical	!false; // meaning true
AND (&&)	AND logical	A && B;
OR ()	OR logical	A B;
Conditional operator (?)	If condition is true, the result is result1. If false go to result2	{a>b} ? a:b;
Comma operator (,)	Separate two or more expression	A = (b=2, c=3);
&	Bitwise AND	
 	Bitwise inclusive OR	
^	Bitwise exclusive OR	
~	Bit inversion	
<<	Shift left	
>>	Shift right	
Explicit type casting	convert a datum of a given type to another	float f = 3.14; j = (double) f;
sizeof (char)	This operator accepts one parameter, which can be either a type or a variable itself and returns the size in bytes of that type or object:	A = sizeof (char);
Precedence	avoidance of doubt because it uses two or more operators	A = 5 + {7%2}; //meaning 6

CHAPTER- 4

DATA INPUT AND OUTPUT

Single Character Input-The getchar Function

Single characters can be entered into the computer using the C library function getchar.

In general terms, a reference to the getchar function is written as: **char variable = getchar ();**

Single character output -The putchar function

Single characters can be displayed (i.e., written out of the computer) using the C library function put char.

In general terms a reference to the putchar function is written as: **putchar (character variable);**

Entering input data by the scanf function

Input data can be entered into the computer from a standard input device by means of the C library function scanf.

Syntax:

```
scanf("%conversion character",&variable);
```

Conversion Character-

It indicates the type of the corresponding data item.

& -

It indicates the data item store in computers memory.

Example:

```
int a;
scanf("%d",&a);
```

Conversion character	Meaning
c	data item is a single character
d	data item is a decimal integer
e	data item is a floating-point value
f	data item is a floating-point value
g	data item is a floating-point value
i	data item is a decimal, hexadecimal or octal integer
o	data item is an octal integer
s	data item is a string
0	data item is an octal integer
u	data item is an unsigned decimal integer

character	Conversion Meaning
C	data item is a single char
X	data item is a hexadecimal integer
[...]	data item is a string which may include whitespace characters

Writing Output Data- The printf Function

Output data can be written from the computer onto a standard output device using the library function printf.

Syntax:

```
printf ("%conversion character",variable);
```

Conversion Character-

It indicates the type of the corresponding data item.

Example:

```
int a;
printf("%d",a);
```

Conversion Character	Meaning
c	data item is displayed as a single character
d	data item is displayed a decimal integer
e	data item is displayed a floating-point value
f	data item is displayed floating-point value
g	data item is displayed floating-point value
h	data item is displayed a short integer
i	data item is displayed a decimal, hexadecimal or octal integer
o	data item is displayed an octal integer
s	data item is displayed a string
0	data item is displayed an octal integer
u	data item is displayed an unsigned decimal integer
x	data item is displayed a hexadecimal integer

THE GETS AND PUTS FUNCTIONS

gets () : These function is used to input one or more than string in variable.

Example:

```
char name[20];
void main()
{
gets(name);
}
```

puts () : These function is used to display one or more than string in variable on output.

Example: Wap for entered and display line.

```
char name[20];
void main()
{
gets(name);
puts(name);
}
```

1. Example program: 1 WAP for display "SARVA"

```
#include<stdio.h>
#include<conio.h>
void main()
{
printf("SARVA\n");
getch();
}
```

Output SARVA

2. Example program: 2 WAP for Addition of three Nos.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
printf("enter the value of a \n");
scanf("%d",&a);
printf("enter the value of b \n");
scanf("%d",&b);
c=a+b;
printf("the value of c=%d",c);
getch();
}
```

Output:
enter the value of a
6
enter the value of b
6
the value of c=12

3. Example program: 3 WAP for Simple interest

```
#include<stdio.h>
#include<conio.h>
void main()
{
float p,r,t,si;
clrscr()
printf("enter the value of principle\n");
scanf("%f",&p);
printf("enter the value of rate \n");
scanf("%f",&r);
printf("enter the value of time \n");
scanf("%f",&t);
si=(p*r*t)/100;
printf("the result of si =%f",si);
getch();
}
```

Output

Enter the value of principle
1000
enter the value of rate
2
enter the value of time
2
the result of si=40.000000

4. Example program: 4 WAP for entered line and Display line.

```
#include<stdio.h>
#include<conio.h>
void main()
{
char name[10];
clrscr();
printf("enter the line\n");
gets(name);
puts(name);
}
```

Output

enter the line
India is great
India is great

5. Example program: 5 Wap for entered & display a single character

```
#include<stdio.h>
#include<conio.h>
void main()
{
char name;
printf("enter a character");
name=getchar();
putchar(name);
getch();
}
```

Output

Enter a character
a

6. Example program: 6 Wap for Area of Circle.

```
#include<stdio.h>
#include<conio.h>
void main()
{
float pi=3.14,r,a;
clrscr();
printf("enter the radius\n");
scanf("%f",&r);
a=pi*(r*r);
printf("the area of circle=%f",a);
getch();
}
```

Output

enter the radius
3
the area of circle=28.260000

CHAPTER- 5

DECISION CONTROL STRUCTURES

Introduction

In C programming the following main type of Decision statement used for implementing the decision; control instruction.

1. The if- statement
2. The if- else statement
3. The conditional operator.
4. Switch case statement

1. The if- statement

Syntax:
 if (boolean expression)
 statement;

Example:

```
if (a>b)
    printf("a is greater then b");
```

Here, we given the condition that if **a** is greater then **b** that time the **a** is greater than **b** will be displayed on the screen

2. The If- else statement

These statements execute statement1 when is condition true and also execute statement2. when is condition false.

Syntax:
 if (condition)
 statement1;
 else
 statement2;

Example:

```
if (a>b)
    printf("a is greatest");
else
    printf(" b is greatest");
```

Here, if $a > b$ then print **a** is greatest statement.
 And if condition is false then it will print **b** is greatest.

In use nested if we use another if in under of if

Syntax:
 If (condition1)
 Statement1;
 else
 if (condition2)
 statement2;
 else
 statements3;

Example: if(a>b)

```
printf('ca is greter than b");
else
if(a==b)
printf(" a is eqaul to b");
else
printf (" b is greater than a");'
```

Here, if $a > b$, in true it will print a is greter than b else check again the $a = b$, in true it will print a is equal to b else print b is greater than a.

3. The conditional operator

Syntax: expression 1 ?expression 2:expression3

example:

```
int a,c;
c=(a>8?3:6);
```

Here, this statement will store 3 in c if a is greater then 8 otherwise it will store 6 in c.

4. Switch case statement

This statement uses a particular group of statements to be choosed from several available groups.

Syntax:
 switch(variable)
 {
 case constant 1: statement-1;
 break; ,
 case constant n: statement-n;
 break;
 default: statement
 }

Example program 1: Wap for greatest among two Nos.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf ("enter the value of a\n");
scanf("%d",&a);
printf ("enter the value of b\n");
scanf("%d",&b);
if(a>b)
printf(" a is greater than b");
else
printf("b is greter than a");
getch();
}
```

Output

enter the value of a
5
enter the value of b
6
b is greter than a

Example program 2: Wap for greates among three Nos.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("enter the value of a\n");
scanf("%d",&a);
printf("enter the value of b\n");
scanf("%d",&b);
printf("enter the value of c\n");
scanf("%d",&c);
if((a>b)&(a>c))
printf("a is greater");
else
if(b>c)
printf("b is greater");
else
printf("c is greater");
getch();
}
```

Output

enter the value of a
1
enter the value of b
2
enter the value of c
3
c is greter

Example program 3: Wap for leap year.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int year;
printf("enter the year\n");
scanf("%d",&year);
if (year%4==0)
printf("the year is leap year");
else
'printf("the year is not leap");
getch();
}
```

Output

enter the year
2000
the year is leap year

Example program 4: Wap for print seven day of the week.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int ch;
printf("enter the choice\n");
scanf("%d",&ch);
switch(ch)
{
case 1 : printf("Sunday");
break;
case 2 : printf("Monday");
break;
Case 3 : printf("Tuesday");
break;
case 4 : printf("Wednesday");
break;
case 5 : printf("Thursday");
break;
case 6 : printf("Friday");
break;
case 7 : printf("Saturday");
break;
default: printf(" Invalid choice");
getch();
}}
```

Output

enter the choice
6
Friday

CHAPTER- 6

LOOP CONTROL STRUCTURES

Introduction

1. **while Statement**
2. **do-while Statement**
3. **for Statement**

In every loop three things are main- initialization of counter variable, condition, counter variable (increment/decrement purpose)

1. **while Statement**
This loop is test-Do type of loop, means first it check the condition and then execute the statement.

Syntax:

```

initialization of variable;
while(condition)
    {
        statement
        counter variable
    }
};

```

Example: Print ARJUN word 10 times.

```

int i=0;
while(i<10)
    {
printf("ARJUN\n");
i++;
    }
};

```

2. **do-while Statement**

This loop is Do-test type of loop, means first it executes the statement and then checks the condition .

Syntax:

```

initialization of variable;

do {
        statement;
        counter variable;
 }while (condition );

```

Example: Print ARJUN word 10 times.

```

int i=0;

do {
print("ARJUN\n");
i++
 }while(i<9);

```

3. **for Statement**

This loop is test-Do type of loop, means first it check the condition and then execute the statement.

Syntax:

```

for(initialization;condition;counter variable)
    {
        statement;
    }

```

Exmple program 1: Wap to print 10 Nos using while loop.

```

#include<stdio.h>
#include<conio.h>
void main()
{
int i;
i=0;
Clrscr ();
printf("Print 10 number\n");
while(i<10)
{
printf("%d\n",i);
i++;
}
getch();
}

```

Output

```

Print 10 number
0
1
2
3
4
5
6
7
8
9

```


Example program 3: Wap to print 10 Nos using for loop**Example program 2: Wap to print 10 Nos using do-while loop.**

```

#include<stdio.h>
#include<conio.h>
void main()
{
int i;
i=0;
clrscr();
printf("Print 10 number\n");
do
{
printf("%d\n",i);
i++;
}
while(i<10);
getch();
}

```

Output

```

Print 10 number
0
1
2
3
4
5
6
7
8
9

```

```

#include<stdio.h>
#include<conio.h>
void main()
{
int i;
clrscr();
printf("Print 10 number\n");
for(i=0;i<10;i++)
{
printf("%d\n",i);
}
getch();
}

```

Output

```

Print 10 number
0
1
2
3
4
5
6
7
8
9

```

CHAPTER- 7

FUNCTION

Introduction

The self contain program is called function.
For create the function the following three major steps are necessary.

1. **Function Prototype**
2. **Function definition**
3. **Function calling**

1. Function Prototype

In these, we define the type of function.
As per the data type we can define function also.
(int function, float function, double function, char function and void function.)

In first four type of function return the value but void function not return nothing.

As per the use argument in function there are following type

According to the argument there are following function:

Without argument

In these we not use any argument.

Example:

```
void arjun();
```

With Argument

In these we use any argument

Example:

```
void arjun(int a, int b);
```

With Argument and return

In these we use any argument with return type

Example:

```
void arjun(int a);
return(a);
```

2. Function definition

In these we write the statement which we want to execute by the function.

Example:

```
void arjun()
{
    print("hallo ARJUN");
}
```

3. Function calling

In these we execute the function definition where we write these function.

```
#include<stdio.h>
#include<conio.h>
void main();
void mahakal();
void shiva();
void nirmala();
void main()
{
    arjun();
    mahakal();
    nirmala();
    getch();
}
void arjun()
{
    printf("I am ARJUN function\n");
}
void mahakal()
{
    printf("I am MAHAKAL function\n");
}
void nirmala()
{
    printf("I am NIRMALA function\n");
}
void shiva()
{
    printf("I am SHIVA function\n");
    getch();
}
```

Output

```
WE ARE IN MAIN FUNTION
I am ARJUN function
I am MAHAKAL function
I am SHIVA function
I am NIRMALA function
```

Example program 2: Wap for with argument function.

```
#include<stdio.h>
#include<conio.h>
void addition(int a,int b);
void main()
{
int a,b;

clrscr();
printf(" enter the value of a\n");
scanf("%d",&a);
printf(" enter the value of b\n");
scanf("%d",&b);
addition(a,b);
getch();
}
void addition(int a,int b)
{
int c;
c=a+b;
printf("the result of addition=%d",c);
getch();
}
```

Output

```
enter the value of a,
1
enter the value of b
2
the result of addition=3
```

Example program 3: Wap for argument with return type function.

```
#include<stdio.h>
#include<conio.h>
void addition(int a,int b);
void main()
{
int a,b;
clrscr();
printf(" enter the value of a\n");
scanf("%d",&a);
printf(" enter the value of b\n");
scanf("%d",&b);
addition(a,&b);
getch();
}
void addition(int a,int b)
{
int c;
c=a+b;
getch();
}
```

Output

```
Enter the value of a
1
enter the value of b
2
the result=3
```

CHAPTER- 8

ARRAY

Introduction

Array is collection of same type of data.

Declaration of Array**One dimensional Array:**

In General definition one dimensional of array data store in one row or column.

data type variable [size of array];

Example: int a [10];

Two dimensional Array:

In General definition two dimensional of array data Store in one row or column.

data type variable[size of array][size of array];

Example program 1 : Wap for entered and display element in array.

```
#include<conio.h>
#include<stdio.h>
void main()
{
int a[10],i;
clrscr();
printf("enter the element in array\n");
for(i=0;i<10;i++)
{
scanf("%d",&a[i]);
}
printf("entered the element in array\n");
for(i=0;i<10;i++)
{
printf("%d",a[i]);
}
getch();
}
```

Output

```
enter the element in array
1
2
3
4
5
6
7
8
9
10
enter the element in array
12345678910
```

Example program 2: Wap for addition of two matrix.

```
#include<conio.h>
#include<stdio.h>
void main()
{
int a[5][5],b[5][5],i,j;
clrscr();
printf("enter the first 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
scanf("%d",&a[i][j]);
}}
printf("enter the second 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
scanf("%d",&b[i][j]);
}
}
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
c[i][j]=a[i][j]+b[i][j];
}
}
printf(" the addition 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
printf("\t%d",c[i][j]);
}
printf("\n");
}
getch();
}
```

Output

```
Enter the first 2*2 matrix
1
1
1
1
enter the second 2*2 matrix
1
1
1
1
the addition 2*2 matrix
2 2
2 2
```

Example program3: Wap for subtraction of two matrix

```

#include<conio.h>
#include<stdio.h>
void main()
{
int a[5][5],b[5][5],i,j;
clrscr();
printf("enter the first 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
scanf("%d",&a[i][j]);
}}
printf("enter the second 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
scanf("%d",&b[i][j]);
}
}
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
c[i][j]=a[i][j]-b[i][j];
}
}
printf(" the subtraction 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
printf("\t%d",c[i][j]);
}
printf("\n");
}
getch();
}

```

Output

```

Enter the first 2*2 matrix
2
2
2
2
enter the second2*2 matrix
1
1
1
1
the subtraction 2*2 matrix
1 1
1 1

```

Unit-X

C++ LANGUAGE

CHAPTER- 1

‘C++’ FUNDAMENTAL

INTRODUCTION TO C++

C++ is a Object oriented programming language. C++ was originally developed in 1983 by Bjaame Stroustrup.

A C++ program is a collection of commands, which tell the computer to do "something". This collection of commands is usually called C++ source code, source code or just code. Commands are either "functions" or "keywords". Keywords are a basic building block of the language, while functions are, in fact, usually written in terms of simpler functions--you'll see this in our very first program, below. (Confused? Think of it a bit like an outline for a book; the outline might show every chapter in the book; each chapter might have its own outline, composed of sections. Each section might have its own outline, or it might have all of the details written up.) Thankfully, C++ provides a great many common functions and keywords that you can use. But how does a program actually start? Every program in C++ has one function, always named main, that is always called when your program first executes. From main, you can also call other functions whether they are written by us or, as mentioned earlier, provided by the compiler.

The C++ character set

C++ character set same as c uses the uppercase letters A to Z, the lowercase letters a to z, the digits 0 to 9, and certain special characters as building block to form basic program elements (e.g., constants, variables, operator, expressions).

Identifier

The C++ identifier is same as c programming language so refer c programming part. As per the characteristic of identifier we can classify identifier into variable and constant.

(a) Variable (b) Constant

(a) Variables:

The C++ **Variables** is same as c programming language so refer c programming part.

(b) Constant:

The C++ **Constant** is, same as c programming Language so refer c programming part. There are *three* types of constants:- **String constants, Numeric constants and Character constants.**

String Constants

A String constant is a sequence of alphanumeric characters enclosed in double quotation marks whose maximum length is 255 characters. Following are the examples of valid string constants.

1. "The result -"
2. "Rs. 2000,00"
3. "This is test program by Sarva"

Numeric Constants

Numeric constants are positive or negative numbers. There are four types of numeric constants, integer constant and floating point constant, hex constant and octal constant. An integer constant may either be a short integer or a long integer. A floating point constant may either be of single precision or double precision.

Numerate constants	Integer integer Short integer (short) Long integer (long)
Float	(float) (double) Long double
Unsigned	Unsigned char Unsigned integer Unsigned short integer Unsigned long integer
Hex	Short hexadecimal Long hexadecimal
Octal	Short octal Long octal

(a) Integer constants:

Integer constants do not contain decimal points, Variables can be declared as integers in the following ways.

```
int x, y;
short int x,y;
long int x,y;
```

In the first statement, the variables x and y take integer values. In the second statement x, y are of the short integer type. the third statement declares x, y as long integer type variables.

- (i) **Integer type data:-** The keyword 'int' stands for the integer data type in C an its size is either 16 or 32 bits. A 16 bit integer may fall in the range of 2^{15} to $2^{15}-1$, while 32 bit integers may fall in the range of -2^{32} to $2^{31}-1$.
- (ii) **Short integer data type:-** Normally, the 'short int' is used to declare the short integer data type in C whose maximum size is 16 bits long. It may fall in the range between $-32,768$ to $32,767$ or 2^{15} to $2^{15}-1$.
- (iii) **Long integer data type:-** Usually, the 'long int' stands for the long integer data type used in C++ and its size is 32 bits, It may fall in the range of $-2,147,483,648$ to $2,147.483.647$ or -2^{31} to $2^{31}-1$.

(iv) **Unsigned data type:-** The unsigned numbers are whole number s and always hold positive values and the sign bit also belongs toe the value. The unsigned numbers may be classified into four types; unsigned char, unsigned integer, unsigned short integer and unsigned long integer. The maximum size of the unsigned integer is 16 or 32 bits.

(b) **Floating point constants-** Positive or negative numbers are represented in the exponential form (similar to scientific notation).

Examples:

- 9010E10
- 7810.11E-11
- 10.990e8
- 1.00le-1

The following floating point constant with their size:
Float, Double, long double.

Data Types	Size in Bytes
Float	4
Double	8
long double	12 or 16

(C) **Hex constants:-** Hexadecimal numbers are integer numbers of base 16 and their digits are 0 to 9 and A to F (a to f).

Example:-

- 0x0
- 0x3
- 22x3.

(d) **Octal constants:-** Octal numbers are integer numbers of base 8 and their digits are 0 to 7

Data Types	Size in Bytes
char	1
short	2
int	2 or 4
long	4 or 8

The following table summarizes the data types in C++

Name	Meaning	Size In Bytes
char	character	1
int	integer	2
long int	long integer (more digits)	4
short int	Short integer (fewer digits)	2
unsigned char	unsigned character	1
unsigned int	unsigned integer	2
unsigned short int	unsigned short integer	2
unsigned long int	unsigned long integer	4
float	floating point number	4
double	double precision floating point number	8

Character Constants

A character represented within single quotes denotes a character constant.

Here are some examples,

- 'A'
- 'a'
- ','
- '?'

Declaration of .the character constants.

```
char x
char x,y,z;
```

CHAPTER- 2

OPERATORS AND EXPRESSIONS

OPERATORS

The C++ Operators is same as c programming c programming part.

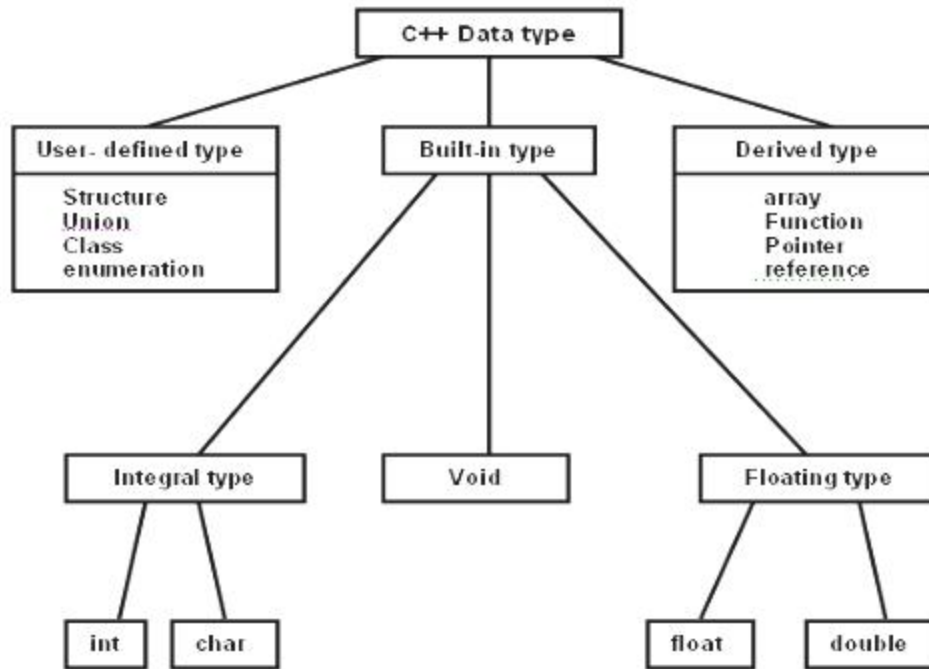
Summary & Example of C++ Operators

Operator	Priority	Description	Order
()	1	Function call operator	from left
[]	1	Subscript operator	from left
->	1	Element selector	from left
!	2	Boolean NOT	from right
-	2	Binary NOT	from right
++	2	Post-/Preincrement	from right
--	2	Post-/Predecrement	from right
-	2	Unary minus	from right
(type)	2	Type cast	from right
*	2	Dereference operator	from right
&	2	Address operator	from right
sizeof	2	Size-of operator	from right
*	3	Multiplication operator	from left
/	3	Division operator	from left
%	3	Modulo operator	from left
+	4	Addition operator	from left
-	4	Subtraction operator	from left
<<	5	Left shift operator	from left
>>	5	Right shift operator	from left
<	6	Lower-than operator	from left
<=	6	Lower-or-equal operator	from left
>	6	Greater-than operator	from left
>=	6	Greater-or-equal operator	from left
==	7	Equal operator	from left
!=	7	Not-equal operator	from left
&	8	Binary AND	from left
^	9	Binary XOR	from left
	10	Binary OR	from left
&&	11	Boolean AND	from left
	12	Boolean OR	from left
?:	13	Conditional operator	from right
=	14	Assignment operator	from right
op=	14	Operator assignment operator	from right
.	15	Concota operator	from left

Operator	Meaning	Example
Assignment (=)	Assigns a value to a variable	T = 2; D = E = F = 5; 5 = 5;
Addition (+)	Addition	4+2;
Substraction (-)	Substraction	4*8;
Multiplication (*)	Multiplication	10/2;
Division (/)	Division	11%5;
Modulo (%)	Remainder of a division	B += 1;
Value += increase	Value = Value + increase	B -= 1;
Value -= decrease	Value = Value - decrease	B /= 2;
Value /= b	Value = Value / b	Value *= B+1;
Value *= b + 1	Value = Value*(b+1)	B += 1;
Increase (++)	Value = value + increase	B -= 1;
Decrease (--)	Value = value - decrease	A == 5;
Equal to (==)	Equal to	A != 2;
Not equal to (!=)	Not equal to	5 > 4;
Greater than (>)	Greater than	8 < 9;
Less than (<)	Less than	A >= B;
Greather than or equal to (>=)	Greather than or equal to	C <= 0;
Less than or equal to (<=)	Less than or equal to	!false; // meaning true
Inverse boolean (!)	Inverse value of logical	A && B;
AND (&&)	AND logical	A B;
OR ()	OR logical	{a>b} ? a:b;
Conditional operator (?)	If condition is true, the result is result1. If false go to result2	A = (b=2, c-3);
Comma operator (,)	Separate two or more expression	
&	Bitwise AND	
	Bitwise inclusive OR	
^	Bitwise exclusive OR	
~	Bit inversion	
<<	shift left	
>>	Shift right	
Explicit type casting	convert a datum of a given type to another	float f = 3.14, j = (double) f; A = sizeof (char);
sizeof(char)	This operator accepts one parameter, which can be either a type or a variable itself and returns the size in bytes of that type or object	
Precedence	avoidance of doubt because it uses two or more operators	A = 5 - (7%2); //meaning 6

asm	double	new	switch
auto	else	operator	template
break	enum	private	this
case	extern	protected	throw
catch	float	public	try
char	for	register	typedef
class	a friend	return	union
const	goto	short	unsigned
continue	if	signed	Virtual
default	inline	sizeof	void
delete	int	Static	Volatile
do	long	struct	while

BASIC DATA TYPES



Type	Bytes	Range
char	1	-128 to 127
unsigned char	1	0 to 255
signed char	1	-128 to
int	2	-32768 to 32767
unsigned int	2	0 to 65535
signed int	2	-31768 to 32767
short int	2	-31768 to 32767
unsigned short int.	2	0 to 65535
signed short int	2	32768 to 32767
long int	4	-214783648 to 2147483647
signed short int	4	-21474648 to 2147483647
using long int	4	0 to 4294967295
float	4	3.4E-38 to 3.4E + 38
double	8	1.7-E-308 to 1.7E + 308
long double	10	3.4E-4932 to 1.1E + 4932

CHAPTER- 3

DATA INPUT AND OUTPUT

Entering input data by the cin statement

Input data can be entered into the computer from a standard input device by cin statement.

Syntax:

```
Cin>>variable;
Int a;
Cin>>a
```

Writing Output Data by cout statement

Output data can be written from the computer onto a standard output by cout statement.

Syntax:

```
int a=10;
cout<<variable;
Cout<<a;
cout<<"INDIA"
```

Example program: 2 Wap for Addition of two Nos.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int a,b,c;
cout<<"enter the value of a \n";
cin>>a;
cout<<"enter the value of b \n";
cin>>b;
c=a+b;
cout<<"the value of c="<<c;
getch();
}
```

Output:

```
enter the value of a
6
enter the value of b
6
the value of c=12
```

Example program: 3 Wap for Simple interest

```
#include<iostream.h>
#include<conio.h>
void main()
{
float p,r,t,si;
clrscr();
cout<<"enter the value of principle \n";
cin>>p;
cout<<"enter the value of rate \n";
cin>>r;
cout<<"enter the value of time \n";
cin>>t;
si=(p*r*t)/100;
cout<<"the result of si="<<si;
getch();
}
```

Output

```
enter the value of principle
1000
enter the value of rate
2
enter the value of time
2
the result of si= 40.000000
```

Example program: 4 Wap for entered Hue and display line.

```
#include<iostream.h>
#include<stdio.h>
void main()
{
char name[10];
{
cout<<"enter the line\n";
gets(name);
puts(name);
}
```

Output

```
enter the line
India is great
India is great
```

Example program: 5 Wap for entered and display one character.

```
#include<iostream.h>
#include<stdio.h>
void main()
{
char name[10];
{
cout<<"enter the line\n";
gets(name);
puts(name);
}
```

Output

```
enter a character
a
```

Example program: 6 Wap for Area of circle.

```
#include<iostream.h>
#include<conio.h>
void main()
{
float pi=3.14,r,a;
Clrscr ();
cout<<"enter the radius\n";
cin>>r;
a=pi*(r*r);
cout<<"the area of circle="<<a;
getch();
}
```

Output

```
enter the radius
3
the area of circle=28.260000
```

CHAPTER- 4

DECISION CONTROL STRUCTURES

Introduction

In C++ programming the following main type of Decision statement used for implementing the decision control instruction same as c programming.

1. The if- statement
2. The if- else statement
3. The conditional operator.
4. Switch case statement

1. The if- statement :

Syntax:

```
if (boolean expression )
statement;
```

Example:

If (a>b)

printf("a is greater then b");

here, we given the condition that if **a** is greater then **b** that time the **a** is greater then **b** will be displayed on the screen.

2. The if- else statement:

Syntax:

```
if (condition)
    statement1;
else
    statement2;
```

These statements execute statement1 when is condition true and also execute statement2 when is condition false.

Example:

if (a>b)

cout<<"a is greatest";

else

cout<<" b is greatest";

here, if a>b then print a is greatest statement and if condition is false then it will print b is greatest. In use nested if we use another if in under of if.

Syntax:

```
(condition1)
statement1;
else
if (condition2)
statement2;
else
statement3;
```

Example:

if(a>b)

cout<<" a is greter than b";

else

else if(a==b)

cout<<" a is eqaul to b";

else

cout<<" b is greater than a";

here, if a>b, in true it will print a is greater than b else check again the a = = b , in true it will print a is equal to b else print b is greater than a.

3. The conditional operator

Example:

```
syntax:
expression1?expression 2:expression3
```

int a,c;

c=(a>8?3:6);

here, this statement will store 3 in c if a is greater then 8 otherwise it will store 6 in c.

Syntax:

Switch(variable)

```
{
    case constant 1: statement- 1;
    break;
    case constant n: statement-n;
    break;
    default: statement
}
```

Example program 1 : Wap for greatest among two Nos.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
cout<<"enter the value of a\n";
cin>>a;
cout<<"enter the value of b\n";
cin>>b;
if(a>b)
cout<<" a is greater than b";
cout<<"b is greater than a";
getch ();
}
```

Output

```
enter the value of a
5
enter the value of b
6
b is greter than a
```

Example program 2: Wap for greatest among three Nos.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
cout<<"enter the value of a\n";
cin>>a;
cout<<"enter the value of b\n";
cin>>b;
cout<<"enter the value of c\n";
cin>>c;
if ((a>b)&(a>c))
cout<<"a is greater";
else
if (b>c)
cout<<"b is greater";
else
cout<<"c is greater";
getch();
}
```

Output

```
enter the value of a
1
enter the value of b
2
enter the value of c
3
c is greter
```

Example program 3 : Wap for leap year.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int year;
cout<<"enter the year\n"
cin>>year;
if (year%4==0)
cout<<"the year is leap year";
else
cout<<" the year is not leap year";
getch();
}
```

Output

```
enter the year
2000
the year is leap year
```

Example program 4 : Wap for display seven day in a week.

```
#include<iostream.h>
#include<conio.h>
void main()
{
cout<<"enter the choiceln";
cin>>ch;
switch(ch)
{
case 1 :cout<<"Sunday";
break;
case 2 : cout<<"Monday";
break;
case 3 : cout<<"Tuesday";
break; ;
case 4 : cout<<"Wednesday";
break;
case 5 : cout<<"Thursday";
break;
case 6 : cout<<"Friday";
break;
case 7 : cout<<"Saturday";
break;
default :cout<<"Invalid choice");
getch();
}
```

Output

```
Enter the choice
6
Friday
```

CHAPTER- 5

LOOP CONTROL STRUCTURES

Introduction

1. **while Statement**
2. **do-while Statement**
3. **for Statement**

In every loop three things are main- initialization of counter variable, condition, counter variable (increment/decrement purpose) .

1. while Statement

These loop is test-Do type of loop, means first it check the condition and then execute the statement.

```

Syntax:
initialization of variable;
while(condition)
{
statement;
counter variable;
};
Example: Print SARVA word 10 times.
int i=0;
while(i<10)
{
cout<<"SARVA\n";
i++;
}
    
```

2. do while Statement

This loop is Do-test type of loop, means first it executes the statement and then check the condition.

```

Syntax:
initialization of variable;
do {
statement;
counter variable;
}while(condition);
    
```

Example: Print SARVA word 10 times.

```

int i=0;
do {
cout<<"SARVA\n";
i++;
}while(i<9);
    
```

3. For Statement

This loop is test-Do type of loop, means first it checks the condition and then executes the statement.

```

Syntax:-
for(initialization;condition;increment/decrement)
{
statement;
}
    
```

Example: Print ARJUN word 10 times.

```

int I;
For(i=0;<10;i++)
{
cout<<"SARVA";
}
    
```

Example program 1: Wap to print 10 Nos using while loop.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int i;
i=0;
clrscr();
cout<<"Print 10 number\n";
while(i<10)
{
cout<<i;
i++;
}
getch();
}
```

Output
Print 10 number
0
1
2
3
4
5
6
7
8
9

Example program 2: Wap to print 10 Nos using do-while loop.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int i;
i=0;
clrscr();
cout<<"Print 10 number\n";
do
{
cout<<i;
i++;
}
while(i<10)
getch();
}
```

Output
Print 10 number
0
1
2
3
4
5
6
7
8
9

Example program 3 : Wap to print 10 Nos using for loop.

```
#include<iostream.h>
#include<conio.h>
void main()
{
int i;
clrscr();
cout<<"Print 10 number\n";
for(i=0;i<10;i++)
{
cout<<i;
}
getch();
}
```

Output
Print 10 number
0
1
2
3
4
5
6
7
8
9

CHAPTER- 6

FUNCTION

Introduction

The self contain program is called function.

For create the function the following three major steps are necessary:-

1. **Function**
2. **Function definition**
3. **Function calling**

1. Function Prototype

In these, we define the type of function.

As per the data type we can define function also.

(int function, float function, double function, char function and void function.)

In first four type of function return the value but void function not return void nothing. As per the use argument in function there are following type without argument. In these we do not use any argument.

2. Function definition

In these we write the statement which we want to execute by the function.

Example:

```
void sarva()
{
    cout<<"hallo SARVA";
}
```

3. Function calling

In these we execute the function definition where we write these function.

Example:

```
void sarva();
```

With Argument

In these we use any argument.

Example:

```
void sarva(int a, int b);
```

With Argument and return

In these we use any argument with return type.

Example:

```
void sarva(int a);
return(a);
```

Example program 1:

Wap for without argument function.

```
#include<iostream.h>
#include<conio.h>
void sarva();
void mahakal();
void shiva();
void nirmala();
void main()
{
    sarva();
    mahakal();
    shiva();
    nirmala();
    getch();
}
void sarva() //function definition
{
    cout<<"I am SARVA function\n";
}
void mahakal()
{cout<<"I am MAHAKAL function\n";
}
void nirmala()
{
    cout<<"I am NIRMALA function\n";
}
void shiva()
{
    cout<<"I am SHIVA function\n";
    getch();
}
```

Output

```
WE ARE IN MAIN FUNCTION
I am ARJUN function
I am MAHAKAL function
I am SHIVA function
I am NIRMALA function
```

Example program 2:

Wap for with argument function.

```
#include<stdio.h>
#include<conio.h>
void addition(int a,int b);
void main()
{
    int a,b;
    clrscr();
    printf(" enter the value of a\n");
    scanf("%d",&a);
    printf(" enter the value of b\n");
    scanf("%d",&b);
    addition(a,b);
    getch();
}
void addition(int a,int b)
{
    int c;
    c=a+b;
    printf("the result of addition=%d",c);
}
getch();
```

Output

```
enter the value of a
1
enter the value of b
2
the result of addition=3
```

Example program 3:

Wap for argument with return type function.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b;
    clrscr();
    cout<<(" enter the value of a\n");
    cin>>a;
    cout<<(" enter the value of b\n");
    cin>>b;
    addition(a,b);
    getch();
}
int addition(int a,int b)
{
    int c;
    c=a+b;
    cout<<"the result of addition="<<c);
}
```

Output

```
Enter the value of a
1
enter the value of b
2
the result =3
```

CHAPTER- 7

ARRAY

Introduction

Array is collection of same type of data.

Declaration of Array**1. One dimensional Array:**

In general definition one dimensional of array data store in one row or column.

data type variable[size of array];

Example: `int a[10];`

2. Two dimensional Array: n general definition two dimensional of array data store in one row or column. *data type variable[size of array][size of array];***Example program 1: Wap for addition of two matrix.**

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[5][5],b[5][5],i,j;
clrscr();
cout<<"enter the first 2*2 matrix\n";
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
cout<<a[i][j];
}
}
cout<<"enter the second 2*2 matrix\n";
for(j=0;j<=1;j++)
{
for(i=0;i<=1;i++)
{
cin>>b[i][j];
}
}
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
c[i][j]=a[i][j]+b[i][j];
}
}
cout<<"the addition 2*2 matrix\n";
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
cout<<c[i][j];
}
}
cout<<"\n";
}
getch();
}
```

Output

```
enter the first 2*2 matrix
1
1
1
1
enter the second 2*2 matrix
1
1
1
1
the addition 2*2 matrix
2 2
2 2
```

Example program 2: Wap for subtraction of two matrix

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[5][5],b[5][5],c[5][5],i,j;
clrscr();
printf("enter the first 2*2 matrix\n");
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
scanf("%d",&a[i][j]);
}
}
cout<<("enter the second 2*2 matrix\n");
for(j=0;j<=1;j++)
{
for(i=0;i<=1;i++)
{
cin>>b[i][j];
}
}
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
c[i][j]=a[i][j]-b[i][j];
}
}
cout<<"the subtraction 2*2 matrix\n";
for(i=0;i<=1;i++)
{
for(j=0;j<=1;j++)
{
cout<<c[i][j];
}
}
cout<<"\n";
}
getch();
}
```

Output

```
Enter the first 2*2 matrix
2
2
2
2
enter the second 2.2 matrix
1
1
1
1
the subtraction 2*2 matrix
1 1
1 1
```


CHAPTER- 8

CLASSES

Introduction to Classes

The word class is a fundamental and powerful keyword in c++. It is significantly useful as it is used to combine the data and operations of a structure into a single entity. The class construct provides support for hiding, abstraction, encapsulation, single inheritance, multiple inheritance, polymorphism and public interface functions (methods) for passing message between objects.

Data abstraction: In oop's, the data abstraction is defined as a collection of data and methods (function).

Data Hiding: In C++, the class allows to declare data and methods as public private and protected group.

Data encapsulation: The internal data (the member data) of a class are first separated 'from the outside world (the defined class).

Inheritance: C++ allows a programmer to build hierarchy of classes. The basic feature of classes (parent classes of basic classes) can be passed onto the derived classes (child classes).

Polymorphism: In oop, polymorphism is defined as how to carry out different processing steps by a function having the same messages.

SPECIFYING A CLASS

A Class specification has **two parts**:

1. Class declaration.
2. Class function definition

The general form of a class declaration is:

The body of a class is enclosed within braces and terminated by a semicolon. The class body contains the declaration of variables and functions. These functions and variables are called class members. They are grouped under two part namely, private and public, the class member that have been declared as In keyword private can be accessed only from within the class, IN public members can be accessed from outside the class also.

```

Class calsss_name
{
    Private
    Variable declarations;
    Function declarations;
    Public :
    Variable declarations;
    Function declarations;
};

```

Example: Class with data and member function

```

#include<iostream.h>
class date {
private:
int day;
int month;
int year;
public:
void getdata (void)
{
cout<<" enter the date>(dd- mm-year) "<< endl;
cin>> day >> month>> year;
}
void display (void)
{
cout<< "Today's date is = " /"<< year <<endl;
}
}; //end of class definition
void main (void)
class date today1;
today1. getdata();
today1. display();
getch();
}

```

Output

```

enter the date (dd-mm-year)
12 1 99
Today's date is = 12/1/99

```

Example: member functions are defined wit

```
#include <iostream.h>
class sample
{
private:
int x;
int y;
public:
void getinfo ()
cout<<"enter any two numbers "<< endl;
cin >> x >> y;
}
void display (){
cout<<"enter any two numbers"<< endl;
cin >>x >> y;
}
void display () {
cout<< "x = "<< x << endl;
cout<< "y = "<< y << endl;
cout<< "sum = "sum () << endl;
cout<< "dif="<< diff (f) << endl;
}
int sum ()
{
return (x + y);
}
int diff()
{
return (x-y);
}
int diff()
{
return (x+y);
}
int diff()
{
return (x/y);
}
} // end of class definition
void main (void)
{
sample obj11;
obj11.getinfo ();
obj11.display ();
obj11.sum ();
obj11.diff();
obj11.mult ();
obj11.div ();
}
getch();
}
```

Example: methods are defined out of the scope of the class

```
#include<iostream.h>
dass sample
{
private:
int x;
int y;
public .
void getinfo ();
int display ();
int sum ();
int diff ();
int mult ();
int div();
} // end of class definition
void sample :: getinfo ()
{
cout<< "enter any two numbers "<< endl;
cin>> x >> y.;
}
void sample:: display ()
{
cout << "x = "<< x << endl;
cout<< "y = " << y <<endl;
cout << "sum = " << sum () << endl;
cout << " dif = "<< diff () << endl;
cout<< "mul = "<<mult()<< endl;
cout<< "div = "<<div 0<<endl;
}
int sample :: sum ()
{
return (X+Y);
}
int sample :: diff ()
{
return (x + y) ;
}
int sample ::mult ()
{
return (x/y);
}
void main (void)
{
sample obj11;
obj11.getinfo ();
obj11.display();
obj11.sum ();
obj11.diff ();
obj11.mult ();
obj11.div ();
}
}
```

Output

```
Enter any two numbers
1 2
x = 1
y = 2
sum = 3
dif = -1
mul = 6
div = 0
```

CHAPTER- 9

SOLVED PROGRAM

EXAMPLE 1: WAP TO INPUT A NO. AND TO PRINT ITS CUBE BY POW () FUNCTION*/

```
#include<stdio.h>
#include<conio.h>
#include<math.h> //for pow()function math.h
void main()
{
    int a;
    clrscr();
    printf("Enter any number:");
    scanf("%d",&a);
    printf("\n The cube of the number is :%g",pow(a,3));
    /*pow(x,y)=x to the power y*/
    getch();
}
```

Output

```
Enter any number:
3
the cube of the number is: 27
```

EXAMPLE 2: WAP TO DISPLAY CUBEROOT OF A NO.*/

```
#include<stdio.h>
#include<conio.h>
#include<math.h> //for pow()function math.h
void main()
{
    float a, y;
    clrscr();
    printf("enter value of a");
    scanf("%f", &a);
    y=(pow(a,1.03));
    printf("\ncubroot of a is %g ",y);
    getch();
}
```

Output

```
Enter the value of a
8
cube root of a is 2
```

EXAMPLE 3: WAP TO CONVERT GRAM TO KILOGRAM.

```
#include<stdio.h>
#include<conio.h>
#include<math.h> //for pow()function math, h is must*/
void main()
{
    float grams,kilogram;
    clrscr();
    printf("enter grams");
    scanf("%f",&grams);
    kilogram=grams/pow(10,3);
    /* 1kilogram=1000 grams*/
    printf("\nquantity in Quintal is =%g ",kilogram);
    getch();
}
```

Output

```
Enter grams
1000
quantity in kilogram is =1
```

EXAMPLE 4 : WAP TO INCREASE AND DECREASE THE INPUT VALUE BY 1.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int k,j;
    clrscr();
    printf("Enter k");
    scanf ("%d", &k);
    k++; //for increment by 1*/
    printf("\n The increment value of k is %d.",k);
    printf("\n enter j");
    j--; //for decrement by 1*/
    printf ("\n The decremented value of j is %d",j);
    getch();
}
```

Output

```
Enter k
2
the incremented value of k is 3
enter j
3
The decremented value of j is 2
```

EXAMPLE 5 : WAP TO DISPLAY AREA AND PERIMETER OF RACTANGGLE.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    float x,y, area, perimeter;
    clrscr();
    printf("Enter two sides x, y :");
    scanf ("%f%f", &x,&y);
    area=x*y;
    perimeter=2*(x+y);
    printf("\nArea of rectangle is %g sqr. Units ",area);
    printf("\n Perimeter of a rectangle is %g", perimeter);
    getch();
}
```

Output

```
Enter two sides x y :
1 4
Area of rectangle is 8 sqr. units
Perimeter of rectangle is 12
```

EXAMPLE 6 : WAP TO INPUT TWO VALUES & EXCHANGE THEM (SWAPING) BY USING THIRD TEMPORARY VARIABLE.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x,y,temp;
    clrscr();
    printf("Enter two values");
    scanf ("%d,%d", &x,&y);
    printf("Entered values are x=%d, y=%d", x,y);
    temp=x;
    x=y;
    y=temp;
    printf("Invalues after swapping are x=%d, y=%d", x,y);
    getch();
}
```

Output

Enter two values
4 5
entered values are x=4, y=5
values after swapping x=5, y=4

EXAMPLE 7 : WAP TO FIND TOTAL EXPENSES.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    float t,d,l, totalexp;
    clrscr();
    printf("Enter Travelling exp. In Rs.");
    scanf ("%f", &t);
    printf("Entered dry cleaning exp. In Rs.")
    scanf ("%f", &d);
    printf("Entered lodging and boarding exp. In Rs.")
    scanf ("%f", &l);
    totalexp=t+d+l;
    printf("n The total exp is Rs.%g",totalexp);
    getch();
}
```

Output

Enter travelling exp in Rs.
2000
Enter dry cleaning exp. In Rs.
200
Enter lodging and boarding exp. In Rs.
300
The total exp are Rs. 2500

EXAMPLE 8 : WAP TO FIND AREA OF TRIANGLE.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    float x,y,z,s, area;
    clrscr();
    printf("Enter three sides x y z :");
    scanf ("%f%f%f", &x,&y,&z);
    s=(x+y+z)/2;
    area =sqrt(s*(s-x)*(s-y)*(s-z));
    printf("nArea of Triangle is %g sqr. Units",area);
    getch();
}
```

Output

Enter three sides x y z :
3 4 5
Area of Triangle is 6 sqr units

EXAMPLE 9: WAP TO FIND THAT ENTERED YEAR IS A LEAP YEAR OR NOT.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int t,yrs;
    clrscr();
    printf("Enter year");
    scanf("%d", &yrs);
    scanf(yrs%4==0) /" % operator will show remainder"/
    printf("nleap year");
    else
    printf(not a leap year");
    getch();
}
```

Output

enter year
2002
leap year

EXAMPLE 10 : WAP TO CALCULATE GROSS SALARY BY CONSIDERING HOUSE RENT ALLOWANCE, DEARNESS ALLOWANCE.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    Float bs,gs,da,hra;
    clrscr();
    printf("n The basic salary ");
    scanf("%f", &bs);
    if(bs<=200)
    {
        hra=bs*10/100;
        da=bs*20/100;
    }
    else
    {
        hra=500;
        da=bs*25/100;
    }
    gs=bs+hra+da;
    printf("n Gross salary=Rs. %g",gs);
    getch();
}
```

Output

The basic salary
500
gross salary=Rs. 1125

EXAMPLE 11 : WAP TO INPUT NO. AND FIND OUT IT IS EVEN OR ODD NO.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n,j;
    clrscr();
    printf("\n enter no.");
    scanf ("%d",&n);
    j=n%2;
    if(j==0)
        printf("even");
    else
        printf("\n odd");

    getch ();
}
```

Output

```
enter no.
24
even
```

EXAMPLE 12 : WAP TO FIND THAT THE NO. IS DIVISIBLE BY SIX OR NOT.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i;
    clrscr();
    printf("\n enter i");
    scanf(%d,&i);

    if(i%6) /* operator will show remainder so if the
            is non-zero than this condition will be
            true and if statement will be executed */
        printf ("\n The number is not divisible by 6");
    else
        printf ("\n The number is not divisible by 6");

    getch();
}
```

Output

```
enter i
36
The number is divisible by 6 .
```

EXAMPLE 13 : WAP TO FIND PROFIT OR LOSS OR NO PROFIT NO LOSS IN SELLING.

```
#include<conio.h>
void main()
{
    float cp,sp,profit,loss;
    clrscr();
    printf("\n Enter cp: "); /*input cost price*/
    scanf("%g",&cp);
    printf("\n Enter sp: "); /* enter selling price*/
    scanf("%g",&sp);
    if (sp>cp)
    {
        profit = sp-cp;
        printf("\n The profit is Rs. %g"-profit);
    }
    else
    {
        if (cp==sp)
            printf("\n The loss is Rs. %g",loss);
        else
        {
            loss =cp-sp;
            printf("\n The loss is Rs. %g",loss);
        }
    }
    getch();
}
```

Output

```
Enter cp:
200
Enter sp:
90
The toss is Rs.110
```

Example 14 : WAP TO GENERATE THE TABLE OF NUMBER ENTERED BY USER.

```
#include<stdio.h>
#include<conio.h>
int table (int, int);
void main()
{
    int i, n;
    clrscr();
    printf("Enter any integer") ;
    scanf("%d", &n) ;
    for(i=1 ; i<=10 ; i++)
        printf("%d x %d = %d\n", n, i, table (n, i)) ;
}
int table (int n, int i)
{
    return (n)
}
return (table (n, i -1) + n);
}
getch();
}
```

Output

```
Enter the number2
2x1 =2
2x2=4
2x3=6
2x4=8
2x5=10
2x6=12
2x7=14
2x 8=16
2x9=18
2x10 = 20
```

Example 15: WAP FOR STRING COPY

```
#include<conio.h>
#include<stdio.h>
main()
{
    char^ source ="arjun";
    char^des="chandel";
    int i;
    clrscr();
    printf("Enter the string");
    gets(source);
    for(i=0;source[i]!='\0';i++)
        des[i]='\0';
    printf("The string is: %s",des);
    printf("\nPress any key to continue; ");
    getch();
}
```

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