

Chapter No 1

What is Computer?

DEFINITION NO 1:

Computer is an electronic device which takes some *input*, *process it*, and *produce output*.

DEFINITION NO 2:

Electronic machine operating under the control of instructions stored in its own memory

- Accepts data
- Manipulates data
- Produces results
- Stores results



PARTS OF COMPUTER:

According to above definition we can divide computer functionality in to three main parts

- Input
- Output
- Process



INPUT

Input is any data or instructions entered to the computer. Input can be in the form of audio, video, graphics and animations and instructions. Instructions can be

- Programs
- Commands
- User response

Programs

Program tells a computer what to do and how to do? These are written instructions in some specific language.(languages will be describe future)

Commands

Command causes a program to perform a specific action. Like Ctrl+S for saving a Ms.Word Document

User Response

A user response is an action which is or can be done by answering any question from computer like You want to save that file? User have two options Yes or No, that is depend on the user what to response

PROCESS

Computer data processing is any process that uses a computer program to enter data and summarize, analyze or otherwise convert data into usable information. The process may be automated and run on a computer. It involves recording, analyzing, sorting, summarizing, calculating, disseminating and storing data. Because data is most useful when well-presented and actually *informative*, data-processing systems are often referred to as information systems. In computer processing is done by CPU (Central Processing Unit)

OUTPUT

Output is the data that has been processed in to useful form. The computer takes the input from user process it and produced output. Output also can be text, Audio, Video, graphics and animations. Output can be in two forms

- Soft Copy
- Hard Copy

Soft Copy:

When you are writing a document, playing a game, watching a video clip, or reading the latest news. Soft copy is what you see on the monitor(Screen). Soft copy is temporary; after you have finished with it, there is nothing solid to hold. You can, however, transfer soft copy to a disk to transport it

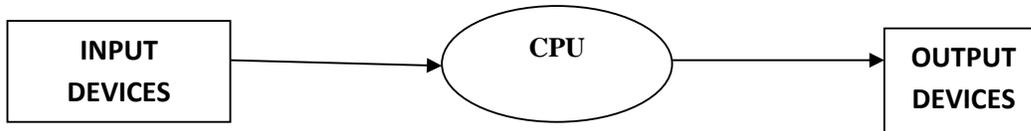
Hard Copy:

Hard copy can be touched and carried. Hard copy is usually some form of paper output. It is especially helpful if you need to have a colleague look at your work or you need to give your work to a supervisor or teacher.

COMPONENTS OF COMPUTER

There are three main Components of computer.

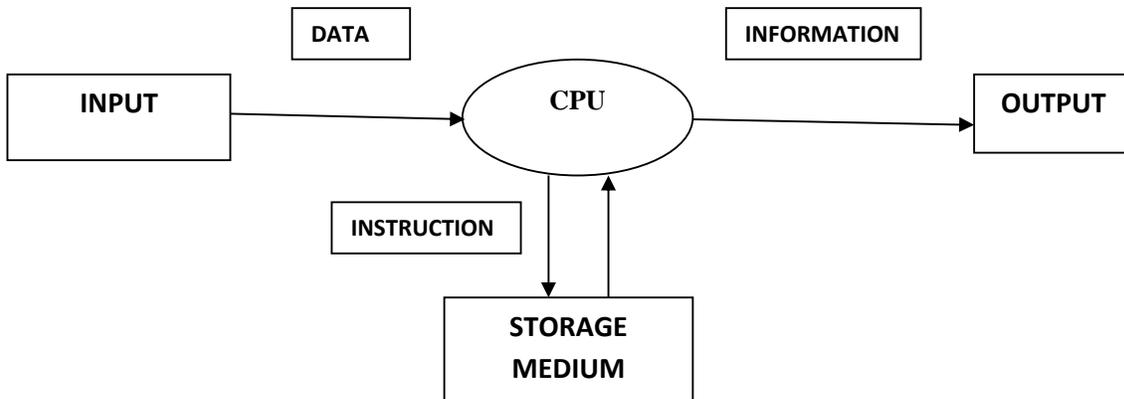
1. Input devices
2. CPU
3. Output Devices



INFORMATION PROCESS CYCLE

Computer process data (input) into information (output).A Computer often holds data, information, and instruction in storage for future use.

The series of input, process, output and storage activities as the information process cycle.



WHAT IS DATA?

Definition: “Raw facts, figures, events and transactions are called data”

Example:

- Researchers who conduct market research survey might ask member of the public to complete questionnaires about a product or a service. These completed questionnaires are data.
- NADRA prepared CNIC of Pakistanis by collecting data of people who belongs to Pakistan.
- Some candidates want to take admission in university they will fill admission forms.

Above all are unprocessed and unprepared which is needed to process and work more.

WHY WE NEED DATA

- Facts, statistics used for reference or analysis.
- Numbers, characters, symbols, images etc., which can be processed by a computer.
- Data must be interpreted, by a human or machine, to derive meaning
- "Data is a representation of information" *

WHAT IS INFORMATION?

DEFINATION:

- “Meaning full data is called information”
- “Processed data is called information”

WHY WE NEED INFORMATION

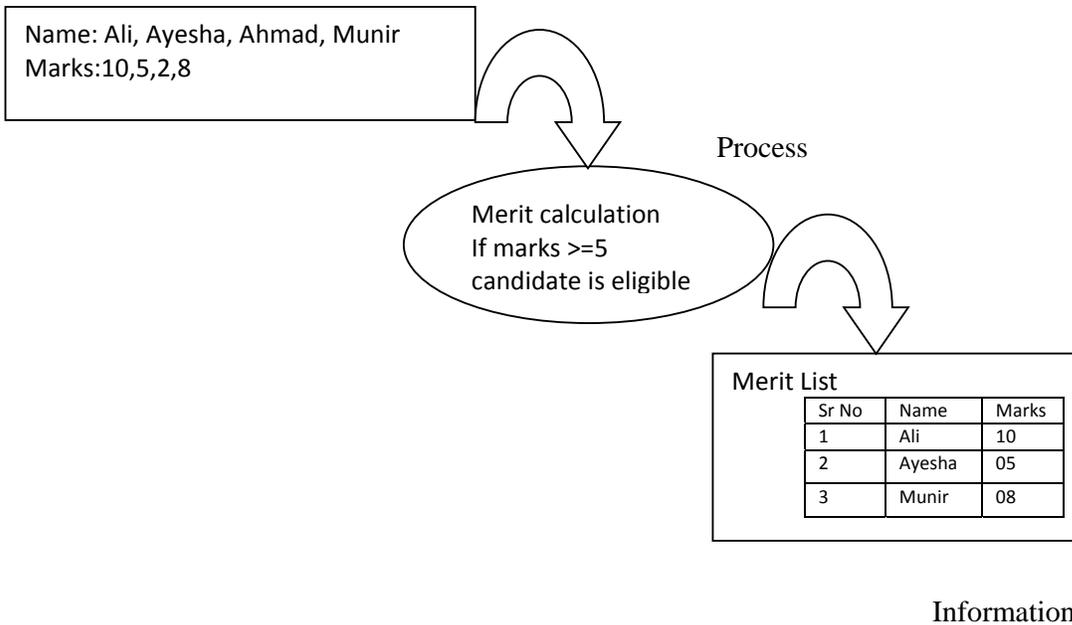
- Knowledge derived from study, experience (by the senses), or instruction.
- Communication of intelligence.
- "Information is any kind of knowledge that is exchangeable amongst people, about things, facts, concepts, etc., in some context."
- "Information is interpreted data"



Detail Example:

Some candidates want to take admission so they will fill an admission form containing data about their selves. When this data is organized and arranged by eligibility criteria and admission rules a merit list will be formulated. This merit list is in the form of information of certain students which are eligible for admission.

Data



Chapter No 2

COMPONENTS OF COMPUTER

INPUT DEVICES

REVISION:

Data: Raw Facts, figures, events and transactions are called data

Information: Meaning full data is called information *or* processed data is called information”

Computer: Computer is an electronic device which takes some *input, process it,* and *produce output.*

Components of computer: Input, Output, CPU

WHAT IS INPUT?

Input is any data or instructions entered to the computer. Input can be in the form of audio, video, graphics and animations and instructions

WHAT ARE INPUT DEVICES?

Any *hardware component* used to enter data, programs, commands, and user responses into a computer

Examples

- Key Board
- Mouse
- Digital Camera
- Webcam
- Scanner etc



WHAT IS HARDWARE?

The term *hardware* refers to the physical parts of the computer. Computer hardware is versatile-what it does depends on the computer program you use. All components which are tangible (touchable) are called Hardware

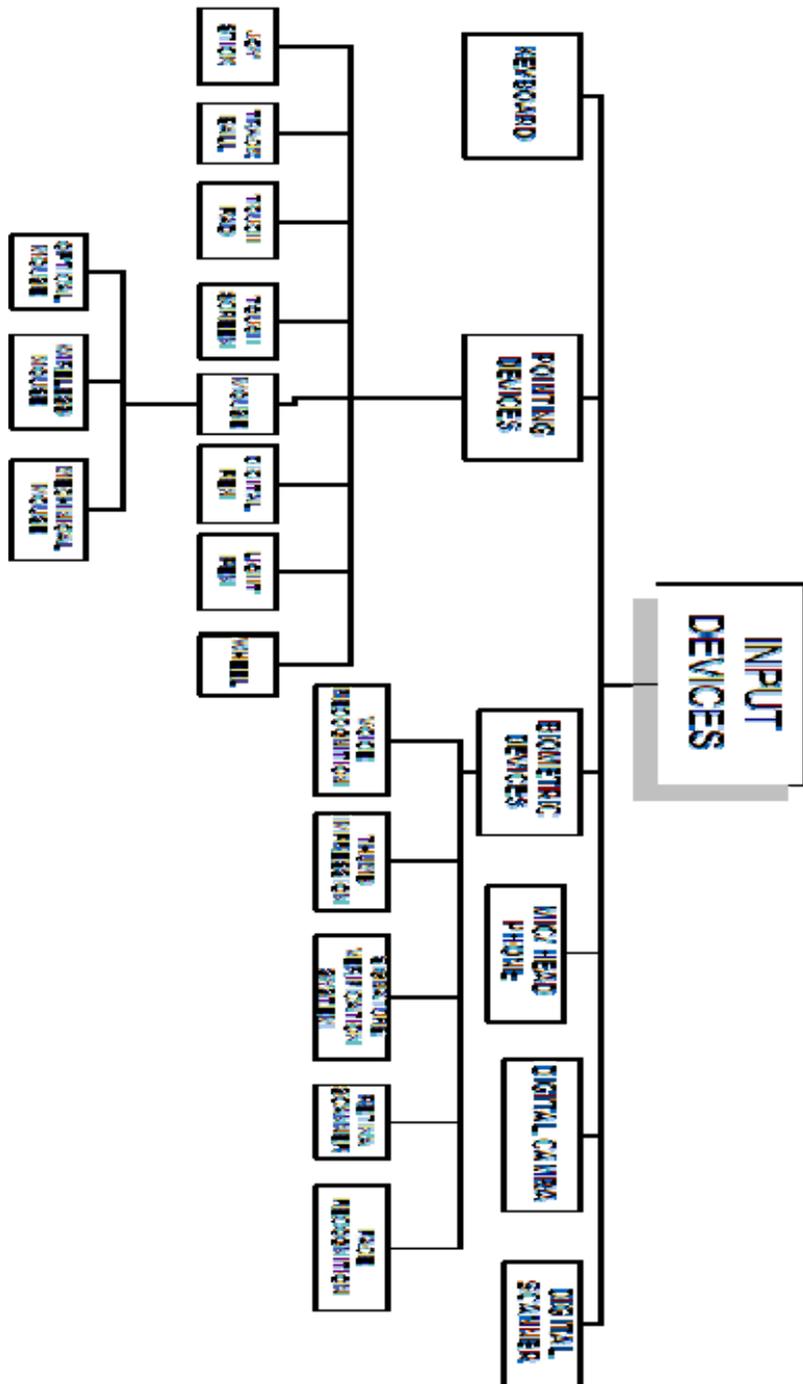
Examples: Mic, Keyboard,Hard Disk, Scanner, Printer etc

WHAT IS SOFTWARE?

Software is the set of instructions (also called a program) that guides the hardware through its job. That tells the computer what to do? And how to do it? All components which are non tangible (Not Touchable) are called software.

Examples: Ms Office, Operating Systems, Adobe photo shop etc





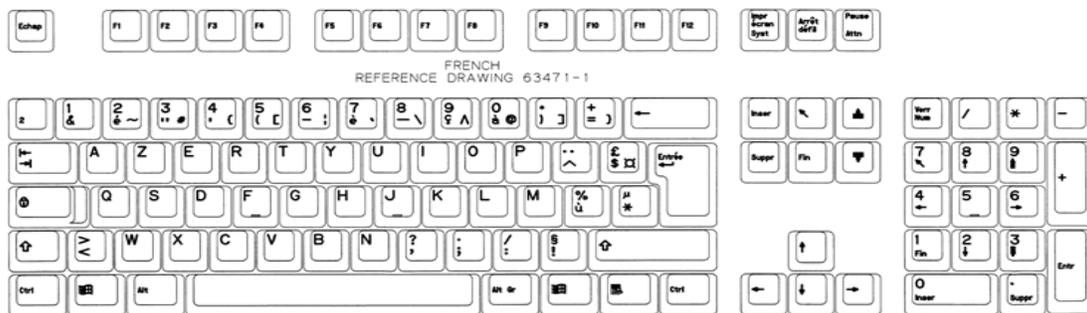
1) KEYBOARD

Definition:

“Keyboard is an *input device*, that contain keys user press to enter data or instructions in to the computer”.

You enter most input data into the computer by using a keyboard. This input method is similar to typing on a typewriter.

Most typewriter and computer keyboards are **QWERTY keyboards**. The alphabetic keys are arranged so that the upper-left row of letters begins with the six letters *Q W E R T Y*. Designers of other keyboards claim that their boards are easier to learn than the QWERTY keyboard.



KEYS OF KEYBOARD

Computer keyboards include keys that are designed to perform specific tasks. These keys enable the user to perform complex tasks easily when using the application. For example, many applications use a function key to access online help for the user.

Keyboard keys consist of

- Alphabetic keys
- Numerical keys
- Symbols
- Functional keys
- Extra keys

Alphabetic keys contain alphabets from A-Z & a-z

Numerical keys contain numbers 0-9

Symbols keys contain many symbols like !, @, #, \$, % etc

Functional keys contain f1-f12, design for special purpose will discuss latter.

Extra keys contain Esc, Alt, Ctrl, Backspace, Enter etc

2) POINTING DEVICES

Definition:

A pointing device is an *input device* which is used to control a pointer on a screen. Pointer is a small symbol on a screen.

A **pointing device** is an input interface (specifically a human interface device) that allows a user to input spatial (i.e., continuous and multi-dimensional) data to a computer. CAD systems and graphical user interfaces (GUI) allow the user to control and provide data to the computer using physical gestures — point, click, and drag — for example, by moving a hand-held mouse across the surface of the physical desktop and activating switches on the mouse. Movements of the pointing device are echoed on the screen by movements of the pointer (or cursor) and other visual changes.

2.1) MOUSE

Definition:

“Mouse is an *input device* that fits under palm of hand and Controls movement of pointer, also called mouse”

The mouse is a palm-size device with a ball built into the bottom. The mouse is usually connected to the computer by a cable (computer wires are frequently called cables) and may have from one to four buttons (but usually two). Mice come in many shapes and sizes. When you move the mouse over a smooth surface, the ball rolls, and the pointer on the display screen moves in the same direction.



With the mouse, you can draw, select options from a menu, and modify or move text. You issue commands by pointing with the pointer and clicking a mouse button. In addition to minimizing typing errors, a mouse makes operating a microcomputer easier for beginning.

TYPES OF MOUSE

There are three types of mouse

1. Mechanical mouse
2. Optical mouse
3. Wireless mouse



MECHANICAL MOUSE:

The mouse that contains a metal or rubber ball on its under side. When the ball is rolled in any direction, sensors inside the mouse detect this motion and move the on-screen mouse pointer in the same direction (picture above).



OPTICAL MOUSE:

An **optical mouse** uses a light-emitting (laser) to detect movement relative to the underlying surface.



WIRELESS MOUSE:

Wireless mice usually work via radio frequencies commonly referred to as RF. RF wireless mice require two components to work properly a radio transmitter and a radio receiver.

2.2) JOY STICK

A joystick is a pointing device often used for playing games. The joystick has a gearshift-like lever that is used to move the pointer on the screen. On most joysticks, a button on the top is used to select options. In industry and manufacturing, joysticks are used to control robots. Flight simulators and other training simulators also use



joysticks.

2.3) TRACKBALL

A *trackball* is like an upside-down mouse. Used similarly to the mouse, the trackball is frequently attached to or built into the keyboard.

The main advantage of a trackball is that it requires less desk space than a mouse. (Some individuals in the computer industry believe that the mouse will soon be replaced by devices that do not require as much space to use.)

The mouse is not practical for people using a laptop computer in a small space. Early alternatives, such as trackballs clipped to the side of the keyboard, have not proved satisfactory. The IBM ThinkPad replaces the trackball with a red plastic button, called a *track point*, located in the middle of the keyboard. You move the button with your thumbs.



2.4) TOUCHPAD

A touch pad is a device for pointing (controlling input positioning) on a computer display screen. It is an alternative to the mouse. Originally incorporated in laptop computers, touch pads are also being made for use with desktop computers. A touch pad works by sensing the user's finger movement and downward pressure.



2.5) TOUCHSCREEN

A touch screen is a computer display screen that is also an input device. The screens are sensitive to pressure; a user interacts with the computer by touching pictures or words on the screen.



2.6) DIGITAL PEN

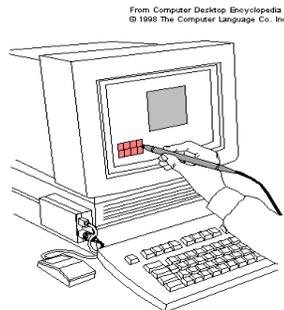
A digital pen is a battery-operated writing instrument that allows the user to digitally capture a handwritten note or drawing. Typically, a digital pen comes with a Universal Serial Bus (USB) cradle to let the user upload the handwritten notes to a personal computer (PC).

The pen looks like a regular ball-point pen and can be used as such, but requires special digital paper if the user wishes to digitally capture what he has written. A page of digital paper, which can be purchased in traditional pad or sticky-note size, has small dots on it that allow the pen to "see" what has been written.



2.7) LIGHT PEN

A light-sensitive stylus wired to a video terminal used to draw pictures or select menu options. The user brings the pen to the desired point on screen and presses the pen button to make contact. Contrary to what it looks like, the pen does not shine light onto the screen; rather, the screen beams into the pen. Screen pixels are constantly being refreshed. When the user presses the button, the pen senses light, and the pixel being illuminated at that instant identifies the screen location.



2.8) WHEEL

Steering wheels are gaming devices used in driving games. All steering wheel controllers come with a wheel, accelerator, and brake; some steering wheel controllers allow "manual" (i.e., gear-to-gear) shifting, while others only have high-low or forward-reverse options. A whole range of racing wheels have been developed to make the experience of driving more realistic. And with the development of force feedback you can feel the actual resistance particular types of steering have. For example, riding a motorcycle is quite different than flying a helicopter or driving a car or tank.



3) BIOMETRIC DEVICES

A "biometric device" is any device that measures a biological function or trait. it identifies persons seeking access to a computing system by determining their physical characteristics through fingerprints, voice recognition, retina patterns, pictures, weight, or other means.

3.1) VOICE RECOGNITION

A system in which the computer recognizes human speech and transforms the recorded words into computer-readable digitized text or instruction.

The conversion of spoken words into computer text. Speech is first digitized and then matched against a dictionary of coded waveforms. The matches are converted into text as if the words were typed on the keyboard.



3.2) THUMB IMPRESSION

Biometrics can be defined as an automatic method for identification or identity verification of individuals using physiological or behavioral characteristics.



3.3) SIGNATURE VERIFICATION

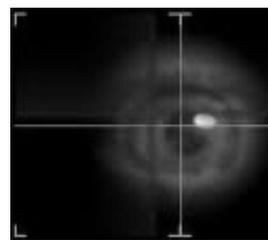
Digital signature unit capture and save signatures as people sign on the LCD touch screens. These signatures can be saved for use to electronically sign documents, customer signature verification for POS transactions, or employee authentication. Get your electronic signature capture system today.



3.4) RETINA SCANNER

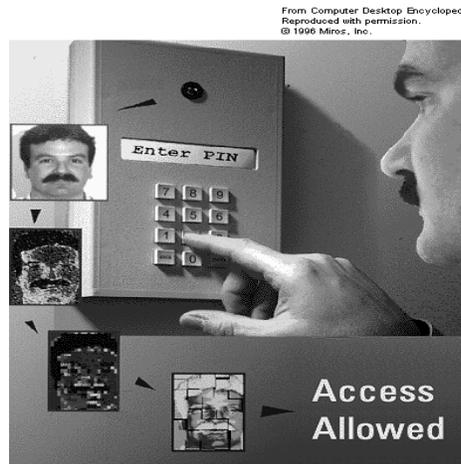
Retina scanner is used to map the unique patterns of a person's retina. it uses the unique patterns on a person's retina to identify them.

It is used for authentication and identification purposes. Retinal scanning has been utilized by several government agencies including the FBI, CIA, and NASA. However, in recent years, retinal scanning has become more commercially popular. Retinal scanning has been used in prisons, for ATM identity verification and the prevention of welfare fraud.



3.5) FACE RECOGNITION

The ability to recognize people by their facial characteristics. The most advanced technology, which maps the characteristics of a person's face into a multidimensional face space. The computer can distinguish the same person with different appearances; for example, with or without glasses, change of hair style and seasonal skin color changes. It also uses in some secret agencies.



4) MIC/ HEAD PHONE

Both are input devices which are related to audio input. These device is used to enter sound in to the system for processing. It can be used in chatting, video conferencing, music or whenever we want to interact with the computer from voice input.



5) DIGITAL CAMERA

A digital camera can be used to take pictures. It can be hooked up to a computer to transfer the pictures from the camera to the computer. It uses a light sensitive processing chip to capture pictures or images.

We can save these images wherever we want. It can be a CD, Computer disk, USB drive or can transfer from one computer to another computer or device.



6) DIGITAL SCANNER

A scanner is used to copy pictures or other things and save them as files on the computer. A scanner is similar to a photocopier, except that instead of producing a paper copy of the document you place on it, you get an electronic copy which appears on your computer screen. This is a very important input device used to convert a hardcopy file (printed paper) to a softcopy (image or display file).



Chapter No 3

COMPONENTS OF COMPUTER

OUTPUT DEVICES

REVISION:

Components of computer: Input, Output, CPU

Input: Any data which is entered to computer for processing.

Input Devices: The Hardware components to do input.

Key Board, Mouse, Track ball, touch pad, speakers etc are input devices

There are many other biometric devices used to do input like voice recognition and retina scanners.

WHAT IS OUTPUT?

An output is the data that has been processed in that form which is useful by user or machine for future processing. Output can be in two forms Soft Copy and Hard Copy. (Describe further)

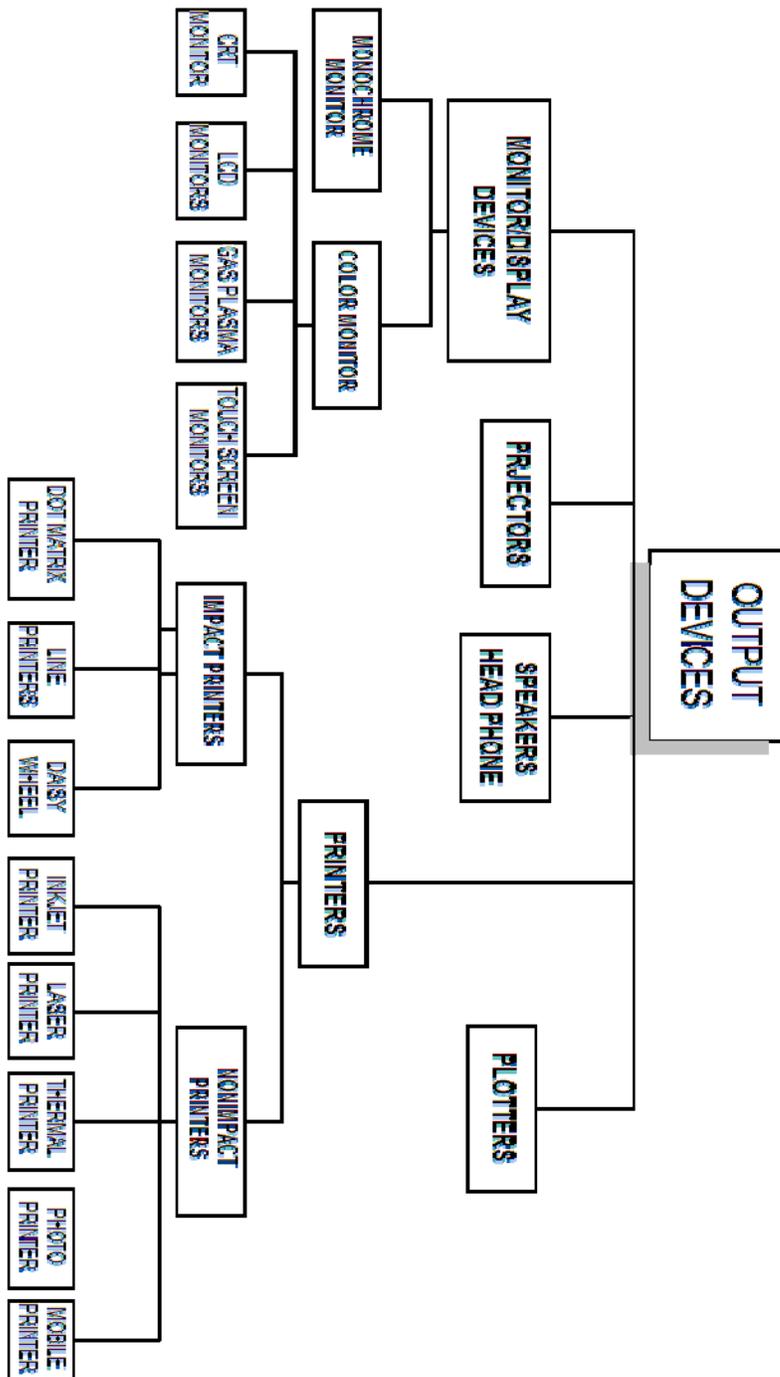
WHAT ARE OUTPUT DEVICES?

Any *hardware component* used to show results after processing to any user and it use to send the results of processing to the user. Output can be text, Audio, Video & graphics.

Examples

- Monitor
- Printer
- Plotter
- Projectors
- Speakers
- Headphone etc





1) MONITOR/DISPLAY DEVICES

Definition:

“Monitor or display devices are used to get output on screen. It is like small television and available in different sizes and specifications. The text which is displayed on screen is called softcopy (as defined above)”

TYPES OF MONITOR

There are majorly two type of monitor according to its specification. These are

- Monochrome monitor
- Color monitor

1.1) MONOCHROME MONITOR

Monochrome monitor is based on a single color that can be white, blue, black or gray etc. these type of monitors is same like the old mobile phones which have a single color in back ground with black text in display. That is very much useful in these devices where we need simple display. Like some ATM machines, mobile phones, specific digital devices like PDA, pagers etc

1.2) COLOR MONITOR

Color monitor is such monitor which is based on colors as its name implies. Today mostly monitor are based on color display rather it is flat panel or tube based monitors. The basic colors in that monitors are three which are RGB stands for Red, Blue, Green by these basic colors a monitor can generate many other colors by the combination of these basic colors.

1.2) COLOR MONITORS

FEATURES & SPECIFICATIONS

When we talked about monitor specification and features then there are several factors which we have to keep in our view. Whenever we want to buy monitor we have to keep these features in our view, defined as under:

- Color

- Size
- Resolution
- Pixel Pitch
- Refresher rate

COLOR

Monitor can view different colors specifically some monitor can view only single color in its background and black text on its screen these monitors are very simple (as defined above) is called monochrome monitors.

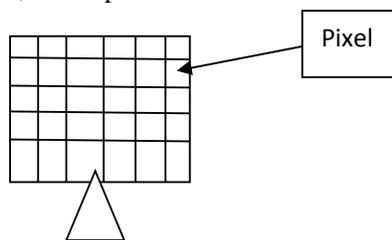
Monitor work with three basic colors and by these three colors it makes different colors in by combinations. These colors are RGB, mean Red, Green and Blue. By combinations it can make 256 colors. More colors more exclusive display.

SIZE

Like television monitor is also available in different sizes. The size started from 15 inches to 22 inches monitor.

RESOLUTION

An important characteristic of all monitor screens is its resolution. The screen is divided in to vertical and horizontal lines and intersecting of these lines make many small boxes and these boxes in used to display images, called pixels



Each point of light on the screen is called a pixel. The resolution of a screen is the number of pixels that the screen can display. This is given as the number of pixels across (horizontal resolution) by the number of pixels down (vertical resolution). For example, 800 x 600. The greater the resolution the better. Modern screens can display 1024 X 768 or better.

PIXEL PITCH

The distance between two pixels on screen is called pixel pitch. it is also an important feature of monitor. If we want to view clear images on monitors it must have less distance between pixels. That pixel pitch is also called dot pitch. It is measured in millimeters.

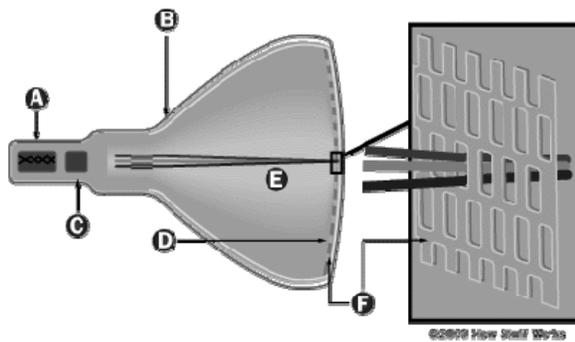
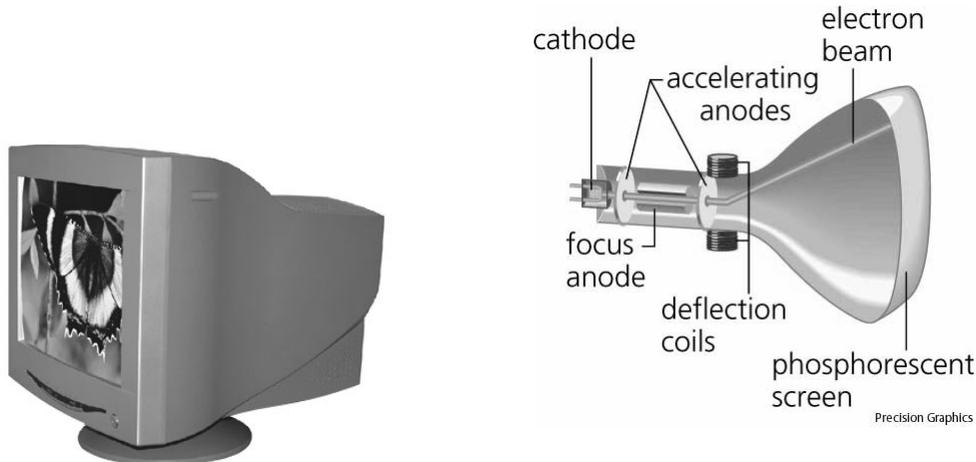
REFRESH RATE

Every monitor has a electric gun behind screen. That gun omits light and makes images to the screen. Refresher rate is that time which gun used to regenerate new image on screen. Refresher rate is

measured in hertz .it is also an important feature for better quality of display. , this is the number of times the image is refreshed every second. A low refresh rate makes the image appear to flicker. You need a refresh rate of at least 72 Hz (72 times a second) to avoid the appearance of flicker.

1.2.1) CRT MONITORS

The cathode ray tube (CRT) type monitors and makes use of the same technology as a television screen. A beam of electronics is fired from an electronic gun at the back of the tube. This strikes the front of the tube which is covered in a phosphorescent material which glows when struck by electrons. Between the electron gun and the screen the beam is modulated by a signal to produce the image you see on the screen.



1.2.2) LCD MONITORS

The **LCD monitors** bring lots of advantages when compared to the CRT ones. The first advantage which is also the most obvious one is the fact that the LCD monitors are smaller and have a smaller weight than the CRT monitors.

The LCD monitors can be placed on the table and they use far less space than the CRT monitors. This is a great advantage. The picture quality of the LCD monitors will be increased as well which means that the movies will be displayed in a better quality and the games will have better colors, and so on.



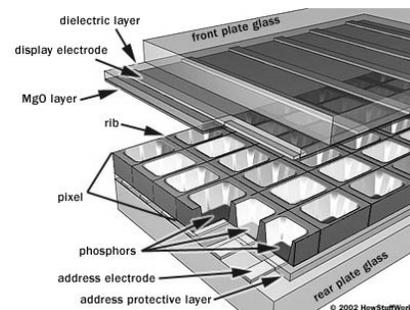
In most of the cases the LCD monitors will have certain features which provide additional functionality. Some of the LCD monitors have USB hubs, HDMI input, TV tuner, and so on. The TV tuner is very important because you can use the computer for watching TV. The aspect ratio of the monitors has changed.

The resolution will be highly influenced by the monitor size. The larger the size of the monitor is the larger resolutions it will have. If you buy the biggest **monitor** that you can buy because the experience of watching movies or playing games on it will be much more enjoyable. This was my info on the **LCD** computer monitors.

1.2.3) GAS PLASMA MONITORS

A gas-plasma display works by sandwiching *neon gas* between two plates. Each plate is coated with a conductive print. The print on one plate contains vertical conductive lines and the other plate has horizontal lines. Together, the two plates form a grid.

When electric current is passed through a horizontal and vertical line, the gas at the intersection glows, creating a point of light, or *pixel*. You can think of a gas-plasma display as a collection of very small neon bulbs. Images on gas-plasma displays generally appear as orange objects on top of a black background.



1.2.4) TOUCH SCREEN MONITORS

These monitors use touching of the screen as an input method. Items can be selected or moved with a finger, and finger gestures may be used to convey commands. The screen will need frequent cleaning due to image degradation from fingerprints.



2) PRINTERS

The second most common form of computer output is printed documents. Although a computer can operate perfectly without a printer, it is certainly helpful to the user to have one. People often prefer to get printouts of the work they have done rather than to look at it on the screen it is considered a form of hard copy.

Types:

Printer has majorly two types.

- Impact printers
- Non impact printers

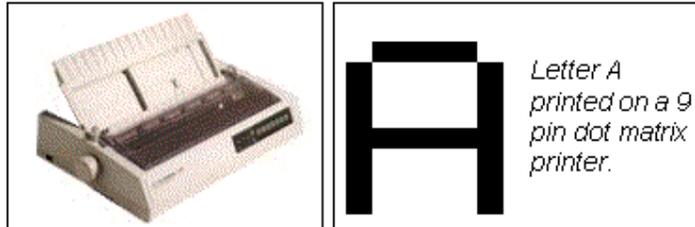


2.1) IMPACT PRINTERS

Impact printers produce output by striking a ribbon with a hammer. When the ribbon is hit a mark is made on the paper behind it. If carbon paper is put into the printer then an impact printer can print more than one copy of a document at a time. This feature is often used by companies when they print invoices, bills etc. Because of the hammering action impact printers are noisy when they are printing.

2.1.1) DOT MATRIX PRINTERS

Dot matrix printers produce an image by hammering a column of 9 or 24 pins against a ribbon. Characters are produced as the print head (which contains the pins) moves across the page.



Dot matrix printers are cheap to purchase and have low operating costs. Most can run in either draft mode (quick but very low quality) or Near Letter Quality mode (slower but better quality). The disadvantages of dot matrix printers are that the output quality is poor, it takes a long time to print a document and the noise can be annoying.

2.1.2) DAISY WHEEL PRINTERS

Daisy wheel printers are rarely used any more. A daisy wheel printer hammers character stamps (like those on typewriters) against a ribbon to produce high quality text output. The character patterns are all arranged around the edge of a wheel.

When a letter is to be printed the wheel rotates so that the correct letter is against the ribbon. A hammer then hits the letter against the ribbon to print it on the paper. Daisy wheel printers are very slow and noisy. It is not possible to print graphics using a daisy wheel printer.



2.1.3) LINE PRINTERS

Dot matrix and daisy wheel printers both print only one character at a time. For that reason they are called Character Printers. In contrast a line printer prints a whole line (typically 80 or 132 characters) of text at a time. These printers are very fast. They are expensive to buy and are used when high volumes of output are required. Example applications include printing telephone bills or bank statements. The main drawback to line printers is that they can produce only text--no graphics



2.2) NON IMPACT PRINTERS

Non-impact printers do not produce images by hammering pins or characters against the paper. Because there is no hammering action non-impact printers are very quiet but cannot print multiple copies using carbon paper.

2.2.1) INK JET PRINTERS

Ink jet printers are the most popular type of printer for use at home or in a small business. This is because they are relatively cheap to purchase and can print in color. Ink jet printers generate output by squirting tiny jets of ink at the paper to be printed on.

A column of ink jets in the print head moves across the page squirting dots onto the page to make the image.



Typically ink jet printers can produce 360 or 720 dots per inch (dpi) but these dots are larger than those that a laser printer makes so the quality although very good is not quite as perfect. Ink-jet printers can work in black and white or color. Black and white versions cost from Rs

5,000 and color ones from about 10,000. They are slower than laser printers (3ppm) and cost slightly more to run.

2.2.2) LASER PRINTERSS

Laser printers are called Page Printers because they print a whole page at a time. A laser beam is used to draw the image to be printed onto a light sensitive Drum. After the image has been drawn on the drum a fine powder ink called Toner is put onto it. The toner only sticks where the laser has drawn the image. The paper then passes over the drum and the toner is transferred onto the paper.



Laser printers produce very high quality output, are very quiet and very fast. Typical home laser printers can print 8 pages per minute (ppm). Some industrial versions print over 40ppm and can print on both sides of a piece of paper at the same time. The main disadvantage of this type of printer is the high cost. Small laser printers cost from Rs 3,000 to buy and are more usually about Rs 8,000. Color laser printers cost Rs 30,000+. Running costs are higher than impact printers but lower than most ink jet printers.

2.2.3) THERMAL PRINTERS

Thermal printers are no longer used as printers for PCs. They are however still used in some computer control systems, tills and in many fax machines. These printers print on special heat sensitive paper which is expensive. The image is produced from small dots which are made on the paper by heating it up. The quality is reasonable and graphics can be printed.



2.2.4) PHOTO PRINTERS

A printer specialized for smaller prints such as 4x6" and 5x7". When first introduced in the mid-1990s, photo printers used dye sublimation for high quality printing because inkjet printing was not quite up to par. Since then, inkjet technology has greatly improved, and most photo printers are inkjets. Epson, Canon and HP are major players in this market



2.2.5) MOBILE PRINTERS

A monitor is portable and we can take it any where we want. Mobile printers are making it easier and faster for us to free our trapped images from their digital prisons -- all without using a drop of ink.

Without ink, it can be dramatically smaller than their predecessors, making them more convenient and even portable. It is said to be "mobile" because it receive wireless signals to print. However, with inkless printing technology, printers can be mobile in a more radical way -- you can carry it around in a pocket or a purse, just like a cell phone

3) PLOTTERS

A plotter, like a printer, produces hard-copy output. Plotters, which produce high-quality color graphics, are usually categorized by whether they use pens or electrostatic charges to create images. A continuous-curve plotter is used to draw maps from stored data. Computer-generated maps can be retrieved and plotted or used to show changes over time. Plotters are generally more expensive than printers, ranging from about 100,000 to \$750,000 (or even more).



4) SPEAKERS/ HEADPHONE

Speakers and headset is used to get audio output. A system's speaker is the component that takes the electronic signal stored on things like CDs, tapes and DVDs and turns it back into actual sound that we can hear. In any sound system, ultimate quality depends on the speakers. The best recording, encoded on the most advanced storage device and played by a top-of-the-line deck and amplifier, will sound awful if the system is hooked up to poor speakers.



5) MULTIMEDIA/PROJECTORS

A **Digital Projector/Multimedia** is an electro-optical machine which converts image data from a computer or video source to a bright image which is then imaged on a distant wall or screen using a lens system. The cost of a device is not only determined by its resolution, but also by its brightness. The projector serves the following purposes:

- Visualization of data stored in a computer for presentations
- Demonstration of program products for a large number of prospective customers
- The projector replaces the white board as well as written documents.
- Watching moving images from a video tape player or digital video disk player.
- Digital projectors may also be built into cabinets which use a rear projection screen to form a single unified display device, now popular for "home theater" applications.



Chapter No 4

COMPONENTS OF COMPUTER

SYSTEM UNIT

REVISION:

Components of computer: Input, Output, CPU

Output: An output is the data that has been processed in that form which is useful by user.

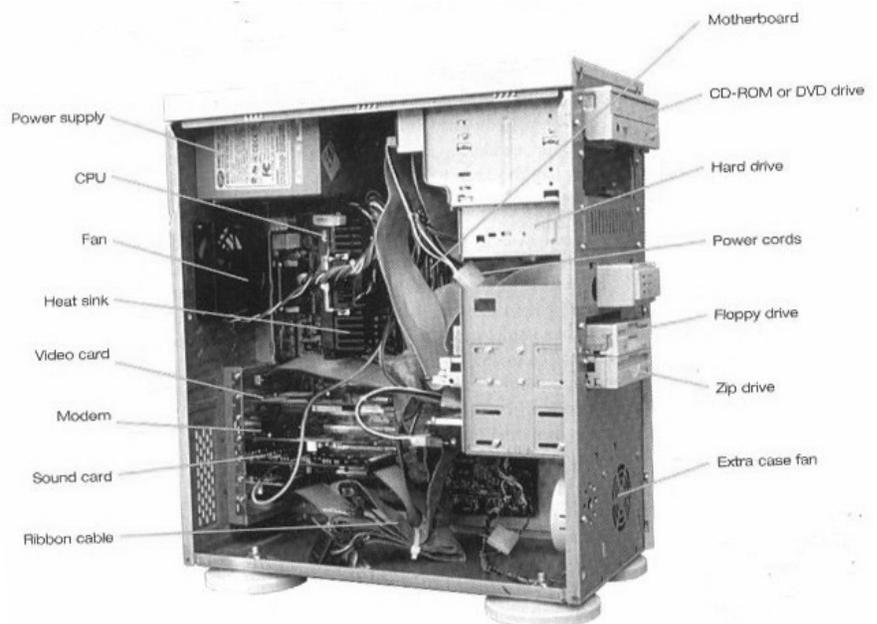
Output Devices: The Hardware components to view results after processing.
Monitor, printer, plotter, speakers/headphone, projectors.

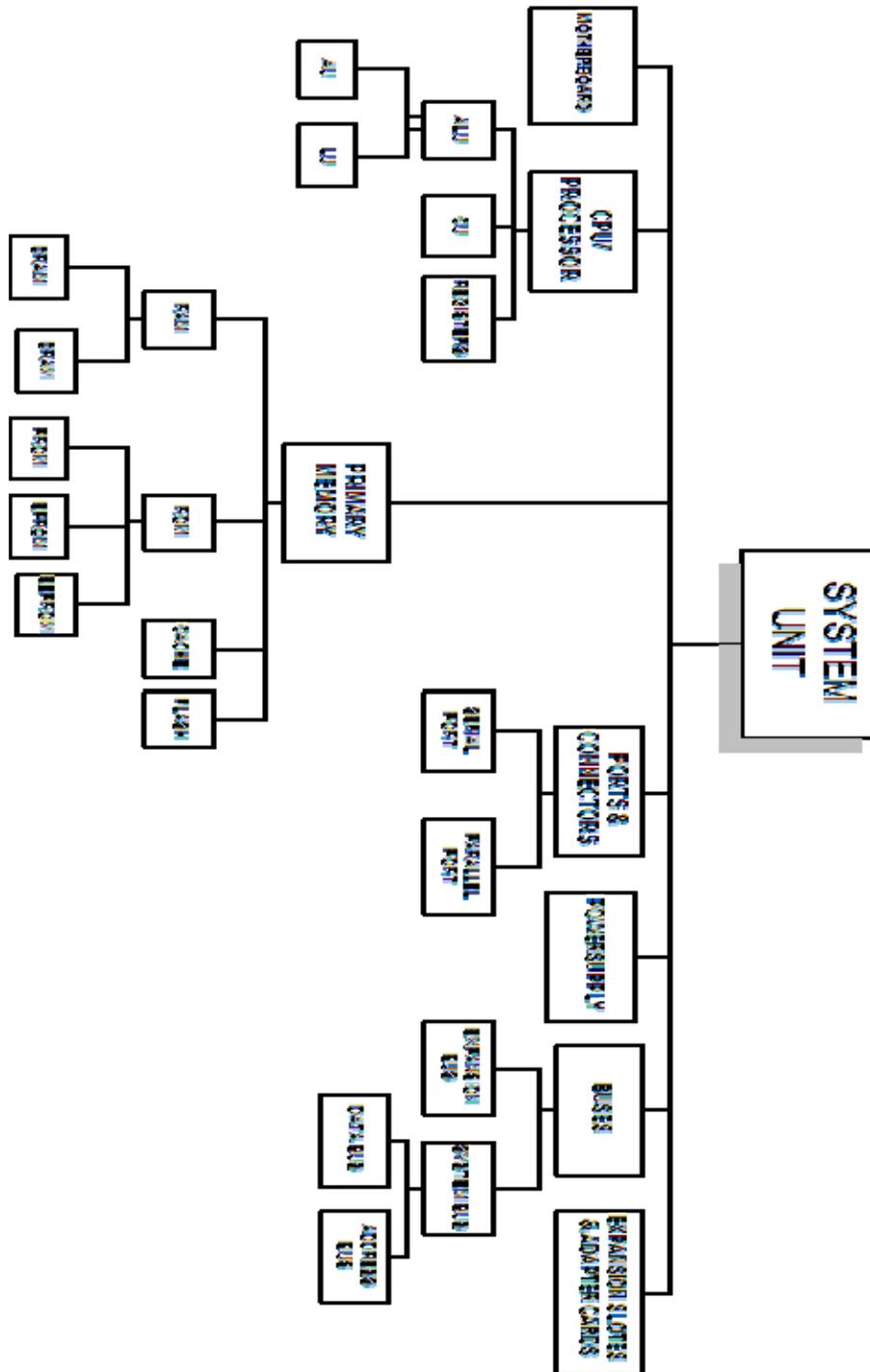
WHAT IS SYSTEM UNIT?

After input and output unit of the system, the main and very important component is System unit. System unit is a case that contains all components which are very important for the processing of data.

The main components of system unit are here under:

- Mother Board
- CPU
- Primary Memory
- Ports & connectors
- Expansion slots & Adaptor Cards
- Buses
- Power supply

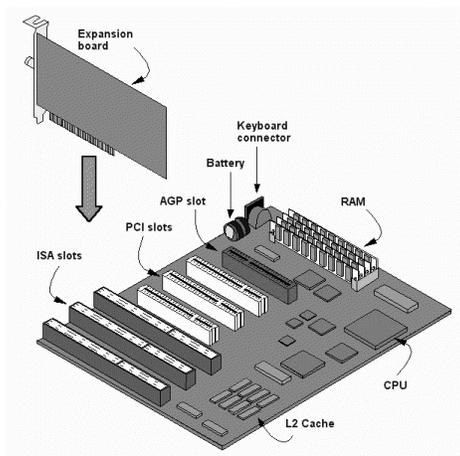




4.1) MOTHER BOARD

The main board of a computer, usually containing the circuitry for the central processing unit, keyboard, and monitor and often having slots for accepting additional circuitry. Also called the "system board," "main board" "base board" or "logic board,"

it is the primary printed circuit board in a computer or other electronic device. In a modern desktop computer, the motherboard contains the CPU, chipset, sockets for memory, as well as all the controller circuits for the disks, keyboard, mouse, network, sound and USB. It may also have a PCI-Express slot for a high-end display adapter and PCI slots for additional peripherals. Laptop motherboards typically have all the peripheral controllers built in.



Shortly we can define it as

- Main circuit board in system unit
- Contains chips, integrated circuits, and transistors
- Also called system board

4.2) CENTRAL PROCESSING UNIT

The CPU stands for Central Processing Unit, is the part of a computer system that is commonly referred to as the "brains" of a computer. The CPU is also known as the “processor” or “microprocessor”.

The CPU is responsible for executing a sequence of stored instructions called a *program*. The programs tells a computer what to do and how to do? This program will take *inputs* from an input device, process the input in some way and *output* the results to an *output device*.



CPU/Processor

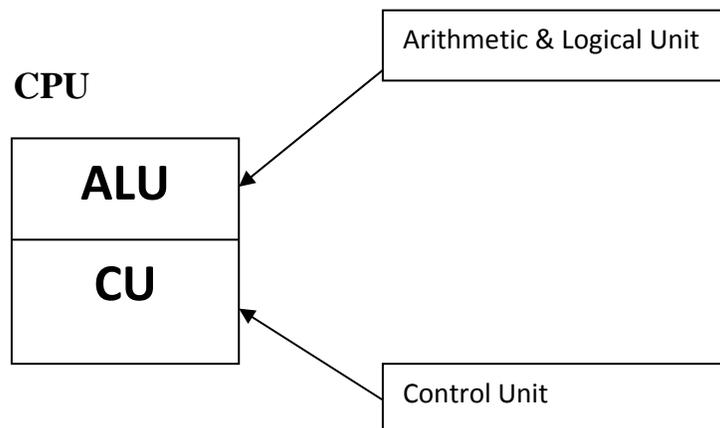


CPUs aren't only found in desktop or laptop computers, many electronic devices now rely on them for their operation. Mobile phones, *DVD* players and washing machines are examples of equipment that have a CPU. CPU is located in motherboard. The speed of processing of CPU is about 500 MHz to 2.5 GHz.

PARTS OF CPU

CPU is subdivided in to three parts defined below:

1. ALU
2. CU
3. Register



1) ARITHMETIC & LOGICAL UNIT

ALU stands for “Arithmetic and Logical unit”. This unit of the CPU is capable of performing arithmetic and logical operations. This unit of the CPU gets data from the computer memory and perform arithmetic and logical operations on it.

ALU is further divided in to two parts, Arithmetic unit & Logical unit.

ARITHMETIC UNIT:

The arithmetic unit of ALU performs arithmetic operations like addition, multiplication, subtraction and division.

LOGICAL UNIT:

The Logical unit of ALU performs logical operations such as comparison of two numbers. It tells us which number is greater and which is smaller. The common comparisons such as less than, equal to, or greater than are performed by the logical unit.

REGISTERS:

A processor has its own memory inside it in the shape of small cells. Each memory cell is called a "Register". Registers are used to carry data temporarily for performing operations. There are total 13 registers in a processor. ALU gets data from registers and stores it in registers to perform arithmetic and logical operations. And data comes in registers from main memory of the computer.

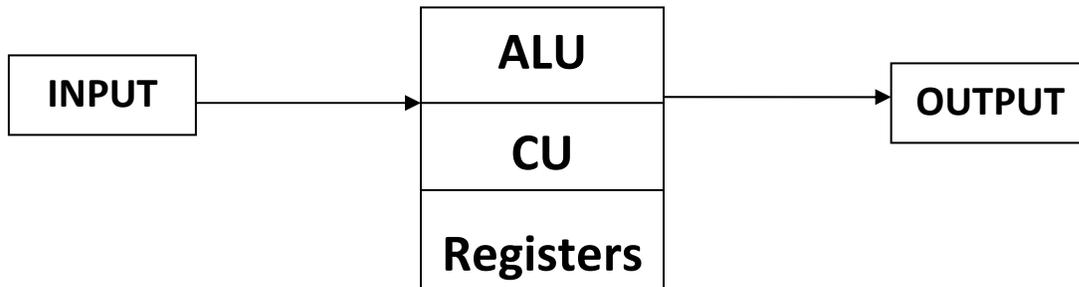
2) CONTROL UNIT

This unit of the processor controls all the activities of the processor and also controls the input and output devices of the computer. It acts just like a police inspector who controls the traffic on a road.

The control unit controls the whole traffic of the computer. It tells the input device that it is now his turn to feed data in the computer and show result of data after execution on the output units. This unit also controls the flow of instructions, which are given to a computer.

It obtains instructions from the program stored in main memory, interprets (translation of instructions into computer language) the instructions, and issues signals that cause other units of the computer to execute them

WORKING COLLECTING



4.3) PRIMARY MEMORY

The primary memory or the main memory is part of the main computer system. The processor or the CPU directly stores and retrieves information from it. This memory is accessed by CPU, in random fashion. That means any location of this memory can be accessed by the CPU to either read information from it, or to store information in it.

There are two types of memory CPU

1. RAM
2. ROM

1) RANDOM ACCESS MEMORY (RAM)

RAM is used to store programs and data that are being used by the computer. When the computer is turned on the RAM is empty. Data and programs can be put into RAM from either an input device or backing store.

The data in RAM is lost when the computer is turned off so it is known as **Volatile Memory**. To keep data the user must save it to backing store before the computer is turned off.

RAM is further divided in to two types

- DRAM (Dynamic Random access Memory)
- SRAM (Static Random access Memory)



DRAM

DRAM stands for Dynamic RAM. A type of physical memory used in most personal computers. The term *dynamic* indicates that the memory must be constantly *refreshed* (reenergized) or it will lose its contents. RAM is sometimes referred to as *DRAM* (pronounced **dee-ram**) to distinguish it from *static RAM* (*SRAM*). Static RAM is faster and **less volatile** than dynamic RAM, but it requires more power and is more expensive.

SRAM

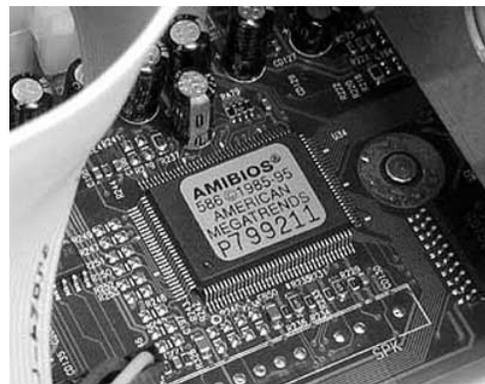
SRAM stands for Static RAM. Short for *static random access memory*, and pronounced **ess-ram**. SRAM is a type of memory that is faster and more reliable than the more common DRAM

(dynamic RAM). The term *static* is derived from the fact that it doesn't need to be refreshed like dynamic RAM

2) READ ONLY MEMORY (ROM)

The contents of ROM are permanent. It cannot be altered by the user. The content is written onto the ROM when it is first made. ROM keeps its contents even when the computer is turned off and so is known as **Non-Volatile Memory**.

On some computers a special piece of software called the operating system is stored in ROM. ROM is also often used in embedded systems where a small built-in computer is used to control a device such as a washing machine. The program that controls the machine is stored on ROM.



TYPES OF ROM

ROM is further divided into three types

- PROM (Programmable Read-Only Memory)
- EPROM (Erasable Programmable Read-Only Memory)
- EEPROM (Electrically Erasable Programmable Read-Only Memory)

PROM

PROMs are manufactured as blank chips on which data can be written with a special device called a PROM programmer.

EPROM

A rewritable memory chip that holds its content without power. EPROM chips are written on an external programming device before being placed on the mother board.

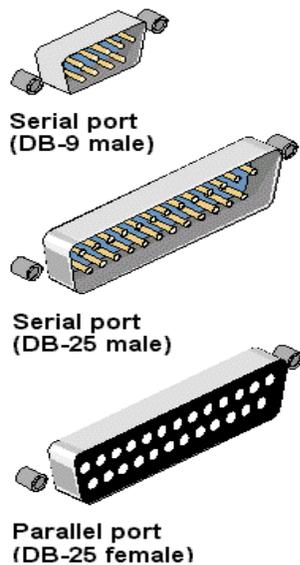
EEPROM

A rewritable memory chip that holds its content without power. EEPROMs are typically used on circuit boards to store small amounts of instructions and data.

4.4) PORTS & CONNECTORS

A personal computer may have several **ports** for connecting devices such as a trackball, expanded keyboard, flatbed scanner, touch screen, and other device peripherals.

It is wise to check what type of port an adaptive device requires to interface with the personal computer. Some computers have many ports, and others may only have a select few of the ports below.



TYPES OF PORTS:

There are two types of ports

- Serial port
- Parallel port

SERIAL PORT:

Serial ports can transfer one bit at a time. A serial communication physical interface through which information transfers in or out one bit at a time.

Throughout most of the history of personal computers, data transfer through serial ports connected the computer to devices such as terminals and various peripherals.

This type of transmission medium is slow as it transmit one bit at a time. It can connect main peripherals of system unit. Like mouse, keyboard etc.



(Serial port connector and port)

PARALLEL PORT:

Parallel port can transfer more than one bit at a time. A **parallel port** is a type of interface found on computers for connecting various peripherals.

In computing, a parallel port is a parallel communication physical interface. It is also known as a **printer port** or **Centronics port**.

The IEEE 1284 standard defines the bi-directional version of the port, which allows the transmission and reception of data bits at the same time. It is faster than parallel port as it transfer more than one bit simultaneously

(Note: Bit will be describe in next chapters)



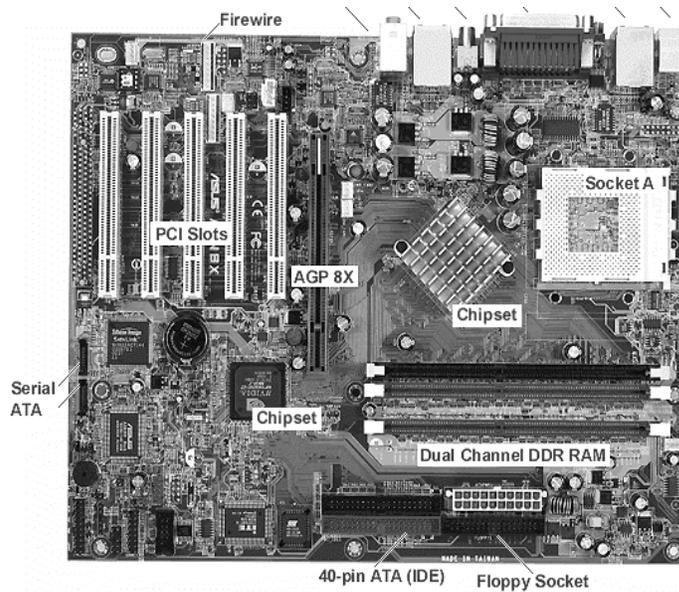
4.5) EXPANSTION SLOTES & ADAPTOR CARDS

Expansion slot is an opening, or socket, where circuit board is inserted into motherboard.

Expansion card inserted in expansion slot. Plug and Play was a much-touted feature of the Windows 95 and Windows 98 operating systems.

A PC Card slot, usually located on the side of a notebook computer, allows a PC Card to be changed without having to open the system unit. There are three types of PC Cards:

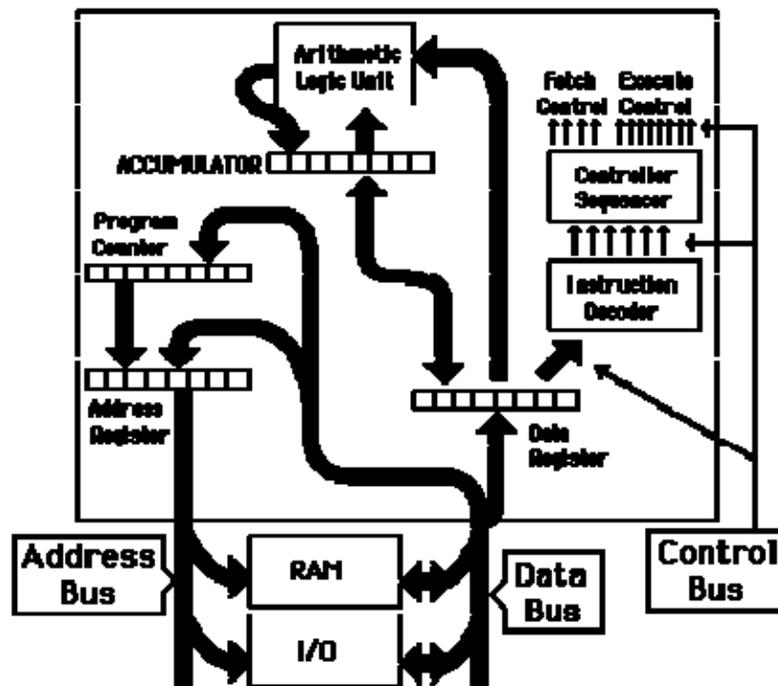
- **Type I cards** add memory capabilities to the computer
- **Type II cards** contain communications devices
- **Type III cards** house devices such as hard disks



4.6) BUSES

A highway analogy can help clarify how bus width affects the speed of data transfer. Data moves like cars – the more lanes (greater the bus width) the faster the traffic (data) flow. Ideally, buses used to transfer data should be large enough to use the processing power of registers. Sometimes, however, manufacturers reduce bus size to cut costs.

Word size, which indicates the number of bits processed in each machine cycle, has been compared to the amount of coffee produced with each turn of a coffee grinder's handle. Theoretically, if word size doubles then processor throughput also could double.



TYPES OF BUSES

- System bus
- Expansion bus

SYSTEM BUS

System bus connects processor and RAM. It is also called internal bus. It is subdivided into two types:

1. Address bus
2. Data bus

ADDRESS BUS

The address bus is a unidirectional pathway that carries addresses generated by the microprocessor to the memory and I/O elements of the computer. The size of the address bus, determined by the number of conductors in the bus, determines the number of memory locations and/or I/O elements the microprocessor can address.

DATA BUS

In contrast to the address bus, the data bus is bi-directional in nature. Data flows along the data bus from the microprocessor to memory during a Write operation. Conversely, data moves from memory to the microprocessor during a Read operation. The direction for data movement is the same for Read and Write operations between the microprocessor and Input/Output devices.

EXPANSION BUS

The expansion bus (sometimes called the *input/output bus*) allows various motherboard components (USB, serial, and parallel ports, cards inserted in PCI connectors, hard drives, CD-ROM and CD-RW drives, etc.) to communicate with one another. However, it is mainly used to add new devices using what are called expansion slots connected to the input/output bus.

4.7) POWER SUPPLY

It supplies electric supply to all components of system unit. It converts alternating current (AC) to direct current (DC). It is responsible for supply of power to all components according to its

Chapter No 4: Components of Computer-System Unit

voltage. Min voltage which power supplied is 3V and convert to 24 V. Some peripheral devices have AC adapterlike printers and scanners.

Chapter No 4

COMPONENTS OF COMPUTER

SYSTEM UNIT

REVISION:

Components of computer: Input, Output, CPU

System Unit: System unit is a case that contains all components which are very important for the processing of data.

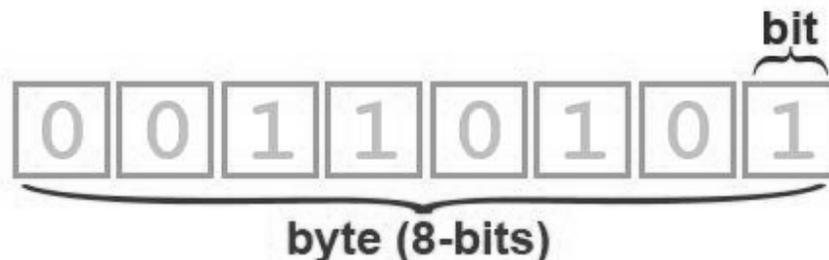
Component of System Unit: Mother Board, CPU, Primary Memory, Ports & connectors, Expansion slots & Adaptor Cards, Buses, Power supply

WHAT IS DATA?

“Raw facts, figures, events and transactions are called data”

DATA REPRESENTATION

Most computers are **digital**, meaning they understand only two discrete states: on and off. These states are represented using two digits, 0 (*off*) and 1 (*on*). Each on or off value is called a **bit** (short for **binary digit**), the smallest unit of data a computer can handle. “**Eight bits**” grouped together as a unit form a **byte**. A byte provides enough different combinations of 0s and 1s to represent 256 individual characters including numbers, letters of the alphabet, punctuation marks, and other characters.



The combinations of 0s and 1s used to represent data are defined by patterns called coding schemes.

Popular coding schemes are **ASCII** (American Standard Code for Information Interchange) , EBCDIC, and **Unicode**. Coding schemes make it possible for humans to interact with a digital computer that recognizes only bits. Every character you type on a keyboard is converted into a corresponding byte, a series of on/off electrical states the computer can process.

The common data representation is formed in to following divisions:

NAME	ABBR.	SIZE
1 Nibble	N	4-bits
1 byte	B	8-bits
1 kilo byte	K	$2^{10}=1024$ bytes
1 Mega byte	M	$2^{20}=1,048,576$
1 Giga Byte	G	$2^{30}=1,073,741,824$
1 Tera Byte	T	$2^{40}=1,099,511,627,776$

WHAT IS BINARY?

The binary numbering system is used by today's computers due to its simplicity in electronic circuitry. Computer only work with two digits - 1 representing "on", and 0 representing "off" (or 1 and 0 representing "yes" or "no").



HOW TO MAKE BINARY

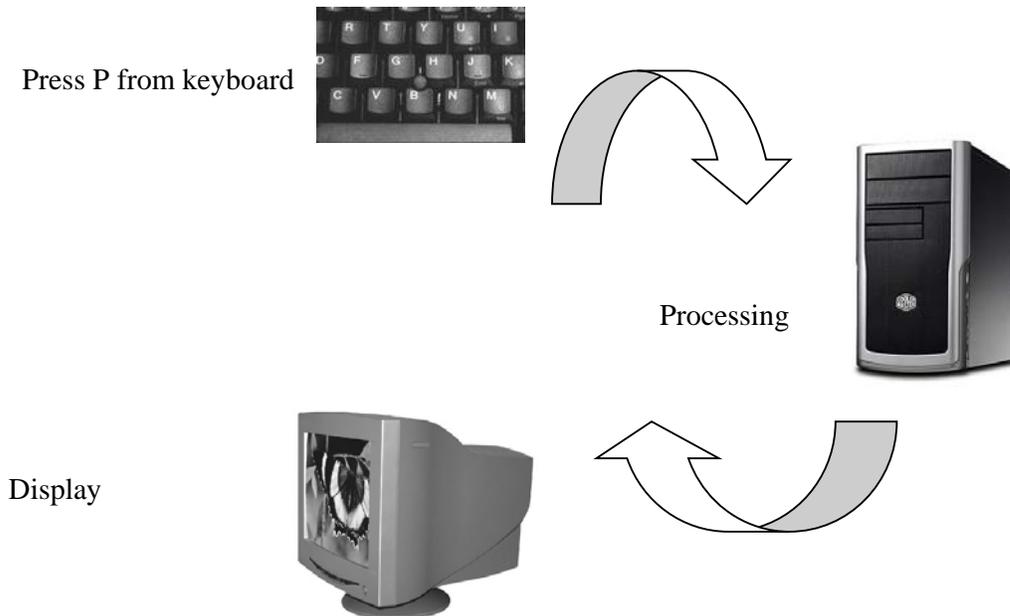
We can convert decimal function in to binary by following technique:

Example: if we want to convert 156 in to binary then we will divide it by 2.

$$\begin{array}{r} 2 \overline{)156} \quad 0 \\ \underline{2)78} \quad 0 \\ \underline{2)39} \quad 1 \\ \underline{2)19} \quad 1 \\ \underline{2)9} \quad 1 \\ \underline{2)4} \quad 0 \\ \underline{2)2} \quad 0 \\ \underline{2)1} \quad 1 \\ 0 \end{array}$$

HOW IS A LETTER REPRESENTED IN SYSTEM PROCESSING?

Data is represented in system by a life cycle defined below:



WHAT IS STORAGE?

A *Storage Medium* (media is the plural) is the physical material on which items are kept. A **storage device** is the computer hardware that records and retrieves items to and from a storage medium. Storage devices can function as sources of input and output.

When storage devices transfer items from a storage medium into memory – a process called **reading** – they function as sources of input. When storage devices transfer items from memory to a storage medium – a process called **writing** – they function as sources of output. Types of storage media include floppy disks, hard disks, compact discs, tape, PC Cards and microfilm etc.

DIFFERENCE B/W MEMORY & STORAGE MEDIUM

Memory, which is composed of one or more chips on the motherboard, is a temporary holding place for data and instructions during processing. The contents of **volatile memory**, such as RAM, are lost when the power to the computer is turned off.

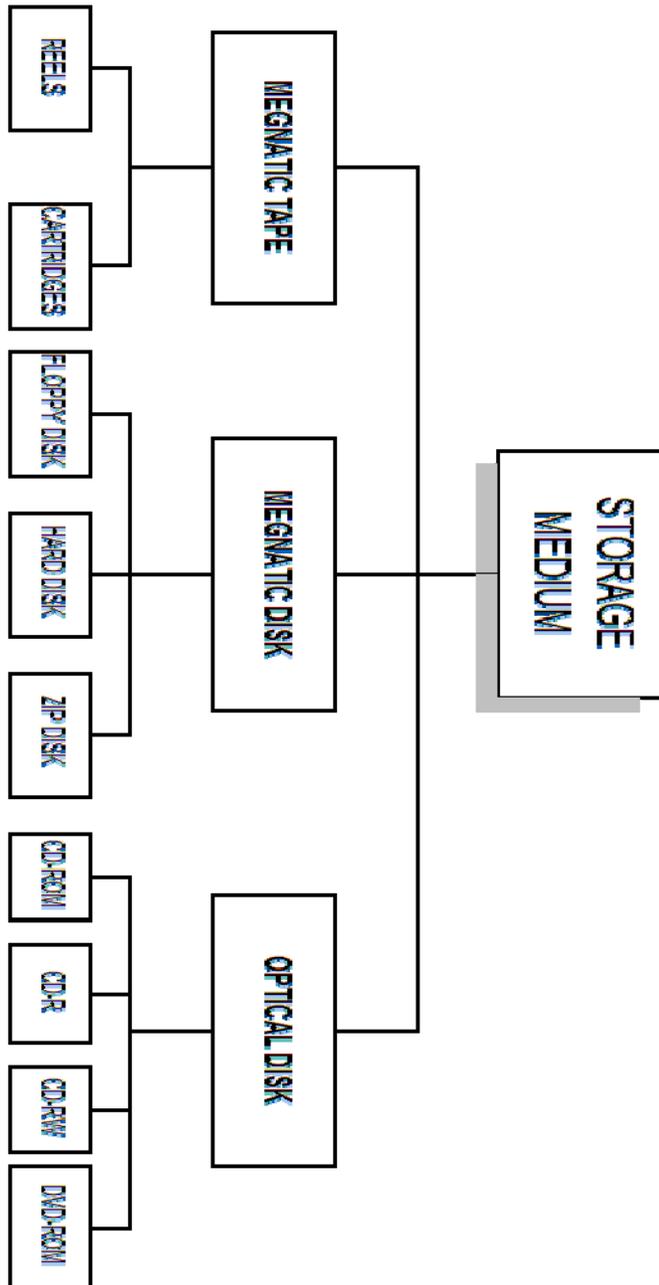
The contents of **nonvolatile memory**, such as ROM, are not lost when power is removed from the computer.

Storage holds items such as data, instructions, and information for future use; that is, storage holds these items while they are not being processed. Storage is nonvolatile, which means the items in storage are retained even when power is removed from the computer. Compared to memory, the **access time** (the time it takes to locate a single item) for storage is slow.

TYPES OF STORAGE MEDIUM

Storage medium is further divided in to three important forms.

1. Magnetic Tapes
2. Magnetic Disks
3. Optical Disks



1) MAGNETIC TAPE

Magnetic tape was developed in the mid-1950s to replace the earlier method of storing data on punched cards. To better understand the difference between sequential access and direct access (or random access), compare an audio cassette tape to a CD-ROM. An audio cassette tape is sequential; to listen to the fourth song it is necessary to listen to (or fast-forward through) the first three songs.

With tape backup, you can press a key; go about other business, and return to remove the finished backup tape.

TYPES OF MAGNETIC TAPE:

Magnetic tape comes in two different forms:

1. Reels
2. Cartridges

REELS:

Large reels of tape (1/2 inch wide and 2400 feet long) which must be loaded into a reel-to-reel tape drive. This type of tape is usually used by mainframe computers.



CARTRIDGES:

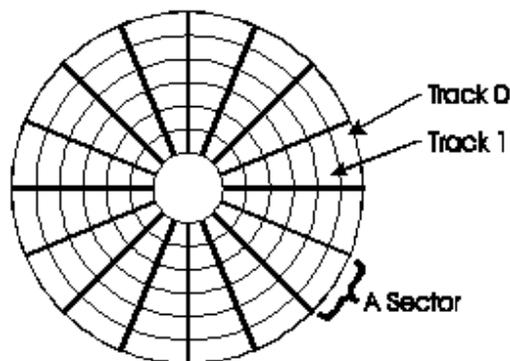
The tape is supplied in a small cartridge rather like a music tape. The tape is typically 1/4 inch wide and 300 feet long. This type of tape is used on PCs (microcomputers) and the device used to read/write the tapes is called a **Tape Streamer**.

The picture below is of a tape streamer for a PC. Capacities of cartridges vary from 80Mb to 10Gb. Tape cartridges can be purchased formatted or unformatted. One-quarter-inch wide cartridge tapes typically are 600 feet long. Unattended tape backup is a great time saver.

2) MAGNETIC DISKS

Magnetic Disks are the most common storage device. Data is stored using magnetized spots called **domains** on the disk. A 3.5" 1.44Mb floppy disk used on a PC contains 16,777,216 such spots. A 3.5" 1Gb hard disk drive contains over a billion spots.

Data stored on disks is arranged along a series of concentric rings called **Tracks**. Each track is divided up into a number of **Sectors**. Data is read to and written from a disk one sector at a time. A sector usually contains 512 or 1024 bytes of data.



The process of dividing a disk up into tracks and sectors so it can be used on a computer is known as **formatting**. You must format a new disk before you can use it.

Data is read from the disk using a **disk head** which moves mechanically about the disk (rather like a record player tone arm). The disk head can move directly to any sector on the disk. Because of this a computer system can load a file or a record from a file very quickly. The system can move directly to the location of the record/file and read it without having to read any other data from the disk. This is known as **direct access**. For most applications using a direct access medium is much faster than using a serial access medium.

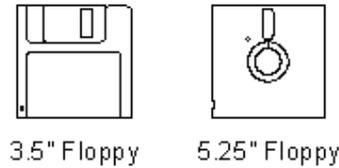
TYPES OF MEGNATIC DISK

The three main types are:

1. Floppy disks
2. Magnetic disks
3. Hard disks

FLOPPY DISK

Floppy disks are portable (can be moved between computers) but have a small storage capacity. Reading and writing data from a floppy disk is very slow. The most common type of floppy disk is the 3.5" disk that can store 1.44Mb of data when it is used on a PC. Older disks were 5.25" or 8" in size but could store much less data.



A floppy disk is manufactured from a flexible plastic disk. This disk is coated with a magnetisable material. For protection the disk is encased in a plastic shell. All sizes of floppy disk have a write protect tab built into the shell. If this tab is set then data can be read from the disk but not written to it. The write protect tab can be used to prevent important data being deleted or changed accidentally.



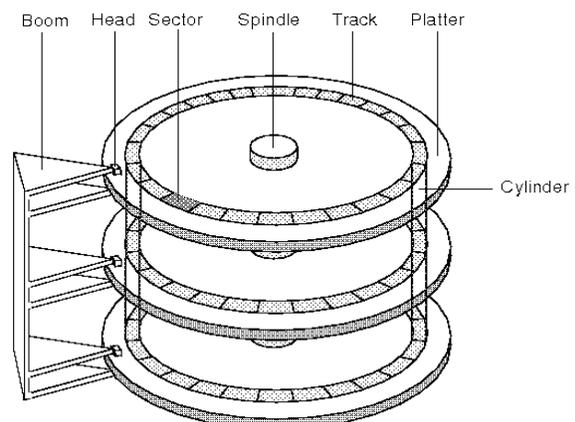
HARD DISK

Hard disks have much larger storage capacities than floppy disks. Data can be transferred to and from a hard disk much more quickly than from a floppy disk. Hard disks are usually fixed inside a computer and cannot be moved between different machines. Some expensive hard disks can be moved between computers. These are called **Exchangeable Hard Drives**.

A hard disk is made of a rigid disk which is coated with a magnetisable material. The magnetic material used is of a much higher quality than that found on floppy disks. Hard disks spin much more quickly than floppy disks and the disk head is positioned very close to the disk (thousandths of a millimeter away).

Because the disk head is positioned so close to the disk hard drives can easily be damaged by dust or vibration. Therefore the disk, the drive head and all the electronics needed to operate the drive are built together into a sealed unit.

This picture shows a hard disk drive with the case removed.





Usually (as in the picture above) several physical disks are contained in one hard disk unit. Each disk is known as a **platter**. Typical hard disk capacities for a home PC now start at 1Gb and units storing up to 16Gb are available.

If larger storage capacities are required then multiple hard drives can be combined. Using appropriate hardware or software many hard disks can be made to look like one very large hard disc to the user.

ZIP DISK

The **Zip drive** is a high-capacity disk drive that uses a Zip disk. The **Zip disk** is larger and thicker than a 3.5-inch floppy disk and can store 100 MB or 250 MB of data. The **Zip drive** is a medium-capacity removable disk storage system, introduced in late 1994. Originally, Zip disks launched with capacities of 100 MB, but later versions increased this to first 250 MB and then 750 MB.



The format became the most popular of the super-floppy type products which filled a niche in the late 1990s portable storage market. However it was never popular enough to replace the 3.5-inch floppy disk nor could ever match the storage size available on rewritable CDs and later rewritable DVDs. USB flash drives

3) OPTICAL DISK

Optical disks store data by changing the reflective properties of a plastic disk. Binary computer data (0s and 1s) are represented by the way the disk reflects light when a low power laser is shown at it. A 0 stored on a disk reflects light differently to a 1 stored on a disk. Like floppy disks, optical disks can be moved from one computer to another.

They have much larger storage capacities than floppy disks but cannot store as much data as a hard disk. Data can be read from an optical disk more quickly than from a floppy disk but hard disks are much quicker. As with a hard disk the drive head in an optical drive can move directly to any file on the disk so optical disks are **direct access**.

There are four types of optical disks that are currently in use. They are:

1. CD-ROM
2. CD-R
3. CD-RW
4. DVD



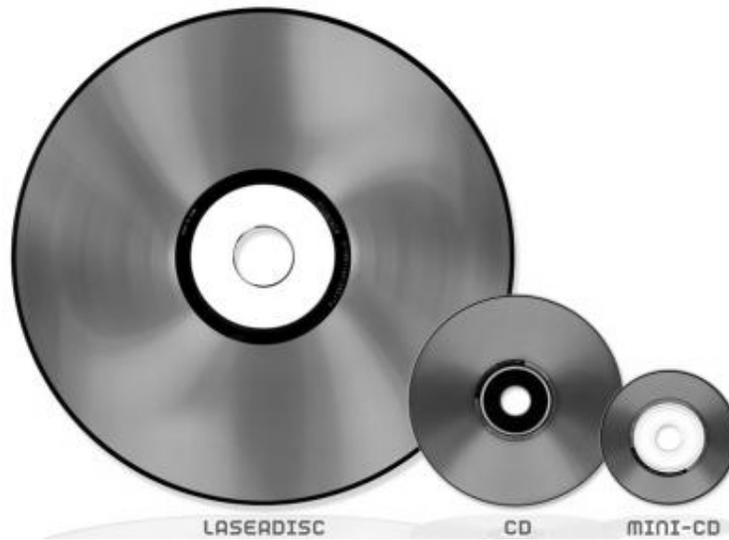
CD-ROM

CD ROM stands for **Compact Disk - Read Only Memory** This is by far the most widely used type of optical disk. A CD-ROM disk can store up to 650Mb of data. The data is written onto the CD-ROM disk before it is sold and cannot be changed by the user. Because of this CD-ROMs are often described as **Write Once Read Many times (WORM) disks**. CD-ROMs are used for applications such as distributing software, digital videos or multimedia products.

CD-R

CD-R stands **Compact Disc – Recordable**. CD-R disk can store up to 650Mb of data. A CD-R disk is blank when it is supplied. The user can write data to it just once. After data has been written to the disk it can not be changed. A special CD-R drive which contains a higher powered laser than a CD-ROM drive is required to write to the disk. CD-Rs are often used for

making permanent backups of data and distributing software when only a small number of copies are required.



CD-RW

A CD-RW stands for **Compact Disc - Read / Write**. The disk can store up to 650Mb of data. CD-RW disks can be read from and written to just like a hard disk. CD-RWs can be used for any application that a hard disk can be used for but the time taken to access data is much longer than that for a hard disk.

DVD

DVD stands for **Digital Versatile Disk or Digital Video Disk**. This new standard for optical disks. By using a shorter wavelength laser, storing data on both sides of the disk and having more than one layer of data on each side of a disk DVD disks are able to store much more data than CD disks.

The DVD standard includes disk capacities up to 18Gb. Current DVD disks store far less than this. There are two types of DVD disks. DVD-ROM disks can be read from but not written to whilst DVD-RAM disks can be read from and written.

STORAGE CAPACITIES

NAME	STORAGE CAPACITY	PORTABLE
Floppy Disk	1.44Mb	Yes
Hard Disk	200Mb to 20Gb	No
Optical Disk	650Mb	Yes
Magnetic Tape	80Mb to 10Gb	Yes

USB FLASH DRIVE

A **flash drive** is a small external storage device that reads and writes to flash memory, a solid-state storage medium that's both inexpensive and durable. Given that your typical flash drive is the size of an adult's thumb, it's not uncommon to hear of these ubiquitous devices as "thumb drives". Due to their portable nature and near-universal compatibility, flash drives have largely supplanted the floppy diskette as everyone's favorite method for transferring files between multiple computers without the use of a network.

Chapter No 6

HISTORY OF COMPUTER

Computer word is derived from "Computing". As the start of the modern science that we call "Computer Science" can be traced back to a long ago age where man still dwelled in caves or in the forest, and lived in groups for protection and survival from the harsher elements on the Earth.

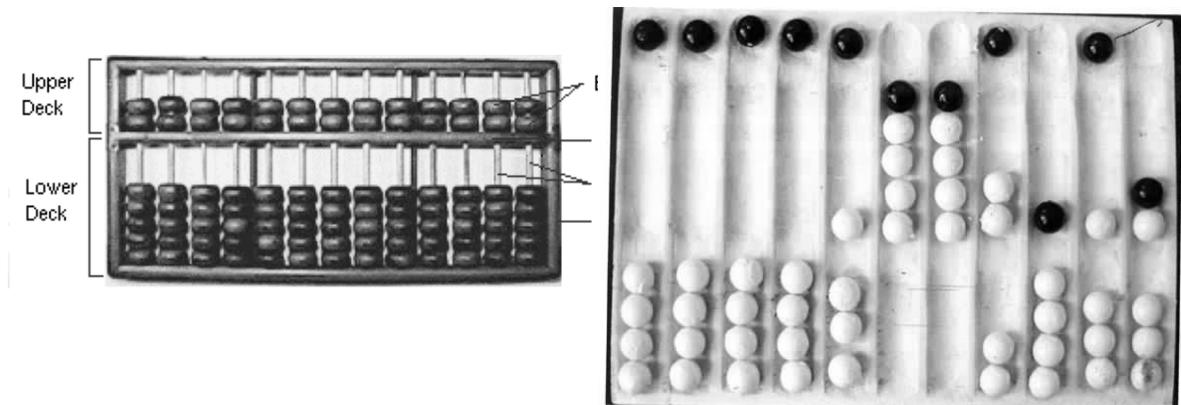
It was a man who decided when to hold both the secret and public religious ceremonies, and interceded with the spirits on behalf of the tribe. In order to correctly hold the ceremonies to ensure good harvest in the fall and fertility in the spring, the shamans needed to be able to count the days or to track the seasons. From the shamanistic tradition, man developed the first primitive counting mechanisms -- counting notches on sticks or marks on walls.

Computing becoming more and more complicated then the first computing device came in to being that is Abacus

ABACUS

The first actual calculating mechanism known to us is the abacus, which is thought to have been invented by the **Babylonians** sometime between **1,000 BC and 500 BC**, although some pundits are of the opinion that it was actually invented by the Chinese.

The word abacus comes to us by way of Latin as a mutation of the Greek word *abax*. In turn, the Greeks may have adopted the Phoenician word *abak*, meaning "sand", although some authorities lean toward the Hebrew word *abhaq*, meaning "dust."



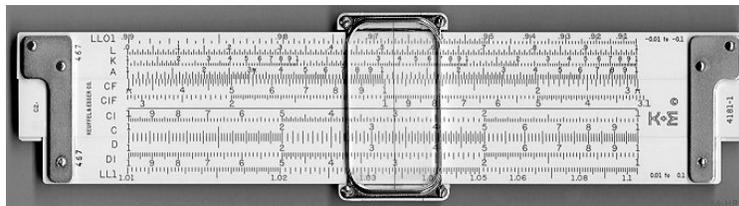
Irrespective of the source, the original concept referred to a flat stone covered with sand (or dust) into which numeric symbols were drawn. The first abacus was almost certainly based on such a stone, with pebbles being placed on lines drawn in the sand. Over time the stone was replaced by a wooden frame supporting thin sticks, braided hair, or leather thongs, onto which clay beads or pebbles with holes were threaded.

A variety of different types of abacus were developed, but the most popular became those based on the bi-quinary system, which utilizes a combination of two bases (base-2 and base-5) to represent decimal numbers. Although the abacus does not qualify as a mechanical calculator, it certainly stands proud as one of first mechanical aids to calculation.

JOHN NAPIER CALCULATING DEVICE(1550-1617):

John Napier developed the logarithms rules which are very useful in mathematics and computer technology. He was a Scottish mathematical scientist. The Logarithm table is designed by Napier as well which make revolutionary change in mathematics and Computing

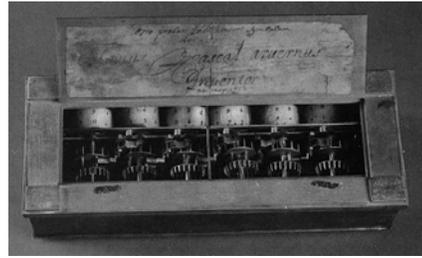
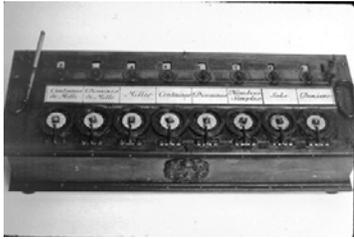
Napier's invention led directly to the *slide rule*, first built in England in 1632 and still in use in the 1960's by the NASA engineers of the Mercury, Gemini, and Apollo programs which landed men on the moon. This slide rules is used to take sin, cos, tangent and other trigonometric & arithmetic calculation.



BLASÉ PASCAL CALCULATING DEVICE(1623-1662):

In 1642 Blasé Pascal, at age 19, invented the *Pascaline* as an aid for his father who was a tax collector. Pascal built 50 of this gear-driven one-function calculator (it could only add) but couldn't sell many because of their exorbitant cost and because they really weren't that accurate (at that time it was not possible to fabricate gears with the required precision).

Up until the present age when car dashboards went digital, the odometer portion of a car's speedometer used the very same mechanism as the Pascaline to increment the next wheel after each full revolution of the prior wheel. Pascal was a child prodigy. At the age of 12, he was discovered doing his version of Euclid's thirty-second proposition on the kitchen floor. Pascal went on to invent probability theory, the hydraulic press, and the syringe. Shown below is an 8 digit version of the Pascaline, and two views of a 6 digit version:



POLYMATH GOTTFRIED LEIBNIZ CALCULATING DEVICE (1646-1716):

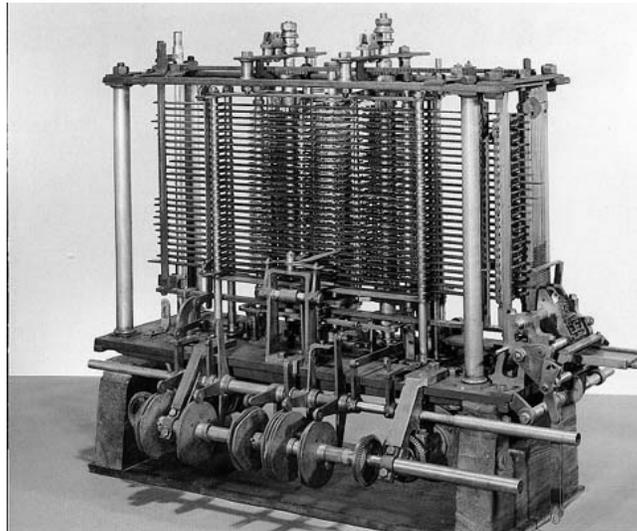
The great polymath Gottfried Leibniz was one of the first men, who dreamed for a logical (thinking) device. Even more Leibniz tried to combine principles of arithmetic with the principles of logic and imagined the computer as something more of a calculator—as a *logical or thinking machine*.

He discovered also that computing processes can be done much easier with a binary number coding. He even describes a calculating machine which works via the binary system: a machine without wheels or cylinders—just using balls, holes, sticks and canals for the transport of the balls.



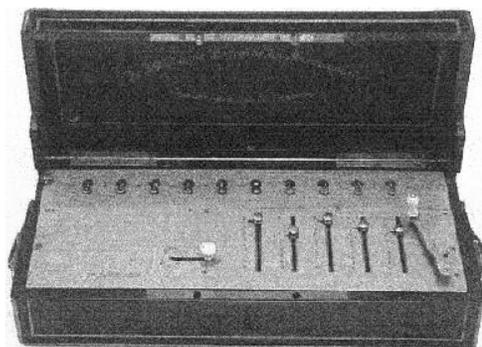
JOSEPH MARIE JACQUARD CALCULATING DEVICE (1752-1834):

Joseph Marie Jacquard (1752-1834) was a French silk weaver and inventor, who improved on the original punched card design of Jacques de Vaucanson's loom of 1745, to invent the Jacquard loom mechanism in 1804-1805. Jacquard's loom mechanism is controlled by recorded patterns of holes in a string of cards, and allows, what is now known as, the Jacquard weaving of intricate patterns.



CHARLES XAVIER CALCULATING DEVICE (1785-1870):

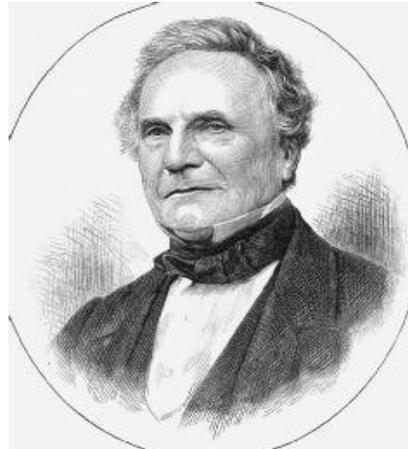
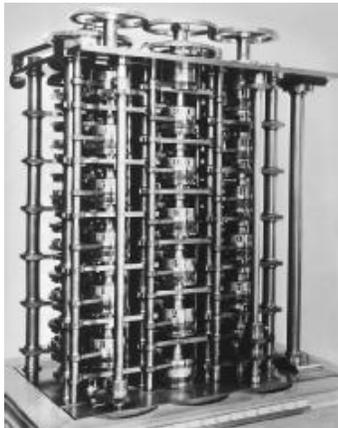
Charles Xavier Thomas de Colmar invented the first calculating machine to be produced in large numbers. This invention came about in France in 1820 as part of a national competition and the machine was called the **Arithmometer**.



The Arithmometer was essentially an early and large version of a pocket **calculator** (occupying the best part of a desk), and by 1845 there was a large, commercially successful industry involved in the manufacture of these machines.

CHARLES BABBAGE CALCULATING DEVICE (1791-1871):

The first glimmer of a "thinking machine" came in the 1830s when British mathematician Charles Babbage envisioned what he called the analytical engine. Charles Babbage is considered as "*Father Of Computing*". Babbage was a highly regarded professor of mathematics at Cambridge University when he resigned his position to devote all of his energies to his revolutionary idea.



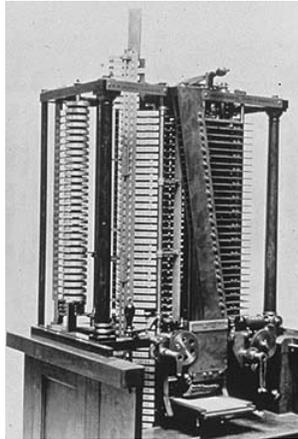
In Babbage's time, the complex mathematical tables used by ship's captains to navigate the seas, as well as many other intricate computations, had to be calculated by teams of mathematicians who were called computers.

No matter how painstaking these human computers were, their tables were often full of errors. Babbage wanted to create a machine that could automatically calculate a mathematical chart or table in much less time and with more accuracy.

His mechanical computer, designed with cogs and gears and powered by steam, was capable of performing multiple tasks by simple reprogramming—or changing the instructions given to the computer.

LADY AUGUSTA ADA (1816-1852):

Lady Augusta Ada is mainly known for having written a description of Charles Babbage's early mechanical general-purpose computer, the analytical engine. Ada was a US governmental developed programming language. The standard was originally known as Ada83, but this is now obsolete, as it was recently "overhauled" and re-born as Ada95. This is now the preferred standard and implementation of the Ada programming language.



HERMAN HOLLERITH (1860-1929):

Herman Hollerith developed in 1890 the punched card system to store data. The punched card system was an important movement in the development of the computer. His idea was totally different from the principle already known by Babbage or by Colmar. He used the working method of a punch cutter on the train. His calculator was so successful that he started his own business to sell his product. Later the company was called International Business Machines (IBM). However the original cards could not be used for complicated calculations.



ATANASOFF BERRY COMPUTER:

Atanasoff Berry Computer is the name given, long after the fact, to an experimental machine for solving systems of simultaneous linear equations, developed in 1938-42 at Iowa State University by Dr. John Vincent Atanasoff and Clifford E. Berry. It is sometimes referred to by its initials, ABC.

The Atanasoff-Berry Computer, constructed in the basement of the Physics building at Iowa State University, took over two years to complete due to lack of funds. The prototype was first demonstrated in November of 1939. The computer weighed more than seven hundred pounds (320 kg). It contained approximately 1 mile (1.6 km) of wire.



GEORGE BOOLE INVENTION (1847):

English mathematician George Boole sets up a system called Boolean algebra,, wherein logical problems are solved like algebraic problems. Boole's theories will form the bedrock of computer science.

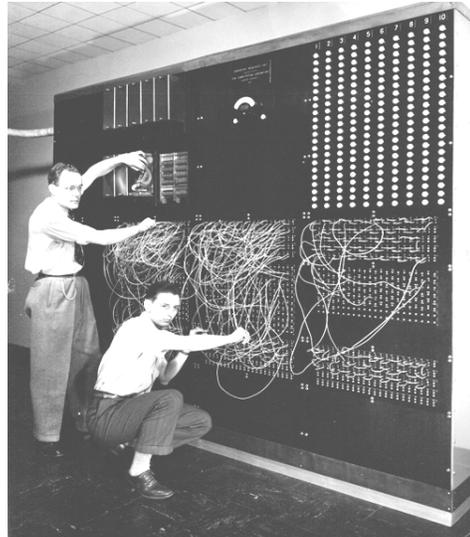


The creation of an algebra of symbolic logic was the work of another mathematical prodigy and British individualist. . As Bertrand Russell remarked seventy years later, Boole invented pure mathematics. The design of circuits is arranged by logical statements and these statements return Zero (0) or one (1). This is called binary language.

MARK-I, ASCC (1944):

The Harvard Mark I designed primarily by Prof. Howard Aiken launches today's computer industry. The Mark I is the world's first fully automatic computer and the first machine to fulfill Babbage's dream. **1945**

A programmable, electromechanical calculator designed by professor Howard Aiken. Built by IBM and installed at Harvard in 1944, it strung 78 adding machines together to perform three calculations per second. It is also known as **ASCC** (Automatic Sequence Controlled Calculator). It was 51 feet long, weighed five tons and used paper tape for input and typewriters for output. Made of 765,000 parts, it sounded like a thousand knitting needles. The Mark I worked in decimal arithmetic, not binary, but it could go for hours without intervention.

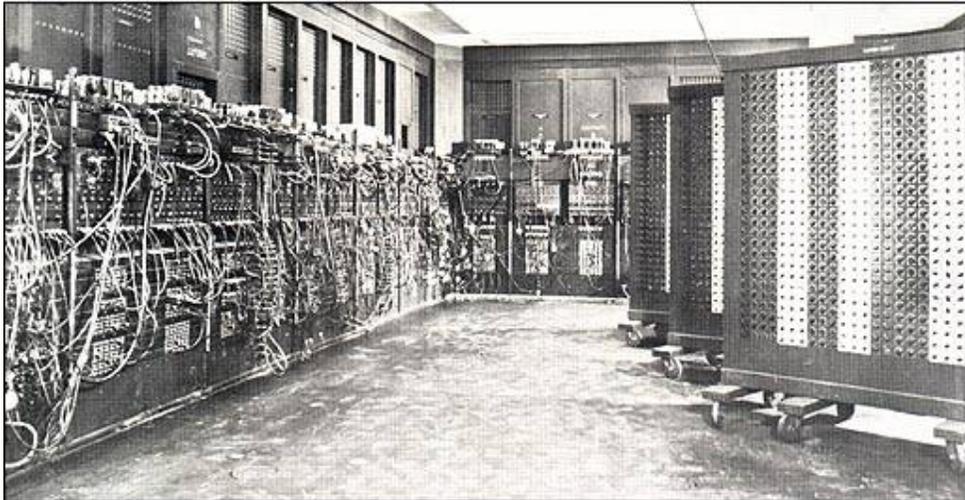


ENIAC (1943-1946):

ENIAC stands for **Electronic Numerical Integrator and Computer**. The first operational electronic digital computer developed for the U.S. Army by J. Presper Eckert and John Mauchly at the University of Pennsylvania in Philadelphia. Started in 1943, it took 200,000 man-hours and nearly a half million dollars to complete two years later.

Programmed by plugging in cords and setting thousands of switches, the decimal-based machine used 18,000 vacuum tubes, weighed 30 tons and took up 1,800 square feet. It cost a fortune in electricity to run; however, at 5,000 additions per second,

It was faster than anything else. Initially targeted for trajectory calculations, by the time it was ready to go, World War II had ended. Soon after, it was moved to the army's Aberdeen Proving Grounds in Maryland where it was put to good work computing thermonuclear reactions in hydrogen bombs and numerous other problems until it was dismantled in 1955.



ENVAC (1946-1952):

In 1944, while working as a research associate at the Moore School, Dr John Von Neumann worked on the **EDVAC (Electronic Discrete Variable Automatic Computer)**, greatly advancing the functions of its predecessor. Completed in 1952, EDVAC had an internal memory for storing programs, used only 3,600 vacuum tubes, and took up a mere 490 square feet (45 sq. m).

He undertook a study of computation that demonstrated that a computer could have a simple, fixed structure, yet be able to execute any kind of computation given properly programmed control without the need for hardware modification.

Von Neumann contributed a new understanding of how practical fast computers should be organized and built; these ideas, often referred to as the stored-program technique, became fundamental for future generations of high-speed digital computers and were universally adopted.

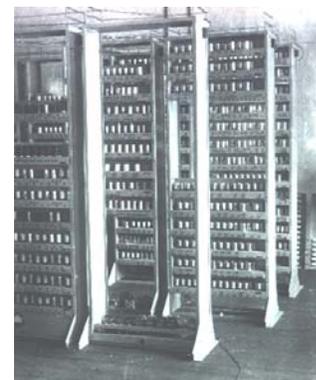


EDSAC (1946-1952):

EDSAC stands for **Electronic Delay Storage Automatic Calculator**, was an early British computer. The machine, having been inspired by John von Neumann's seminal EDVAC report, was constructed by Professor **Sir Maurice Wilkes** and his team at the University of Cambridge Mathematical Laboratory in England.

EDSAC was the world's first practical stored program electronic computer, although not the first stored program computer (that honor goes to the Small-Scale Experimental Machine).

The project was supported by J. Lyons & Co. Ltd., a British firm, who were rewarded with the first commercially applied computer, LEO I, based on the EDSAC design. EDSAC ran its first programs on May 6, 1949, calculating a table of squares and a list of prime numbers.

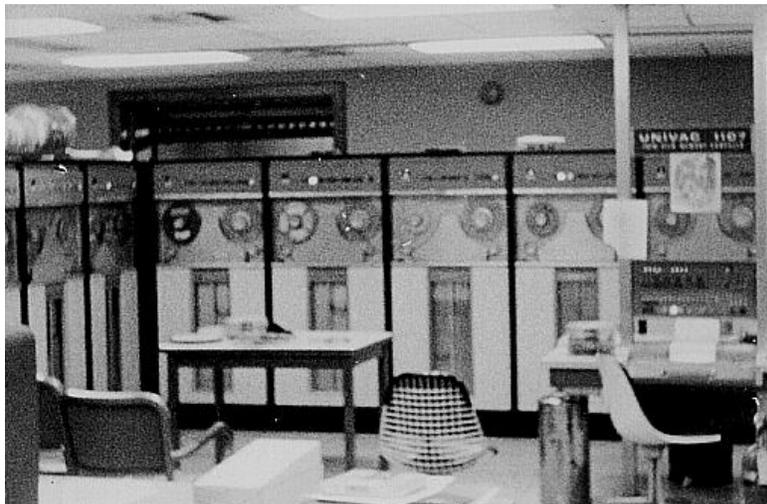


UNIVAC-I (1951):

UNIVAC I. First-generation computer was characterized by a very prominent feature on the ENIAC, vacuum tubes. Until the year 1950, several other computers using these tubes, each computer provides significant advances in computer development. Development includes arithmetic binary, random access, and the concept of stored programs.

1951 The U.S. Bureau of Census in 1951 installed the first commercial computer called the Universal Automatic Computer – UNIVAC I. UNIVAC I developed by Mauchly and Eckert for the Remington-Rand Corporation.

The first IBM products are sold in the market is the IBM 701 in 1953. Remarkably, the IBM 650 was introduced in the next year that may be the reason IBM is a big benefit in the previous year. To get rid of its competitors, the IBM 650 was made in order to upgrade the machine-punched-card machines available. That's because IBM 650 data processing in a way similar to the traditional way of punched-card machines.



GENERATIONS OF COMPUTER

The history of computer development is often referred to in reference to the different generations of computing devices. A generation refers to the state of improvement in the product development process. This term is also used in the different advancements of new computer technology. With each new generation, the circuitry has gotten smaller and more advanced than the previous generation before it.

As a result of the miniaturization, speed, power, and computer memory has proportionally increased. New discoveries are constantly being developed that affect the way we live, work and play.

Each generation of computers is characterized by major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, and more powerful and more efficient and reliable devices.

Read about each generation and the developments that led to the current devices that we use today. The generations which are divided in to fifth categories can be describe as:

Generations	Period	Technology
Early Period	1000 BC-1940	Many As describe in previous Chapter
First Generation	1942-1955	Vacuums Tube
Second Generation	1955-1964	Transistors
Third Generation	1964-1975	Integrated Circuits (ICs)
Forth Generation	Since 1975	Microprocessor/Large Scale Integration
Fifth Generation	Since 1980	Artificial Intelligence

THE EARLY DAYS (1,000 B.C. TO 1940)

Computers are named so because they make mathematical computations at fast speeds. As a result, the history of computing goes back at least 3,000 years ago, when ancient civilizations were making great strides in arithmetic and mathematics. The Greeks, Egyptians, Babylonians, Indians, Chinese, and Persians were all interested in logic and numerical computation. The Greeks focused on geometry and rationality, the Egyptians on simple addition and subtraction, the Babylonians on multiplication and division, Indians on the base-10 decimal numbering system and concept of zero, the Chinese on trigonometry, and the Persians on algorithmic problem solving.

These developments carried over into the more modern centuries, fueling advancements in areas like astronomy, chemistry, and medicine.

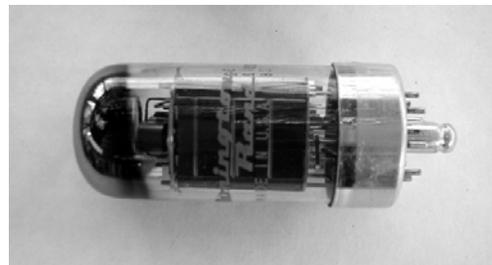
(All other history from abacus to UNIVAC-I describe in previous Chapter)

FIRST GENERATION (1942 - 1955)

The first computers used **vacuum tubes** for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. First generation computers relied on machine language to perform operations, and they could only solve one problem at a time.

The Mark-I, EDSAC, EDVAC, UNIVAC-I and ENIAC computers are examples of first-generation computing devices. It was 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.

Vacuum tubes used to calculate and store information, these computers were also very hard to maintain. First generation computers also used punched cards to store symbolic programming languages. Most people were indirectly affected by this first generation of computing machines and knew little of their existence.



IMPORTANT MACHINES:

Mark-I, EDSAC, EDVAC, UNIVAC-I and ENIAC

ADVANTAGES:

1. After long history of computations, the 1G computers are able to process any tasks in milliseconds.
2. The hardware designs are functioned and programmed by machine languages (Languages close to machine understanding).
3. Vacuum tube technology is very much important which opened the gates of digital world communication.

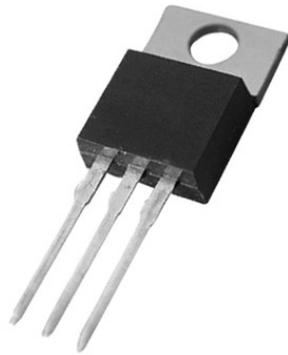
DISADVANTAGES:

1. Size of that machines are very big
2. Required large amount of energy for processing
3. Very expensive
4. Heat generated and need air conditioning.
5. Not portable (never take from one place to other)
6. Comparing with 5G computers, these computers are slow in speed.
7. Not reliable
8. In order to get proper processing, maintenance is required continuously.

SECOND GENERATION (1942 - 1955)

Transistors replaced vacuum tubes and ushered in the second generation computer. **Transistor** is a device composed of semiconductor material that amplifies a signal or opens or closes a circuit. Invented in 1947 at Bell Labs, transistors have become the key ingredient of all digital circuits, including computers. Today's latest microprocessor contains tens of millions of microscopic transistors.

Prior to the invention of transistors, digital circuits were composed of vacuum tubes, which had many disadvantages. They were much larger, required more energy, dissipated more heat, and were more prone to failures. It's safe to say that without the invention of transistors, computing as we know it today would not be possible.



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. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology. The first computers of this generation were developed for the atomic energy industry.

IMPORTANT MACHINES:

IBM 7074 series, CDC 164, IBM 1400 Series.

ADVANTAGES:

1. If we compare it with G1 computer, less expensive and smaller in size.
2. Fast in speed
3. Less heat generated as G1 computers generate more.
4. Need low power consumption
5. Language after machine language for programming, in G2 assembly language (COBOL, FORTRAN) is introduced for programming.
6. Portable.

DISADVANTAGES:

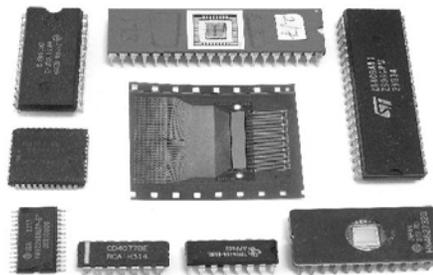
1. Maintenance of machine is required.
2. Air conditioning required still as heat causes to process slowly.
3. These computers are not used as personal system.
4. Preferably used for commercial purposes

THIRD GENERATION (1964 - 1975)

The development of the **Integrated Circuit** was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which 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. Computers for the first time became accessible to a mass audience because they

were
smaller
and
cheaper
than their
predecessors.



IMPORTANT MACHINES:

IBM System/360 & IBM 370, PDP-8, DEC, UNIVAC 1108, UNIVAC 9000.

ADVANTAGES:

1. Smaller in size
2. Low cost then previous
3. Low power consumption
4. Easy to operate
5. Portable
6. Input devices introduced and that make user easy to interact with it like keyboard, mouse etc
7. External Storage medium introduced like floppy & tape.

DISADVANTAGES:

1. IC chips are still difficult to maintain
2. Need complex technology.

FOURTH GENERATION (1975 ONWARDS)

The **Microprocessor** brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand.

The Intel 4004 chip, developed in 1971, located all the components of the computer—from the central processing unit and memory to input/output controls—on a single chip.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers

and into many areas of life as more and more everyday products began to use microprocessors.

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.



IMPORTANT MACHINES:

Intel processors, AMD processor based machines

ADVANTAGES:

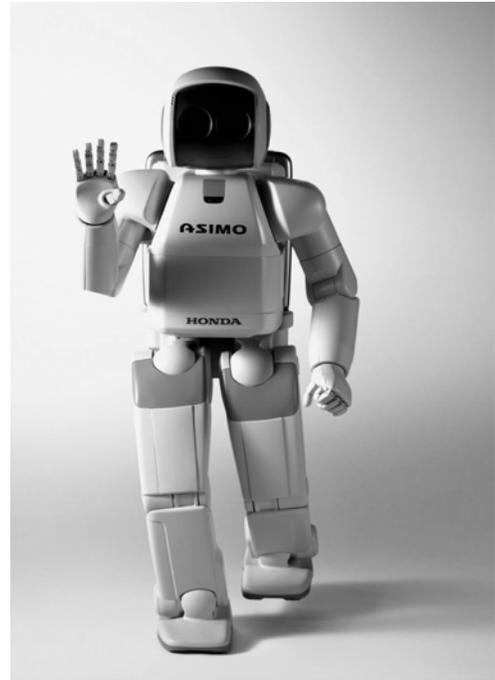
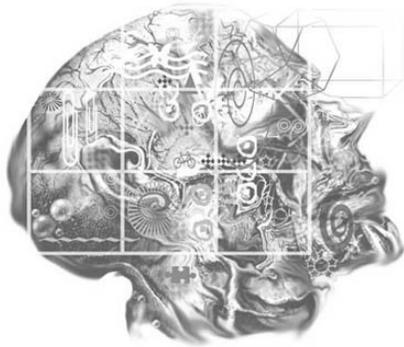
1. Smaller in size
2. High processing speed
3. Very reliable
4. For general purpose
5. More external storage mediums are introduced like CD-ROM, DVD-ROM.
6. GUIs developed for interaction

FIFTH GENERATION (1980 ONWARDS)

Fifth generation computing devices, based on **Artificial Intelligence**, are still in development, though there are some applications, such as voice recognition, that are being used today.

The use of parallel processing and superconductors is helping to make artificial intelligence a reality. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come.

The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.



IMPORTANT MACHINES:

ULAIC Technology, Artificial intelligence etc

PROPERTIES

1. Program independent
 2. Have thinking and analysis by its own
 3. Voice reorganization & biometric devices
 4. Self organization and learning
-

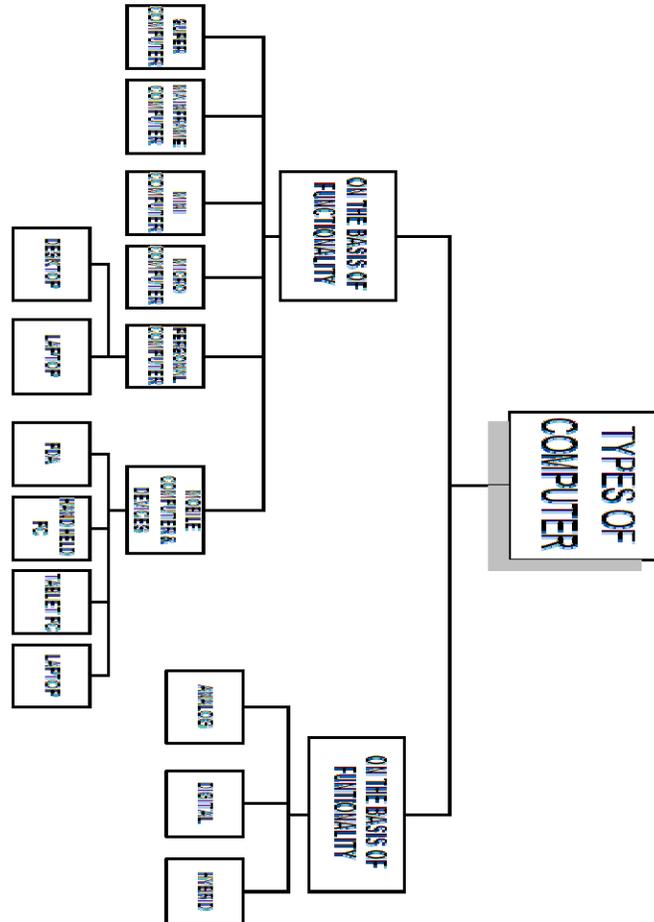
Chapter No 7

TYPES OF COMPUTER

The computer sitting on the desk in your classroom is a microcomputer. It is a small, powerful piece of equipment. Even so, the power of the microcomputer is not enough for most large organizations. The computer industry consists of more than just microcomputers.

Any classification of computers is somewhat arbitrary. Computer can be classified it to following basis defined below.

- On the basis of functionality
- On the basis of Size, Speed and Cost.



ON THE BASIS OF FUNCTIONALITY:

According to functionality computer can be divided in to three types:

1. Analog
2. Digital
3. Hybrid

ANALOG COMPUTERS:

DEFINITION:

- “An analog (spelled analogue in British English) computer is a form of computer that uses the **continuously-changeable** aspects of physical fact such as electrical, mechanical, or hydraulic quantities to model the problem being solved.”
- Analog means **continuity** of associated quantity just like an analog clock measures time by means of the distance traveled by the hand of the clock around a dial.

HISTORY:

Mechanical analog computers were very important in gun fire control in World War II and the Korean War; they were made in significant numbers. In particular, development of transistors made electronic analog computers practical, and before digital computers had developed sufficiently, they were commonly used in science and industry.



EXAMPLES:

- Thermometer
- Analog clock
- Speedometer

- Tire pressure gauge

ADVANTAGES:

- Analog computer has come to refer to
 - devices and media that represent
 - Store images
 - Sound, motion pictures, etc.

DISADVANTAGES:

- Analog computers can have a very wide range of complexity.
- Slide rules and monographs are the simplest, while naval gun fire control computers and large hybrid digital/analogue computers were among the most complicated.
- Very complicated for containing output for the users some time.

DIGITAL COMPUTERS:

DEFINITION:

- “A computer that performs calculations and logical operations with quantities represented as digits, usually in the binary number system of “0” and “1”.
- “Computer capable of solving problems by processing information expressed in discrete form. By manipulating combinations of binary digits (“0”, “1”), it can perform mathematical calculations, organize and analyze data, control industrial and other processes, and simulate dynamic systems such as global weather patterns.”



HISTORY:

In 1937 at Bell Labs, George Stibitz invented the first calculator based on binary circuits to perform complex mathematical formulas.

Steinitz's invention transformed computer science from analog to digital. With the advent of digital technology, scientists could customize a computer's operating functions by developing programming languages.

EXAMPLES:

- IBM PC
- Apple Macintosh
- Calculators
- Digital watches etc

HYBRID COMPUTERS:

DEFINITION:

- “A computer that processes both analog and digital data”.
- “Hybrid computer is a digital computer that accepts analog signals, converts them to digital and processes them in digital form”

A hybrid computer may use or produce analog data or digital data. It accepts a continuously varying input, which is then converted into a set of discrete values for digital processing.

Examples:

- Hybrid computer is the computer used in hospitals to measure the heartbeat of the patient.
- Devices used in petrol pump.
- Hybrid Machines are generally used in scientific applications or in controlling industrial processes.



ON THE BASIS OF SIZE, SPEED AND COST:

We can divide computers on the basis of size cost and speed as:

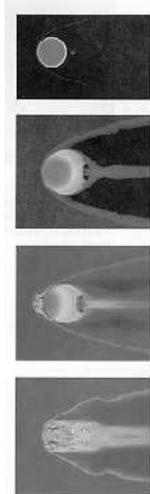
- Super Computer
- Mainframe Computer
- Mini Computer
- Micro Computer

- Personal Computer
 - Desktop computers
 - Laptop /Note Books
- Mobile Computer & Devices
 - PDA
 - Tablet PC
 - Hand Held Computer
 - Laptop/Note Books

SUPER COMPUTER

Supercomputers are the largest, fastest, most powerful, and most expensive computers made. Like other large systems, supercomputers can be accessed by many individuals at the same time. Supercomputers are used primarily for scientific applications that are mathematically intensive. The first supercomputer was built in the 1960s for the United States Department of Defense.

This computer was designed to be the world's fastest and most powerful computer of that time. The commitment to create the fastest, most powerful computer in the world is still the driving force behind the development of supercomputers. Manufacturers produce relatively few of any one model of supercomputer, and they spend millions of dollars on research and development of new machines.



Supercomputers derive much of their speed from the use of multiple processors. **Multiprocessing** enables the computers to perform tasks simultaneously--either assigning different tasks to each processing unit or dividing a complex task among several processing units.

EXAMPLE:

- Cray-1
- Cray-2
- Control Data Cyber 205
- ETA

FEATURES:

- The aerospace, automotive, chemical, electronics and petroleum industries use supercomputers extensively.
- Supercomputers are used in weather forecasting and seismic analysis. They are found in many public and private research centers, such as universities and government laboratories.
- A supercomputer was used to alert scientists to the impending collision of a comet with Jupiter in 1994, giving them time to prepare to observe and record the event.
- The ultra supercomputer will simulate nuclear explosions (eliminating the need to detonate any bombs), model global weather trends, and design power plants.
- Supercomputers can perform at up to 128 gigaflops, and use bus widths of 32 or 64 bits. This capability makes supercomputers suitable for processor-intensive applications, such as graphics.

Note:

The speed of modern supercomputers is measured in nanoseconds and gigaflop. A **nanosecond** is one billionth of a second. A **gigaflop** is one billion floating-point arithmetic operations per second.

MAINFRAME COMPUTER

Mainframe computers are the most powerful computers. A mainframe computer may contain several microprocessors. A single mainframe computer can be used by hundreds of people at once.

Each user has his own **terminal** that is connected to the mainframe. Mainframe computers are usually kept in a special cooled, clean computer room. Minicomputers are medium-sized computers which are more powerful than microcomputers but not as powerful as mainframes.

A mainframe computer system is usually composed of several computers in addition to the mainframe, or host processor.

Host Processor:

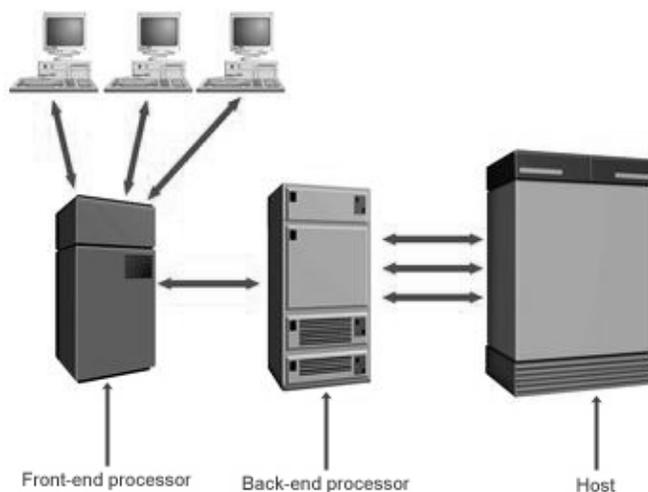
The host processor is responsible for controlling the other processors, all the peripheral devices, and the mathematics operations.

Front End processor:

A front-end processor is responsible for handling communications to and from all the remote terminals connected to the computer system.

Back end Processor:

Sometimes a **back-end processor** is used to handle data retrieval operations. Although the host computer could perform all these operations, it can be used more efficiently if relieved of time-consuming chores that do not require processing speed.



FEATURES:

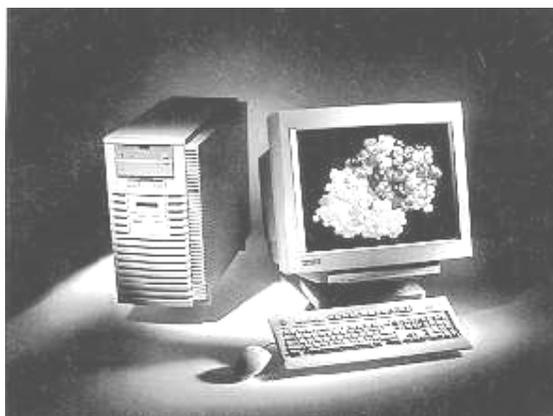
- Mainframe computer systems are powerful enough to support several hundred users simultaneously at remote terminals.
- Mainframe Computers are so much faster than people, the users never notice that the computer is handling other tasks.
- This capability to process many programs concurrently for multiple users is known as multiprogramming.
- The typical mainframe computer occupies much of a large room.
- Like supercomputers, mainframes require an environment with closely monitored humidity and temperature.
- Mainframe computers are priced between \$100,000 and \$2,000,000.

EXAMPLE:

- IBM S/390
- Amdahl 580
- Control Data Cyber 176

MINI COMPUTER

The "age of the mini" started in the late 1960s. The creation of integrated circuits suitable for computers enabled designers to shrink the size of the computer. Minicomputers are frequently referred to as **mid-range computers**.



Before Digital Equipment Corporation (DEC) released the first DEC PDP-8 **minicomputer** in 1968, most medium-sized organizations were priced out of the computer market because they couldn't afford mainframe computers.

FEACTURES:

- Like mainframes, most minicomputers are multiuser systems.
- Many of today's minicomputers can accommodate as many as 200 users working from individual terminals.
- Mini computers are a little slower than mainframe.
- Like mainframes, minicomputers can accommodate remote users, but not as many.
- Minicomputers' input, output, and storage devices look like those on mainframes.
- Minicomputers have slightly less storage, and the printers are slightly slower.

EXAMPLE:

- IBM AS/400
- IBM SYSTEM 360
- HP 3000
- PRIME 9755

MICROCOMPUTER

When you are working on a multiuser computer, such as a mainframe or minicomputer, you can control the input and see the output on the display, but you control nothing else.

A single-user computer gives you control over all the phases of computer processing: input, processing, output, and storage. You can select the programs you want to use, and you don't have to compete with other users to gain access to the system. A single-user system is designed to meet the computing needs of an individual.

Single-user computers fall into two categories:

- Workstations
- Microcomputers.

WORKSTATION:

A **workstation** is a powerful desktop computer designed to meet the computing needs of engineers, architects, and other professionals who need detailed graphics displays. The workstation has sometimes been called a "*super micro*." The workstation looks very much like a desktop microcomputer, but the chips inside make the difference

For example, workstations are commonly used for **computer-aided design (CAD)**, in which industrial designers create pictures of technical parts or assemblies. To process these complex and detailed diagrams, the computer needs great processing power and much storage.

FEATURES:

- Workstations are small, powerful systems designed to drive networks of less powerful microcomputers and to create high-quality graphics.
- Workstations typically cost \$5,000 to \$20,000.
- Major competitors in this market include DEC, Hewlett-Packard, Sun, and Silicon Graphics, Inc.

MICROCOMPUTERS:

It is difficult to overstate the impact of the microcomputer on the computer industry. In 1975, the microcomputer did not exist. In 1995, sales exceeded \$116 billion. Microcomputers are the fastest growing segment of the computer industry.

The microcomputer segment of the industry is complex; there are different types of microcomputer platforms with varying capabilities. The most common type of microcomputer is a **desktop computer**, which is a non portable **personal computer** that fits on top of a desk. (will describe below).

Microcomputers are the smallest and cheapest of these and are used at home, in schools and in some businesses. Mainframe computers are the most powerful computers



This table makes some comparisons between the different types of computer:

Comparison	Microcomputer	Minicomputer	Mainframe
Where Used	Home, small business, on a network in a larger business.	Medium sized business. e.g. supermarket, traffic control system.	Large businesses, universities.
Number of Users	1	1 - 20	Hundreds
Cost	30,000 – 200,000 Rs	25,000-100,00 Rs	Rs 2,000,000+

PERSONAL COMPUTER

DEFINATION:

“A small computer, intended for use by an individual. A personal computer will usually fit on a desk.”

A computer designed for use by a single user. Although other Microcomputers preceded it, the IBM PC was the first to use the name specifically. As a result, the term PC now applies to an IBM-compatible computer as contrasted to the Apple Macintosh, these being the two standards that emerged from an abundance of competitors in the early 1980s.

PC further divided in to two types:

- Desktop Computer
- Laptop/ Note book Computer

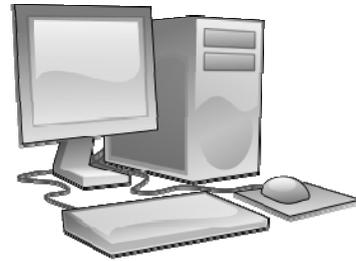
DESKTOP COMPUTER:

DEFINATION:

“A computer designed for desktop use; usually comprises, at a minimum, a central processing unit (CPU), a monitor, and a keyboard as separate units, connected by special cables. Most such computers now also include a Pointing Device.

A computer that could fit on a desk was considered remarkably small. Desktop computers come in a variety of types ranging from large vertical tower cases to small form factor models that can be tucked behind an LCD monitor.

"Desktop" can also indicate a horizontally-oriented computer case usually intended to have the display screen placed on top to save space on the desktop. Most modern desktop computers have separate screens and keyboards.



LAPTOP /NOTE BOOK COMPUTER:

DEFINATION:

- “A laptop is a personal computer designed for mobile use, small and light enough to sit on a person's lap while in use.”
- “A portable computer typically weighing less than 6 pounds (3 kilograms) that has a flat-panel display and miniature hard disk drives, and is powered by rechargeable batteries.”

Laptops are capable of many of the same tasks that desktop computers perform, although they are typically less powerful. Laptops contain components that are similar to those in their desktop counterparts and perform the same functions but are miniaturized and optimized for mobile use and efficient power consumption. Laptops usually have LCD displays.

Laptops generally cost around twice as much as a desktop machine of similar specification. Performance is always lower than that of a comparable desktop because of the compromises necessary to keep weight and power consumption low.



MOBILE COMPUTERS / DEVICES

All devices which can carry in hand and portable, is said to be mobile devices and computers.

These Devices are categorized in:

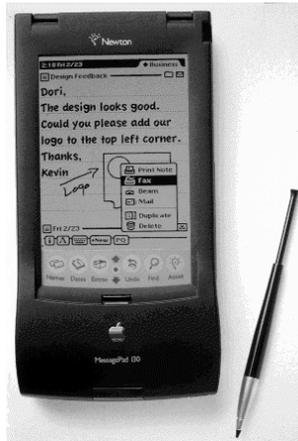
- PDA
- Tablet PC
- Hand Held Computer
- Laptop/Note Books

PDA

DEFINITION:

PDA stands for “Personal Digital Assistant”. A small, handheld system combining in one device multiple computing, Internet, networking, and fax/telephone features”A PDA contain following features:

- Keep phone directories
- Calendars and provide calculator capabilities
- Schedule appointments
- Retrieve frequently used phone numbers
- Jot down notes.
- Most PDAs are designed to accept written input by a pen; the PDA decodes what you write.



TABLET PC

DEFINATION:

- “A tablet PC is a wireless personal computer (PC) that allows a user to take notes using natural handwriting with a stylus or digital pen on a touch screen.”

A tablet PC is similar in size and thickness to a yellow paper notepad and is intended to function as the user's primary personal computer as well as a note-taking device.

Tablet PCs generally have two formats, a convertible model with an integrated keyboard and display that rotates 180 degrees and can be folded down over the keyboard or a slate style, with a removable keyboard.

The user's handwritten notes, which can be edited and revised, can also be indexed and searched or shared via e-mail or cell phone.



HAND HELD COMPUTER

DEFINITION

- “Very small, lightweight device (such as the Palm Pilot) which provides functionality approaching that of a laptop computer. “

Features of modern handhelds include calendar and diary organizing, word processing, data management, remote access to firm's network, internet access, wireless access, messaging, etc



LAPTOP/NOTE BOOKS COMPUTER

DEFINATION:

Chapter No 7: Type of Computer

- “A laptop is a personal computer designed for mobile use, small and light enough to sit on a person's lap while in use.”
- “A portable computer typically weighing less than 6 pounds (3 kilograms) that has a flat-panel display and miniature hard disk drives, and is powered by rechargeable batteries.”

Laptops are capable of many of the same tasks that desktop computers perform, although they are typically less powerful. Laptops contain components that are similar to those in their desktop counterparts and perform the same functions but are miniaturized and optimized for mobile use and efficient power consumption. Laptops usually have LCD displays.

Laptops generally cost around twice as much as a desktop machine of similar specification. Performance is always lower than that of a comparable desktop because of the compromises necessary to keep weight and power consumption low.



Chapter No 8

SOFTWARE AND PROGRAMING LANGUAGES

SOFTWARE:

DEFINITION:

- “A piece of software is a computer program which has been written to carry out a particular task.”
- “A set of instruction to solve a particular problem”

Without software the hardware that is used to build a computer system would not be very useful. A software program contains the instructions that the computer must follow to carry out the task. Sometimes more than one program is required to complete a task. When this is the case the group of programs which together complete the task are known as a software package.

Software programs are originally produced by computer programmers who will write the instructions that form the program in a programming language.

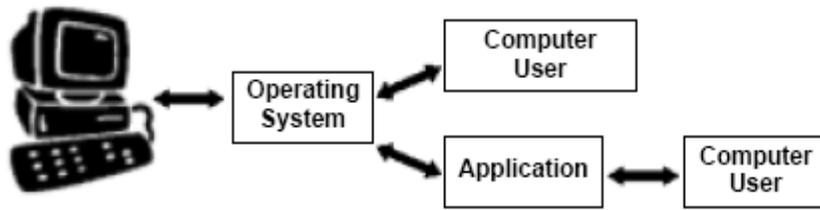
Example pieces of software are:

- A word processor.
- A multimedia encyclopedia.
- A spreadsheet.

TYPES OF SOFTWARE

A software is usually classified as being two types

1. Systems software
2. Applications software.



SYSTEM SOFTWARE

Systems software controls the operation of a computer. Without systems software a computer would not function. The most important piece of systems software is the operating system. The operating system will perform vital tasks such as:

- Managing communications between software and hardware.
- Allocating computer memory to other software programs.
- Allocating CPU time to other software programs.

TYPES

- Operation systems
- Utility program
- Programming languages
- Device drivers



APPLICATION SOFTWARE

DEFINATION:

“Application software consists of programs designed to perform specific tasks for users”.

Application software can be used as a productivity/business tool; to assist with graphics and multimedia projects; to support home, personal, and educational activities; and to facilitate communications.

TYPES:

- Word Processor
- Presentation Software
- Database
- Spreadsheet
- Communication software
- Desktop Publisher
- Graphics Package

fCHAPTER NO 9

SYETEM SOFTWARE

DEFINATION:

Systems software controls the operation of a computer. Without systems software a computer would not function. The most important piece of systems software is the operating system.

The operating system will perform vital tasks such as:

- Managing communications between software and hardware.
- Allocating computer memory to other software programs.
- Allocating CPU time to other software programs.

EXAMPLES:

- Operation systems
- Utility program
- Programming languages
- Device drivers

OPERATING SYSTEM

The operating system is a very special piece of software. All the other applications software such as databases and spreadsheets communicate with the computer hardware through the operating system. The operating system controls the overall operation of the computer.

DEFINITION:

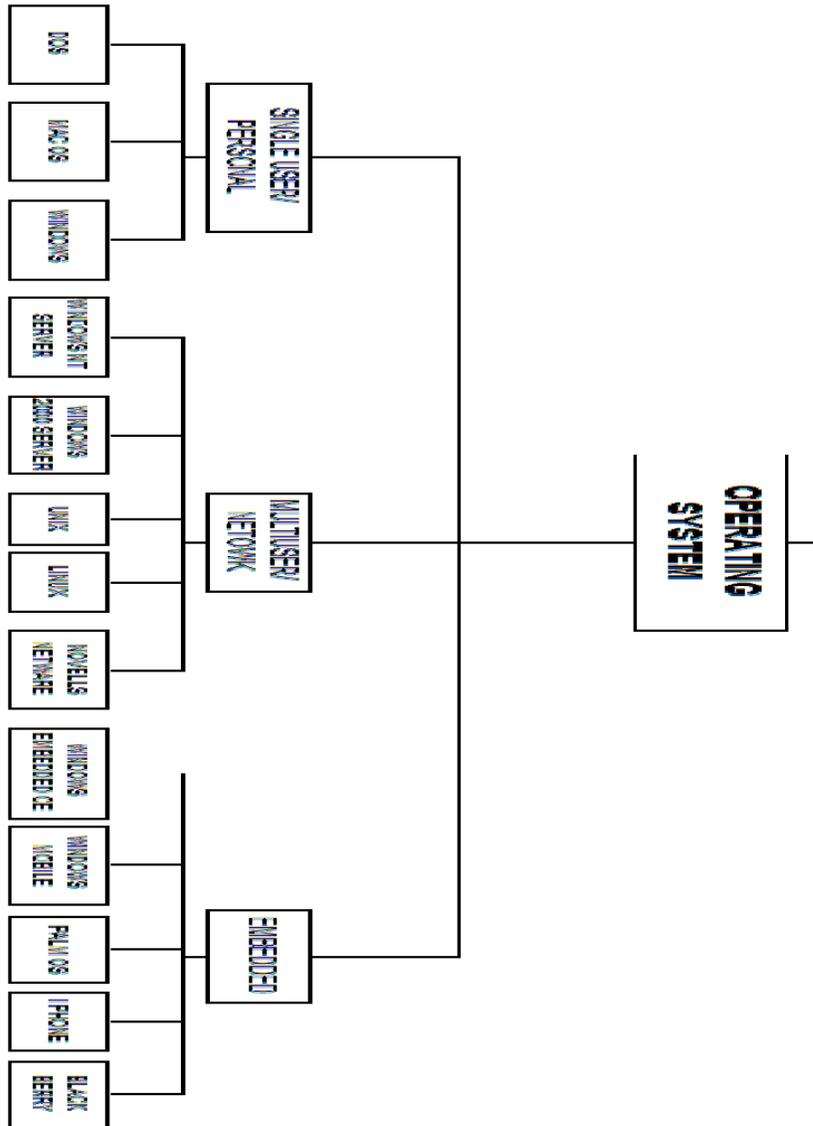
“An operating system (or OS) is a computer program which controls the entire operation of the computer. Computer software applications communicate with the computer hardware via the operating system”.

Example Operating Systems

When you buy a computer it is usually supplied with an operating system already installed. You will not be able to use a computer without an operating system. Different operating systems are available for different types of computer and different purposes. Some popular operating systems are:

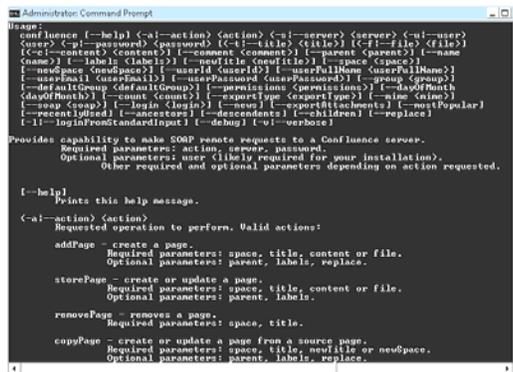
- Microsoft windows
- Disk Operating System (DOS)
- Linux
- Unix

The choice of operating system will affect how a computer works. It will probably determine the type of user interface (command line, menu driven or graphical) that the computer uses and the types of processing (batch, transaction or real-time) that the computer can carry out.



COMMAND LINE INTERFACE:

Command Line Interface (CLI) lets you control your PC by typing commands. In the figure below is command line interface. There's no mouse or graphical controls like you get in a GUI such as Windows.



GRAPHICAL USER INTERFACE (GUI):

“A graphical user interface (GUI, pronounced "gooey") is a computer environment that simplifies the user's interaction with the computer by representing programs, commands, files, and other options as visual elements, such as icons, pull-down menus, buttons, scroll bars, windows, and dialog boxes.”

By selecting one of these graphical elements, through either use of a mouse or a selection from a menu, the user can initiate different activities, such as starting a program or printing a document

As define in that figure:



TASKS PERFORMED BY AN OPERATING SYSTEM

There are several tasks which are performed by practically all operating systems, regardless of the complexity of the computer the operating system is being used on. These tasks include:

1. Managing communications between software and hardware.
2. Allocation of computer memory.
3. Allocation of CPU time.
4. Run and Manage program
5. Managing files
6. Configure Software and Devices
7. Configure Network
8. Coordinating Tasks
9. Performance Management

The range of tasks that an operating system performs increases if the computer using the operating system is on a network or if the operating system is a multi-tasking or multi-user operating system.

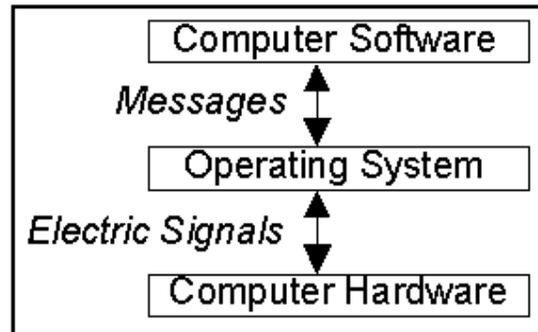
1) MANAGING COMMUNICATIONS BETWEEN SOFTWARE AND HARDWARE

There are many tasks which practically every program written for a computer will need to carry out. For example:

- Loading and saving data and programs.
- Communicating with peripherals such as a mouse or a printer.
- Organizing data stored on a hard disk.
- Displaying information on the VDU.

Therefore the operating system manages all of these tasks. If, for example, a program wants to save or print a file it must send a request to the operating system asking it to do so. The operating system will then carry out the task.

Because an application such as a spreadsheet works by communicating with the operating system the application will probably only work with one particular operating system. If you buy Microsoft Works for Windows 95 it will only operate on computers with the Windows 95 operating system. If you want to use Microsoft Works with the MS-DOS operating system you will have to buy a different version of the application.

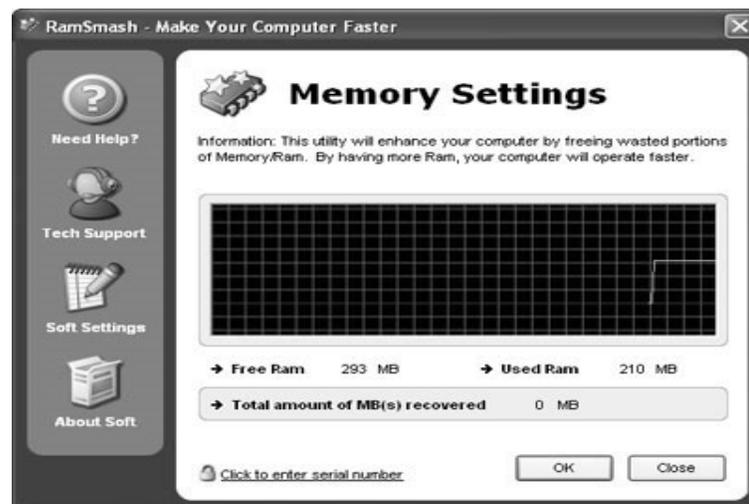


Putting commonly used operations such as saving data into the operating system also reduces the amount of work that a person writing a new application must do.

2) ALLOCATION OF COMPUTER MEMORY

Computer memory must be allocated to (divided between) the different tasks that the computer is performing. Even if your computer appears to be doing only one task such as word processing there will be several different items to which memory must be allocated.

For example memory would have to be allocated to storing the word processor program, storing your word processed document and storing a copy of the screen that is being displayed on the monitor. And of course the operating system itself will also use up some memory.



3) ALLOCATION OF CPU TIME

Most computers have only one Central Processing Unit (CPU) or microprocessor. The CPU can only process one piece of data at a time. Therefore the CPU's time must be divided up between all of the tasks that the computer is currently carrying out. If you were printing a document from a word processor application then the CPU's time would need to be divided up between:

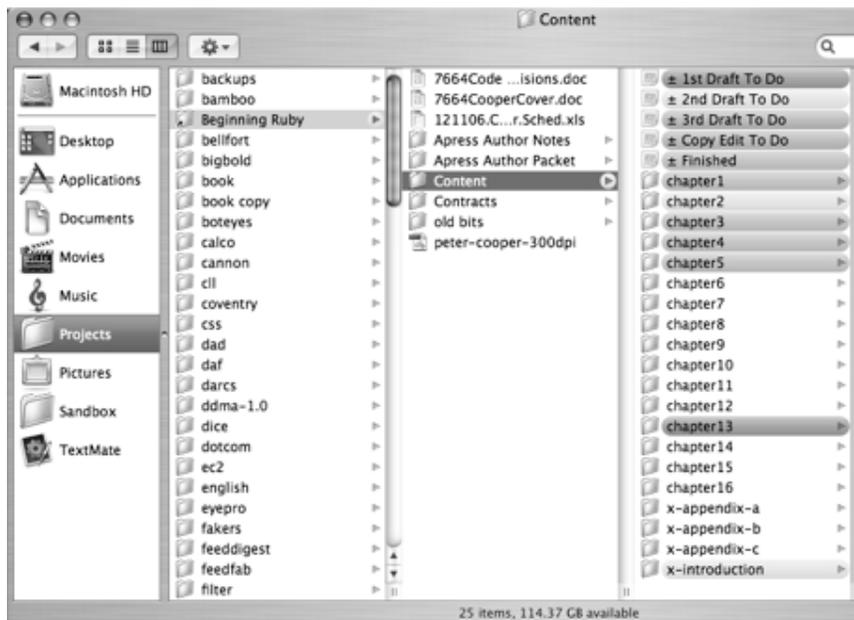
- Letting you type on the computer.
- Sending the document that is being printed to the printer.
- Updating the screen display to show you what is going on.

4) RUN AND MANAGE PROGRAM

The operating system manages all the other programs that run on the computer. The operating system provides services to programs and the user, including file management, memory management, and printing. It provides services to programs, the OS makes system call requesting other hardware and software resources to perform tasks.

5) MANAGE FILES

Operating system manages and organizes all files in system. The operating system keeps track of all the files on each disk. Users can make file management easier by creating a hierarchical file system that includes folders and subfolders arranged in a logical order.

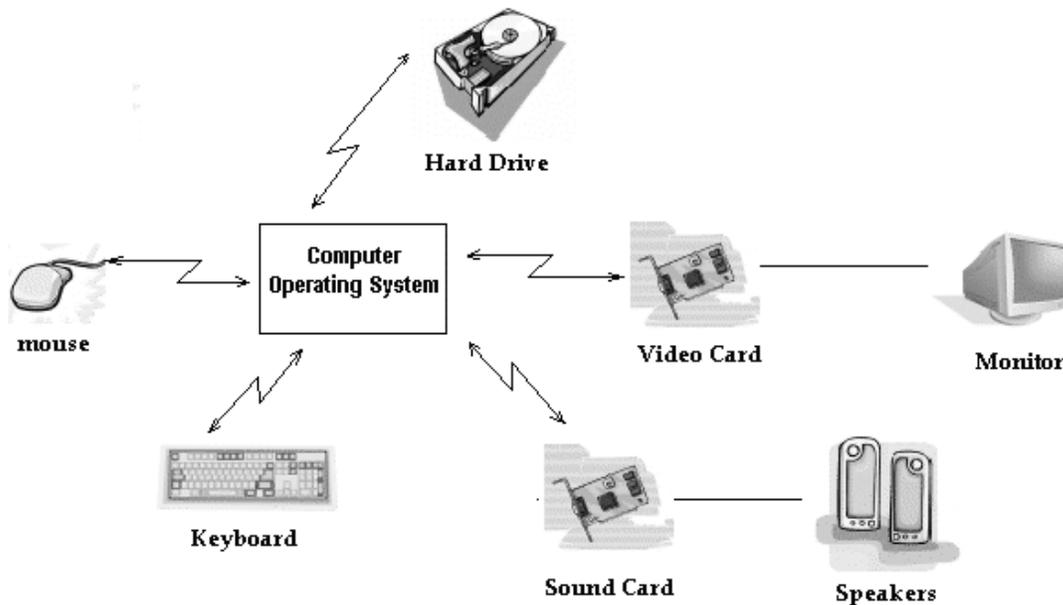


6) CONFIGURE SOFTWARE AND HARDWARE

Operating system is maintaining organized communication with the process and hardware. Each hardware device is controlled by Software, which allows the OS to activate and use the device. The operating system provides the software and hardware connection in order to use that hardware.



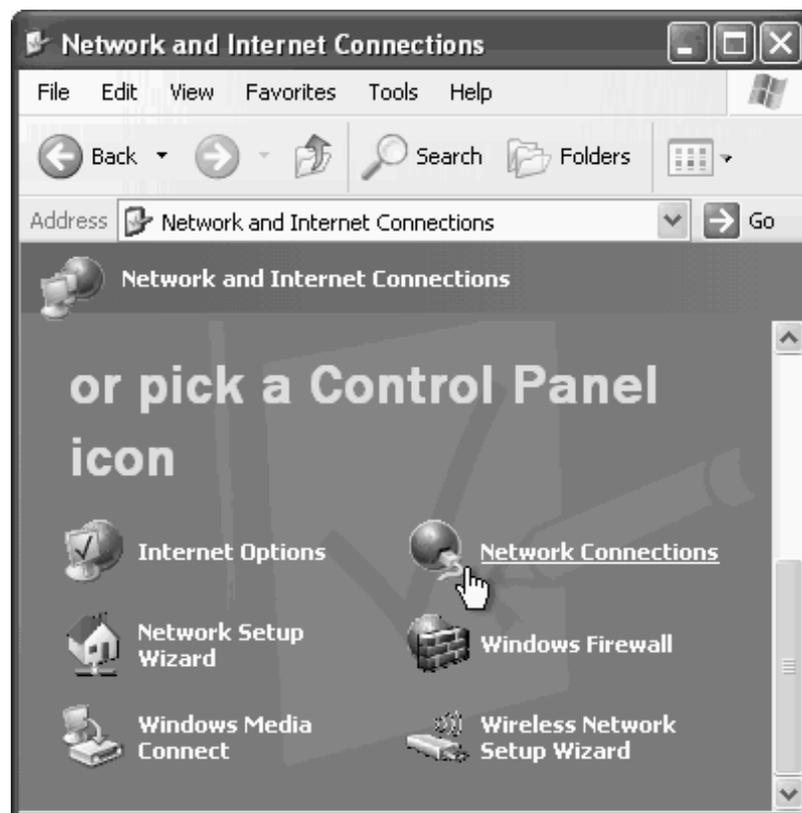
Operating System Interfaces



7) CONFIGURE NETWORK

Operating system manages and configures network and internet connections it provide the platform on which computer networking takes place. Operating system provide basic features for allow for file, print and Internet connections.

OS configured and managed through network operating system utility.



8) COORDINATING TASKS

Operating system controls the order and time in which programs are run and is more difficult in the mainframe environment where scheduling the daily work has always been routine. In a desktop environment, batch files can be written to perform a sequence of operations that can be scheduled to start at a given time.

Multitasking, which is the ability to simultaneously execute multiple programs, is available in all operating systems today. Multitasking is necessary for keeping several applications open at the same time so you can bounce back and forth among them

9) PERFORMANCE MANAGMENT

Operating system given the increased complexity of processors and applications, the current generation of Operating Systems (OSs) focuses mostly on software integrity.

Operating System managed with performance by resource partitioning (virtualization), CPU cycles, clock speed, memory and I/O bandwidth, and main/cache memory space.

TYPE OF OPERATING SYSTEM

An operating system is a software component of a computer system that is responsible for the management of various activities of the computer and the sharing of computer resources.

Users and application programs access the services offered by the operating systems, by means of system calls and application programming interfaces. Users interact with operating systems through Command Line Interfaces (CLIs) or Graphical User Interfaces known as GUIs as defined above.

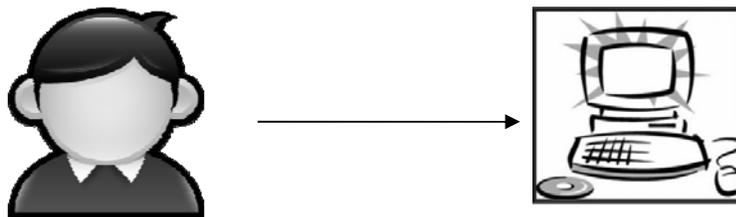
In short, operating system enables user interaction with computer systems by acting as an interface between users or application programs and the computer hardware.

The types of Operating systems are here under:

- 1) Single user/personal computer operating system
- 2) Multiuser/network operating system
- 3) Embedded operating system

1) SINGLE USER/PERSONAL COMPUTER SOPERATING SYSTEM:

The most basic type of operating system can only carry out one task at a time and can only be used by **one person at a time**. More sophisticated multi-tasking and multi-user operating systems can appear to carry out more than one task and be used by more than one user at the same time.



It has further types

- DOS
- MAC OS
- Windows

DISK OPERATING SYSTEM (DOS):

DOS stands for “Disk Operating System”. It is single user operating user has command line interface. DOS is product of Microsoft but developed for another company named as IBM.

DOS uses a command line, or text-based interface, that allows the user to type commands. By typing simple instructions such as pwd (print working directory) and cd (change directory), the user can browse the files on the hard drive, open files, and run programs. While the commands are simple to type, the user must know the basic commands in order to use DOS effectively.



MAC OPERATING SYSTEM:

Mac OS X is Apple's operating system for its line of Macintosh computers. Its interface, known as Aqua, is built on a Unix foundation.

it has much of the look and feel of the former Mac OS, features such as preemptive multitasking, symmetric multiprocessing, multithreading, and protected memory give Mac OS X improved stability and performance.



WINDOWS OPERATING SYSTEM:

Windows is a personal computer operating system from Microsoft. Operating system designed and produced by Microsoft Corporation. Similar to other operating systems, Windows makes a computer system user-friendly by providing a graphical display and organizing information so that it can be easily accessed.

The operating system utilizes icons and tools that simplify the complex operations performed by computers. Estimates suggest that 90% of personal computers use the Windows operating system. Microsoft introduced the operating system in 1985 and it has continued to be widely used despite competition from Apple's Macintosh operating system.

It has many versions like

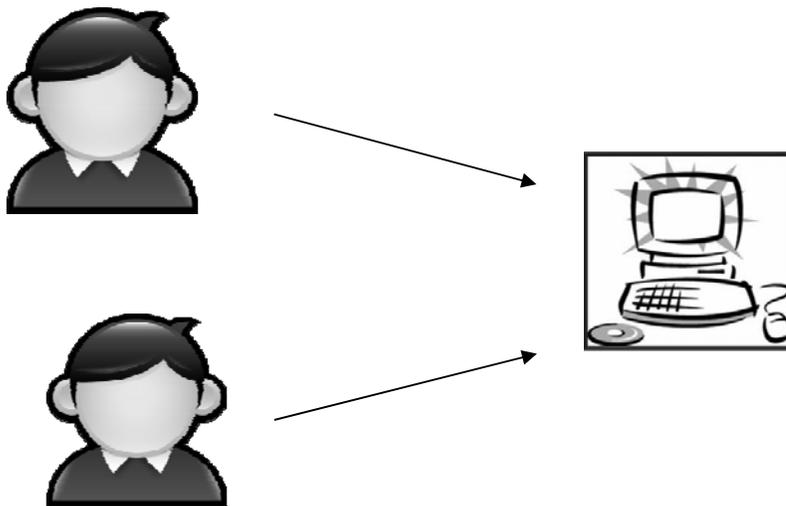
- Windows 95
- Windows 2000
- Windows 2000 XP
- Windows vista
- Windows 7
- Windows me



2) MULTIPLE USER/NETWORK OPERATING SYSTEM:

Multi-user operating systems are used on large mainframe computers. A mainframe computer system has one very powerful processing unit. Many users will all share this processing unit. They use terminals (a keyboard and a screen) to access the mainframe computer.

A multi-user operating system lets **more than one user** work on a mainframe computer at the same time.



Operating systems that are used on computers connected to networks usually have to carry out some additional tasks. Probably the most important of these is managing system security. Important aspects of systems security that an operating system might manage are :

- Controlling who has access to which files.
- Keeping a log of all of the files that a user changes.
- Automatically backing up important files.

These operating systems are more complicated and require faster hardware and more memory to work than more basic operating systems.

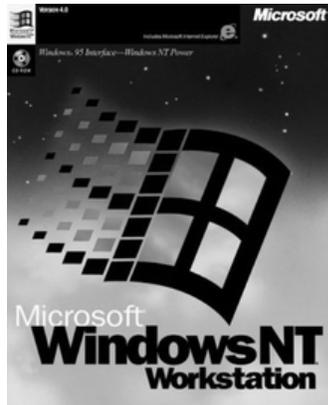
It has further types

- WINDOWS NT SERVER
- WINDOWS 2000 SERVER
- UNIX
- SOLARIS/LINUX
- NOVEL'S Novell's

WINDOWS NT SERVER:

Windows NT is a Microsoft Windows personal computer operating system designed for users and businesses needing advanced capability.

NT's technology is the base for the Microsoft successor operating system, Windows 2000. Windows NT (which may originally have stood for "New Technology", is actually two products: Microsoft NT Workstation and Microsoft NT Server.



WINDOWS 2000 SERVER:

Window 2000 server is also product of “Microsoft” and advance version of Windows NT server. It is designed to appeal to small business and professional users as well as to the more technical and larger business market. It is consist of three products

- Windows 2000 server
- Windows 2000 Advance server
- Windows 2000 data center server



UNIX:

By the simplest definition, **UNIX** is a computer operating system - the base software that controls a computer system and its peripherals. In this sense, UNIX behaves in the same way that the perhaps more familiar PC operating systems

UNIX is a powerful, flexible, computer operating system designed for multi-user applications (such as networks). It is the most frequently used operating system for servers on the World Wide Web.



SOLARIS/LINUX:

The Solaris Operating System (Solaris OS) is another version of UNIX. Solaris is the computer operating system that Sun Microsystems for Intel-based processors.

Sun has historically dominated the large UNIX workstation market. As the Internet grew in the early 1990s, Solaris systems became the most widely installed servers for Web sites. Solaris has its large number of features, and its Internet-oriented design.

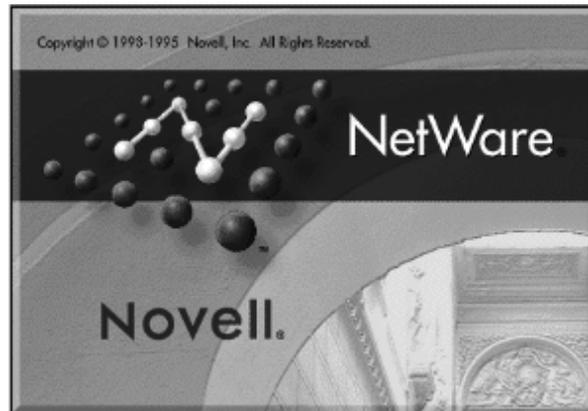


NOVELL's NETWARE:

A family of network operating systems from Novell that support Windows, Macintosh, DOS and OS/2 clients. UNIX client support is available from third parties.

In the early 1990s, NetWare was the largest installed base of LAN operating systems. It eventually gave way to UNIX, Linux, Windows and Mac running the IP protocol.

NetWare, made by Novell, is a widely-installed network server operating system. Initially very successful in installing its products in large and small office local area networks (LANs), Novell redesigned (or at least re-featured) NetWare to work successfully as part of larger and heterogeneous networks, including the Internet. An early - and primary competitor was the Microsoft Windows NT operating system.



3) EMBEDDED OPERATING SYSTEM

An embedded operating system is an operating system for embedded computer systems. Due to the very nature of embedded systems, the operating system has different constraints compared to other desktop OS.

These devices have operating system in ROM. Many handheld devices have the embedded operation systems like PDA, palm device, tablet pc etc

Types of embedded OS are here under:

- Windows Embedded CE
- Windows mobile
- Palm operating system
- I phone OS
- Black berry Operating System

WINDOWS EMBEDDED CE

This operating system is designed for some portable and web based devices which have different features like Communication, internet, entertainment & different application programs like MS Word & Excel etc

It has many features like other operating system which is designed by Microsoft like for entertainment it has windows media player, we can perform multitasking in these devices. We can check email and browse websites.



WINDOWS MOBILE

This operating system is same like Windows CE but it is specially designed for some PDA (Personal Digital Assistant) and other mobile devices.

It has same features like Windows CE but by windows mobile any user can access its contacts from address book, schedule his tasks and set the notes and meetings on it.



PALM OPERATING SYSTEM

This operating system is designed for some devices which we can hold in hand and portable.

Palm operating system that provides a software platform for the Palm series of handheld personal digital assistants (PDAs) made by Palm Inc. According to Palm, Palm OS was designed from the beginning to fit into a palm-size device of a specific size and with a specific display size.

Palm OS has Dates, Address Book, To Do Lis, Memo Pad, Calculator, and special Password Protection.



I PHONE OPERATING SYSTEM

This is designed for special based devices which have capability to work with touch screen and touch pad, I phone and I Pad Touch. By the help of your fingers all objects can functioned.

The I Phone Touch has the same applications that are present by default on the other PDAs but, with the exception of the Phone, Messages, Compass and Camera apps. It also has two applications of Music, and Videos.



BLACK BERRY OPERATING SYSTEM

It is designed for a handheld device named as black berry. That operating system provides web capabilities like email, chatting, text messages, multimedia messages and can access different remote devices with Blue tooth technology. It also provide interface to take pictures, record videos and has GPS (Global positioning system).



UTILITY PROGRAM

A program that performs a specific task related to the management of computer functions, resources, or files, as password protection, memory management, virus protection, and file compression.

It is part that is used to provide services for the hardware and software but it is not absolutely required to run programs and, if it didn't come with the operating system, you could perhaps add it. In other usages, a utility is an application that is very specialized and relatively limited in capability.

Examples of some utilities are here under:

- Virus scanning software
- Backup software
- Scandisk
- Disk defragmenter

VIRUS SCANNING SOFTWARE

Virus Scanning Software is utility programs designed to protect your computer from computer viruses. Virus scanning software is critical to uses, due to the number of computer viruses (small computer programs created to disrupt and destroy computer files and/or operating system software).

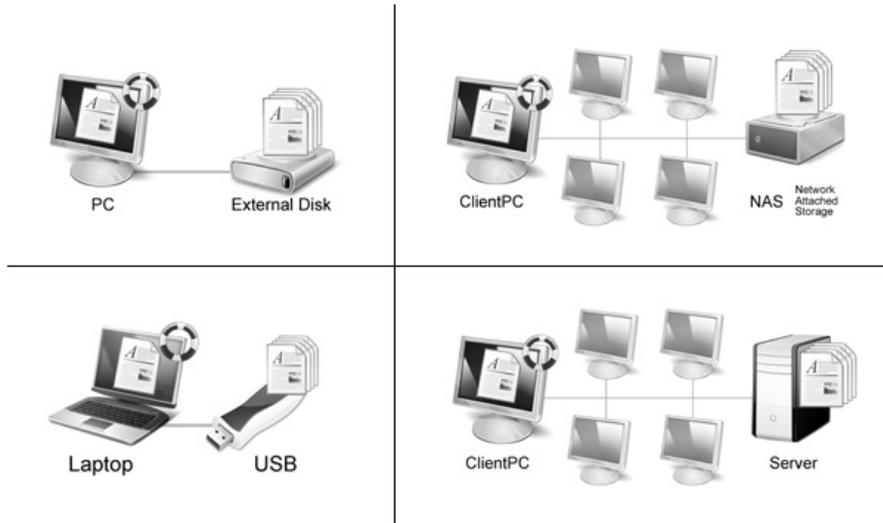
Virus scanning software scans your disk each time you insert it into a computer. If you receive a warning that there is a virus suspected on your disk then to eliminate the virus we have antivirus utility. If you own your own computer, you should have a good virus scanning software package installed. Remember - virus scanning software needs to be updated on a regular basis (usually monthly). Updates insure that your virus scanning software will protect you from the most recent viruses. Virus scanning packages come with directions on how to receive updates to your software. Some popular anti viruses are:

1. MacAfee
2. Avaira
3. Norton
4. Symantec



BACKUP SOFTWARE

Backup software is software that assists you in backing up your files and even the entire computer hard drive. It is important for you to back up your files regularly. If you own your own computer, you should think about how to backup your valuable data on your hard drive, USB, and server. The server that houses your Home Folder is backed up regularly.



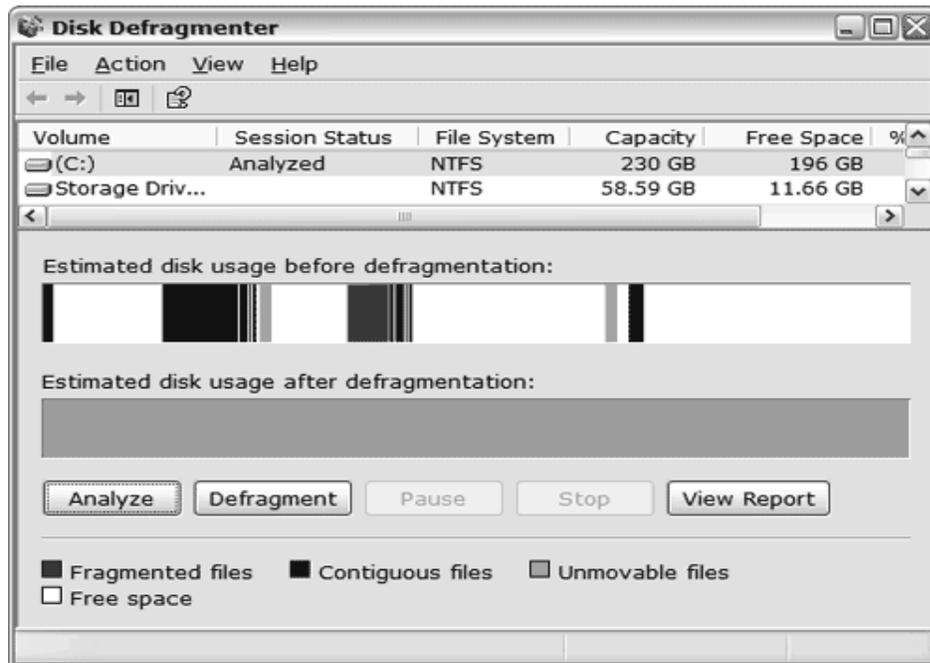
SCANDISK

Scandisk is a utility provided with Windows computers. Scandisk scans your disks to see if there are any potential problems on the disk, such as bad disk areas. Since disks are magnetic media, all disks, including your hard drive can be corrupted.



DISK DEFRAGMENTER SOFTWARE

Disk Defragmenter software assists you in keeps reorganizing your disk drives. After files are saved, deleted and resaved again, the disk can become fragmented --- available space is in small blocks located throughout the disk. Disk defragmenters gather those free spots and put them together to enable you to continue to save your data in the most efficient manner.



PROGRAMING LANGUAGES

A language in simple word is a way of communication for any person to other person in order to understand his talk.



Like in the picture above a girl is communicating, the man who is sitting next to her. So the language is very important medium of communication like linguistics of human. Like human languages, each programming language has its own grammar and syntax. There are many components of the same language Computer also need a language so that it can communicate to the hardware and other important components of computer.

Definition:

A language used to write instructions for the computer. That is the way of representation any program in to that form which is understandable by CPU.

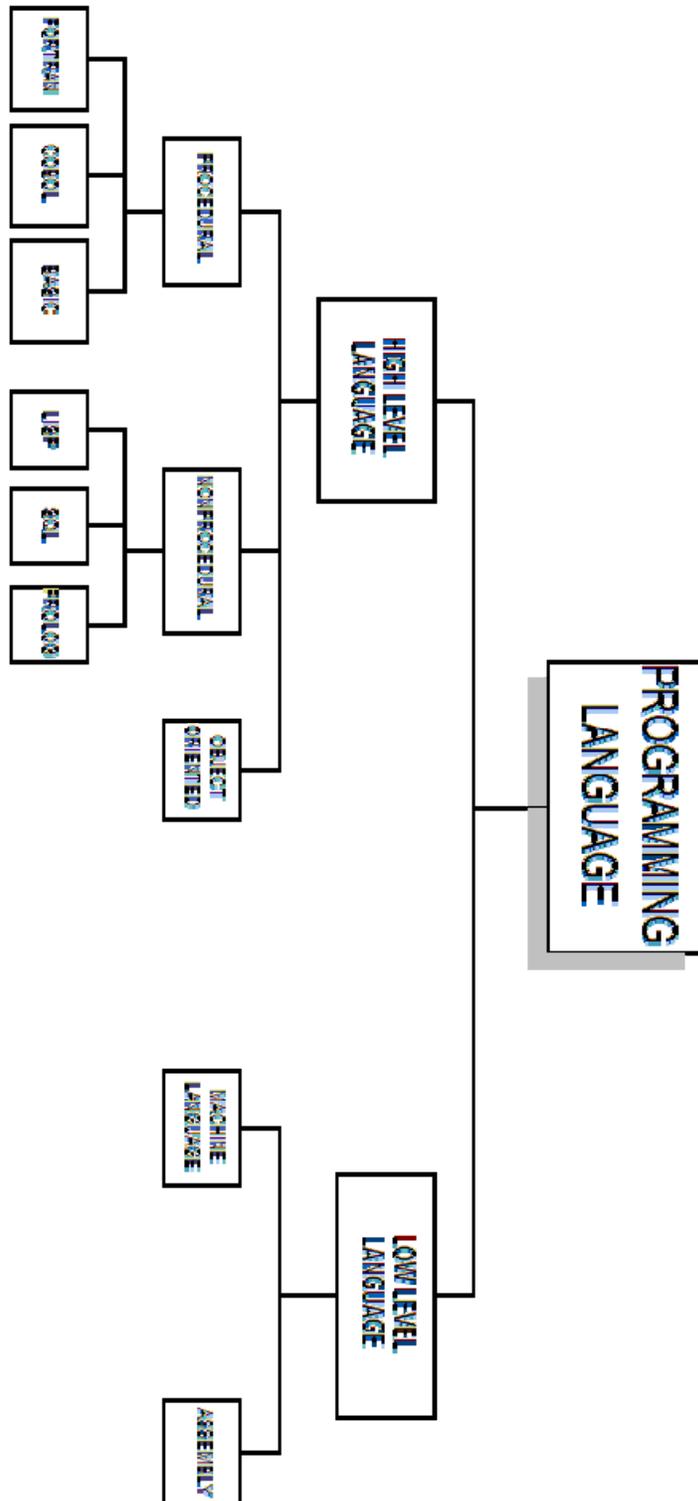
Reminder: program is written instruction for computer.

Programs are written by using any language and these languages set the procedures & rules to write computer programs. Programmers have to follow that rules which is set by programming languages.

TYPES OF PROGRAMMING LANGUAGES

According to structure, interface and procedure computer languages can be divided in to two major types.

1. Low Level Language
2. High Level Language



1) LOW LEVEL LANGUAGE

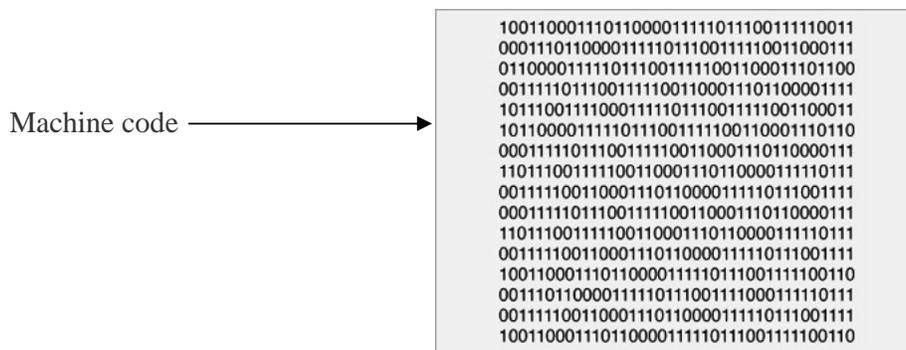
Low level language is also called machine language. That types of languages are close to machine and easily understand by machine as, it is majorly in binary form (0 & 1).low level language types are

- Machine language
- Assembly language

MACHINE LANGUAGE

This program written is this type of language sometimes referred to as machine code or object code, machine language is a collection of binary digits or bits that the computer reads and interprets. Machine language is the only language a computer is capable of understanding. Machine code is consisting of 0 & 1. Which mean off and on bit.

Program written in machine language is very fast but machine dependent. It is also referred as “First Generation Language”.



ASSAMBLY LANGUAGE

Assemble language is also low level language close to machine language. It is also referred as assembly or ASL, assembly language and “Second Generation Language”.

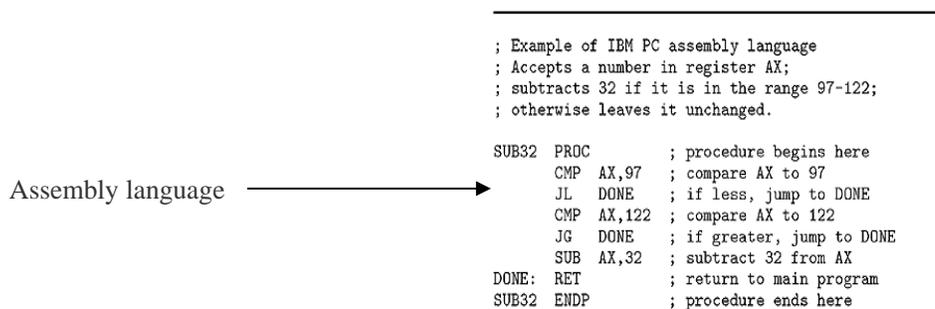
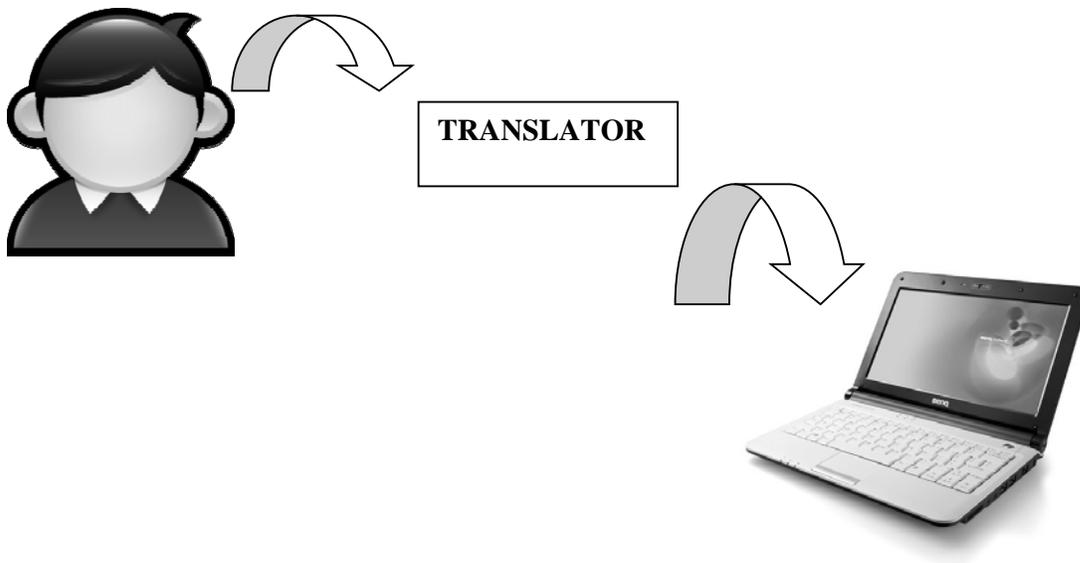


FIGURE 17. Assembly language

Assembly language used to interface with computer hardware. Assembly language uses structured commands as substitutions for numbers allowing humans to read the code more easily than looking at binary. Although easier to read than binary, assembly language is still a complex language

2) HIGH LEVEL LANGUAGE

High level programming languages is languages program than use languages or syntax which closes to human languages so; it is easy to understanding the languages. This type of language is machine-independent, and uses similar language as English, which is easily understandable by human.



this type of language's processing is slow as compared to high level languages. As, it need any translator between interface on computer and human. So, that both can understand their languages.

TYPES OF HIGH LEVEL LANGUGES

Types of high level languages are:

- Procedural Languages

- Functional & Non procedural Languages
- Object Oriented Languages

PROCEDURAL LANGUGES

The most common high-level languages today are procedure-oriented languages. In these languages, one or more related blocks of statements that perform some complete function are grouped together into a program module & procedure. These types of languages are “Third-Generation Language”.

The programmer defines the set of executable instructions and the exact sequence in which those instructions are to be executed. The computer simply obeys the instructions in the sequence it is told.

Procedural languages allow programs to be shorter and easier for the computer to read, but they require the programmer to design each.

Here are some types of procedural programming languages:

- FORTRAN (FORmula TRANslation)
- BASIC (Beginners All Purpose Symbolic Instruction Code)
- COBOL (Common Business Oriented Language)

NON PROCEDURAL LANGUGES

In non-procedural languages the computer is not limited to a set of precise instructions. Instead, the programmer defines only the problem--*not* the instructions--to solve the problem.

The computer determines the necessary steps to solve the problem. In essence, non-procedural languages emphasize the result (or *what*) is to be achieved rather than the methods (or *how*) a result is achieved. For example, to sort a list, the programmer instructs the computer to output a list in which adjacent items are in increasing or decreasing order.

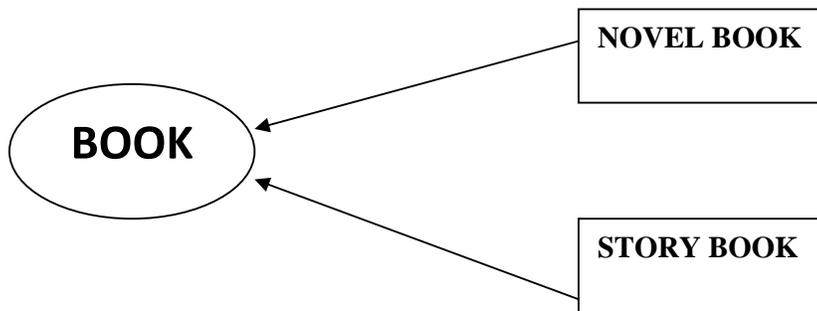
Here are some types of Non Procedural Programming Languages:

- SQL (Structured Query Language)
- LISP (List Processing)
- PROLOG (PROgramming with LOGic)

OBJECT ORIENTED LANGUGES

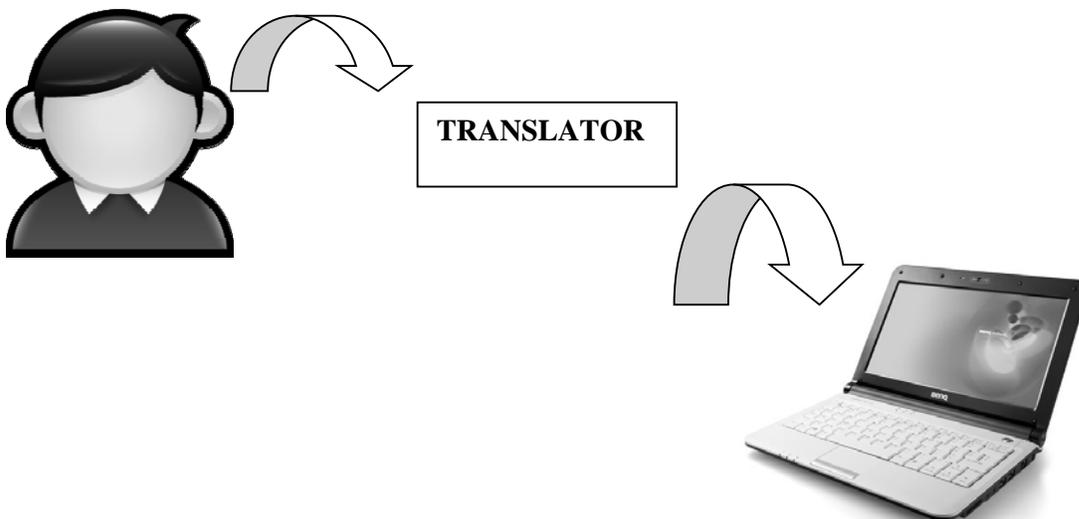
Object-oriented languages are outgrowths of functional languages. In object-oriented languages, the code used to write the program and the data processed by the program are grouped together into units called objects. **Objects** are further grouped into classes, which define the attributes objects must have.

A simple example of a class is the class Book. Objects within this class might be Novel and Short Story.



LANUAGE PROCESSOR

As, computer can understand only machine language; that's why we need an interface between user and computer so that both can understand its instructions.



Some types of language processors and translator are here under

- Compiler
- Interpreter
- Assembler

COMPILER

A compiler is a computer program that transforms human readable **complete code** of another computer program into the machine readable code that a CPU can execute.

INTERPRETER

An interpreter is a computer program that reads the source code of another computer program and executes that program.

Because it is interpreted **line by line**, it is a much slower way of running a program than one that has been compiled but is easier for learners because the program can be stopped, modified and rerun without time-consuming compiles.

ASSEMBLER

Assembler converts code written in assembly language into machine language. It works same like interpreter and compiler.

The assembler program takes each program statement in the code and generates a corresponding bit stream or pattern (a series of 0's and 1's of a given length).

CHAPTER NO 10

APPLICATION SOFTWARE

DEFINATION:

“Application software consists of programs designed to perform specific tasks for users”.

Application software can be used as a productivity/business tool; to assist with graphics and multimedia projects; to support home, personal, and educational activities; and to facilitate communications.

Application software divided in to two main types

- Custom based software
- Package software

CUSTOM BASED SOFTWARE:

“The software which is specified by the software vendor/producer **for a specific organization** or institute is called custom based software”

All organization which wants use custom software must buy a license for usage and Installation it in number of computers.

Example:

NADRA used special custom based software for registration of Pakistani nationals.

GENERIC PACKAGED SOFTWARE:

Generic software package is a package that can be put to a wide variety of uses. it is design for general public uses. For example a spreadsheet package can be used for any task involving calculations or graph plotting. The most common generic software packages are:

1. Word Processor
2. Presentation Software
3. Database
4. Spreadsheet

5. Communication software
6. Desktop Publisher
7. Graphics Package

WORD PROCESSOR

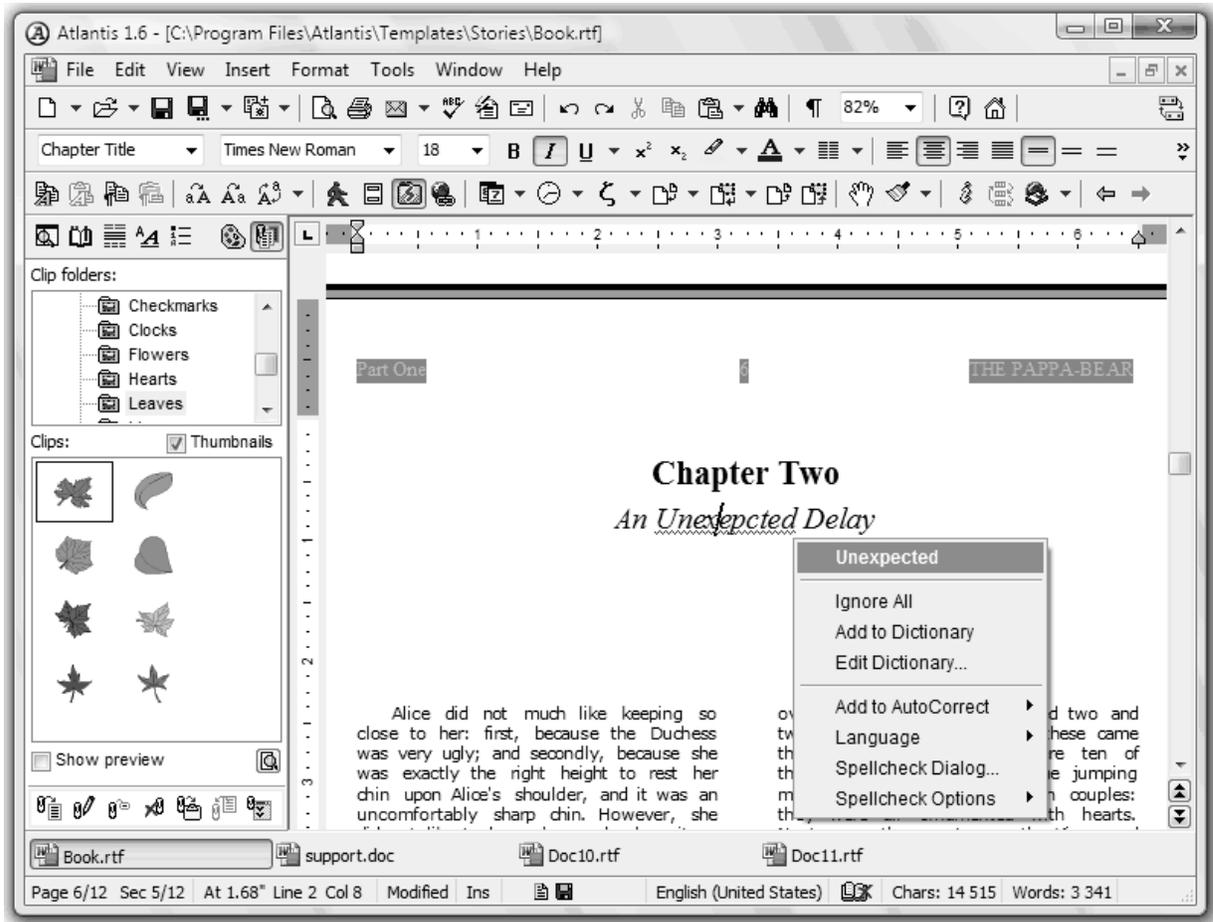
“A word processing package is used to prepare and edit text.”

Word processors are used to create all types of documents such as letters, reports and essays. Using a word processor you can type, revise and correct a document on the screen before printing it out.

The layout of the page can be changed and a wide variety of different styles of text can be used to improve the presentation of a document. Tools such as spelling checkers can help ensure that the contents of a document are accurate.

The functions of a word processor can be divided up into several different categories:

- **Page Layout** : The page layout functions let you decide how each page will be set out.
- **Text Presentation** : The appearance of text can be easily altered. Different fonts and styles can be used and the size of text can be varied. Text can be neatly lined up on the page.
- **Editing of Text** : Text editing functions are used to revise and change text that you have entered.
- **Blocks of Text**: The style and position of selected blocks of text can be changed.
- **Text Analysis** : The word processor can look at your document and try to highlight any errors such as spelling or grammatical mistakes that you have made.
- **Templates**: Template files let you save favorite document layouts that you have created so that you can use them over and over again.
- **Other Features**: Most modern word processors will offer lots of extra features such as tables, bullet points and fancy text effects.
- **Mail Merging** : A database of names and addresses can be used to personalize letters that have been created in a word processor

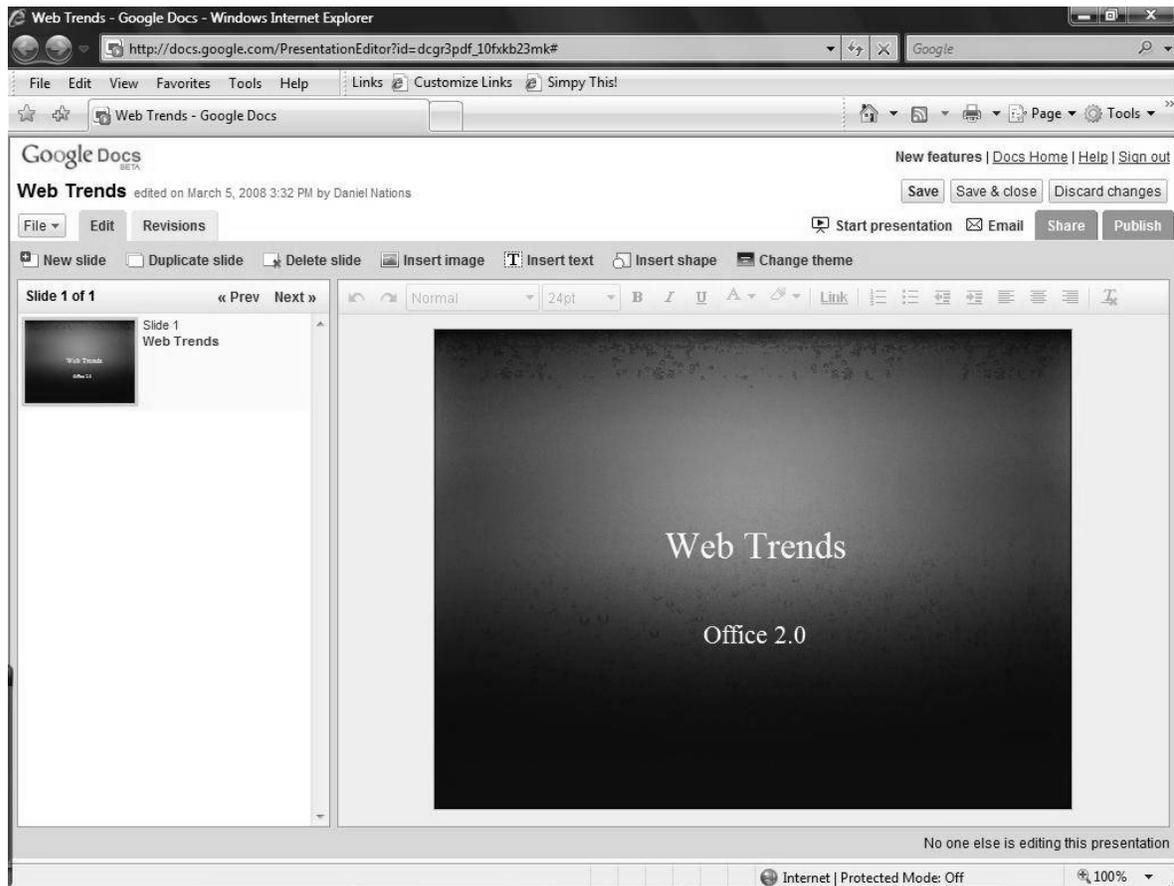


PRESENTATION SOFTWARE

“A software program for creating graphic presentations with visual aids, handouts, slides, etc. software for creating text with graphics, audio, and/or video; also called presentation graphics”

- **Presentation graphics:** Presentation software sometimes called "presentation graphics". It is a category of application program used to create sequences of words and pictures that tell a story or help support a speech or public presentation of information.
- **Multimedia authoring tools:** Presentation software can be divided into business presentation software and more general multimedia authoring tools, with some products having characteristics of both.

- **Audio and video sequences:** Multimedia authoring software enables you to create a more sophisticated presentation that includes audio and video sequences. Business presentation software usually enables you to include images and sometimes audio and video developed with other tools.

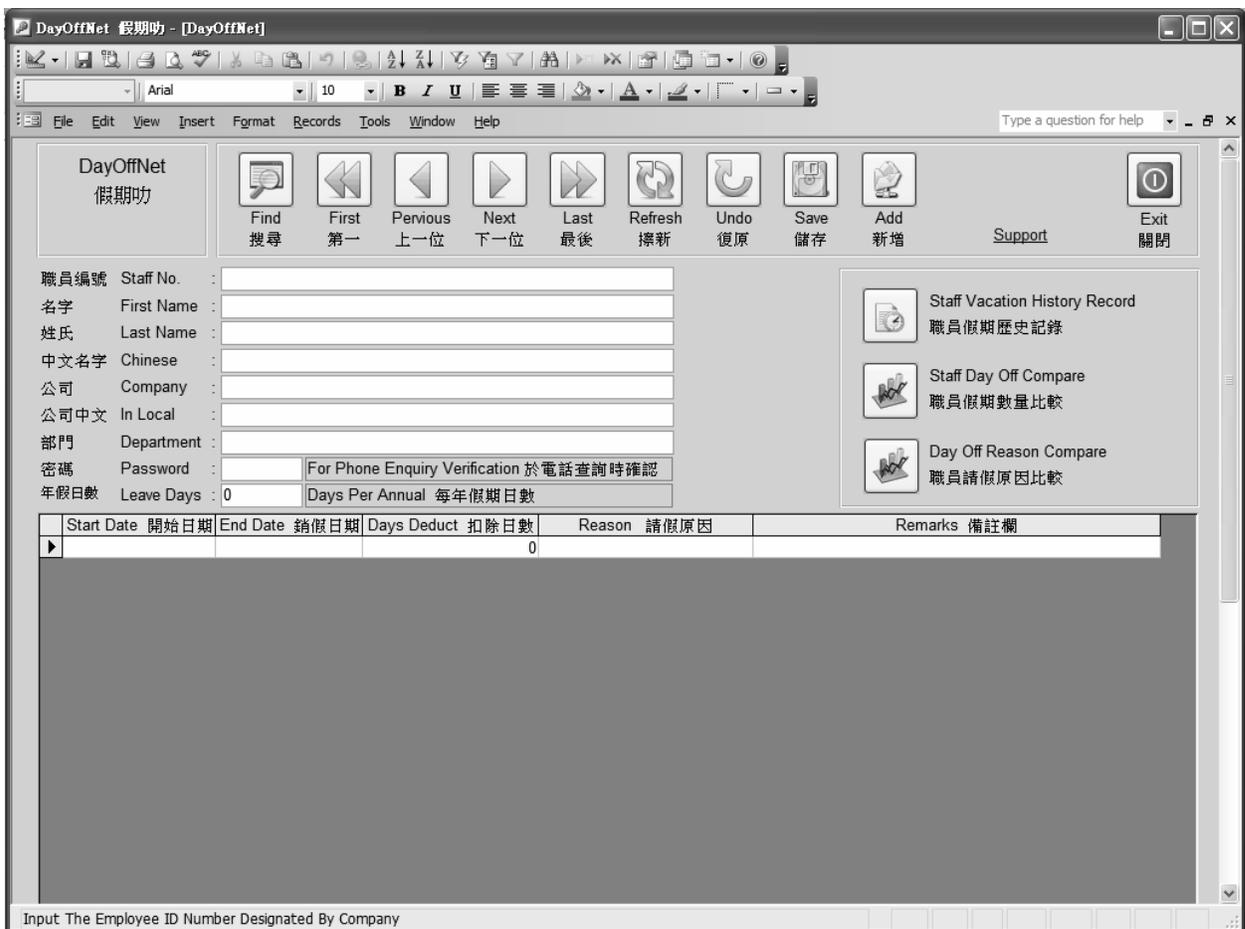


DATABASE SOFTWARE

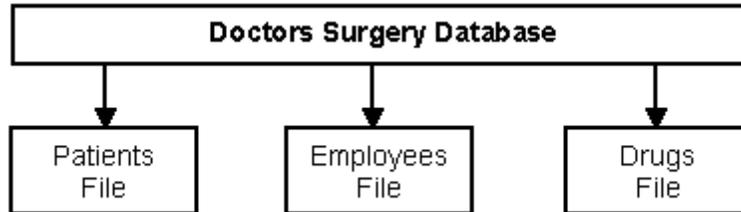
“A database is a computerized record-keeping system. Databases are used when a large quantity of data has to be stored.”

A database is very useful because it will provide tools to let the user search through the data that has been stored to find particular pieces of information. The data stored in a database must have a regular structure.

A database will typically consist of one or more files storing information relevant to the organization that has created the database. Each file is identified by a filename. Sometimes a file in a database is known as a data table.



For example a database keeping information for a doctors surgery may contain the following files:

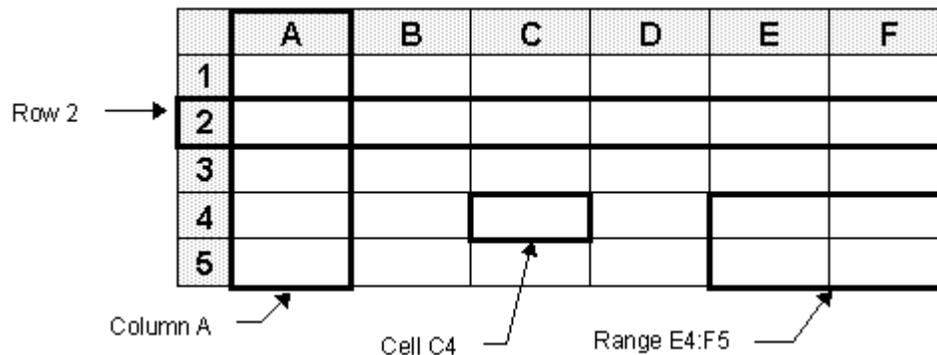


When you set up a database you decide on what files you want to create and what the structure of the records in the files should be. All the **records** in the same file must have the same structure. The structure of a record refers to the names of the **fields** that the record contains and the types of these fields. Databases are split up into separate files because:

- Often you want to store information about different kinds of things (e.g. patients, employees) using different record structures. You need to use different files for the different structures.
- Splitting up files can reduce data duplication, saving storage space and improving data consistency.

SPREAD SHEET SOFTWARE

A spreadsheet package is used for performing calculations and drawing charts. When you open a spreadsheet package the screen looks like a very large table similar to this:



The table is divided into a number of boxes called **Cells**. You can type information into each cell. Going across the table are many **Rows** each of which is identified by a number. Going down the table are many **Columns** each of which is identified by a letter.

Each cell is identified by a unique name called a **Cell Reference**. The cell reference is formed by writing down the letter of the column that the cell is in followed by the number of the row that it is in.

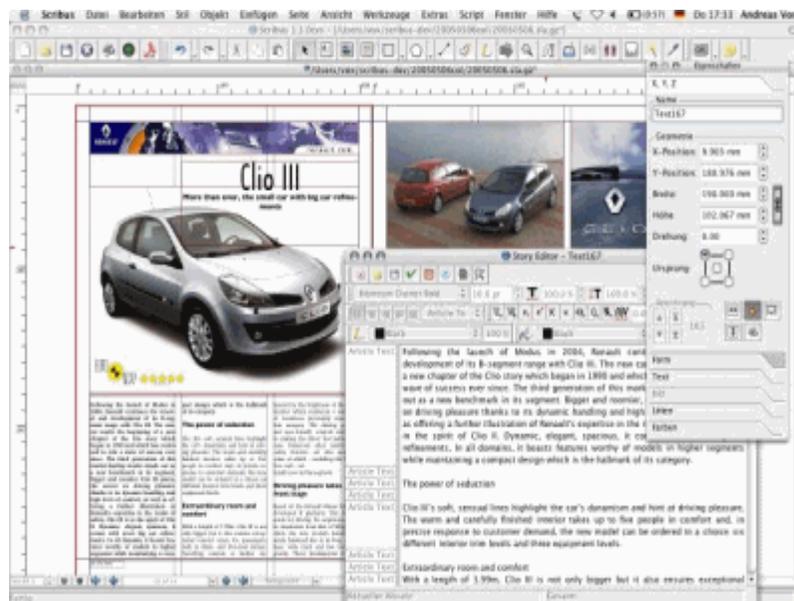
Groups of joined cells are known as a **Range**. A range can be described by writing down the cell references of the cells at the top left and bottom right corners of the range with a colon to separate them.

You can enter three different types of information into a cell. The three types are :

- **Numbers:** Any number.
- **Labels:** Combinations of letters and numbers used as titles or labels to make the sheet clearer.
- **Formulas:** Used to carry out calculations with the numbers that are entered into the sheet.
- **Formulas :** Used to carry out calculations with the numbers that are entered into the sheet.

DESKTOP PUBLICATION

DTP stands for Desktop Publishing. You use DTP software to produce professional-looking documents such as reports, books, posters or leaflets. DTP software gives you more control over the layout of a page than a word processor and lets you easily integrate graphics into your publications.



In addition to the features of a word processor you should also expect a desktop publisher to offer you these facilities :

- **Page Layout** : The ability to define the layout of a page using frames to place text and pictures in.
- **Fonts and Styles** : A wide range of fonts and styles.
- **Drawing Facilities** : Some drawing facilities, although these may be limited.
- **Importing Pictures and Text** : The ability to incorporate pictures and text from other packages into a document.
- **Clipart** : A library of pictures for you to include in your documents.
- **Accurate Positioning** : The ability to position objects extremely accurately on the page using guidelines or a grid.

The main features that you can expect to find in a desktop publishing package are described in detail below

GRAPHICS DESIGNING SOFTWARE

Computer graphics or images are often used either by themselves or to enhance the quality of other documents, for example a desktop published document.



There are three distinct types of package which can be used to create images on a computer. They are :

- **Painting Packages**: This is the most basic type of graphics package. These packages allow you to paint onto the screen as if it was a canvas. Unfortunately they produce files which take up a lot of storage space and painted images are difficult to edit.
- **Drawing / Vector Drawing Packages**: These are more sophisticated than painting packages. They store images as a set of objects which can be easily edited.
- **Computer Aided Design (CAD) Packages**: Very advanced, highly accurate packages which can be used for designing three dimensional objects such as houses and machinery.

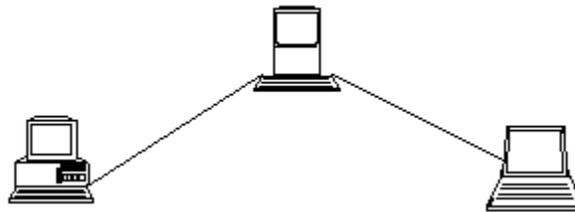
CHAPTER NO 11

NETWORK AND INTERNET

COMPUTER NETWORK

DEFINATION:

“A computer network is a group of computers which are connected together to allow communication between them.”



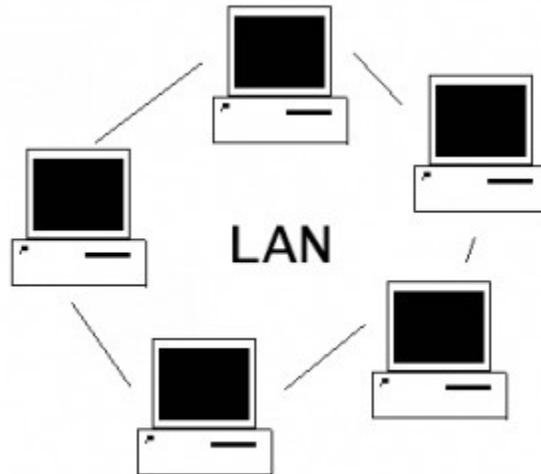
TYPES OF NETWORK

There are two main types of network :

- LAN
- WAN

LOCAL AREA NETWORK (LAN) :

Definition: “A network which is located entirely on one site such as an office, school or within a group of buildings that are in close proximity, that are connected together.”



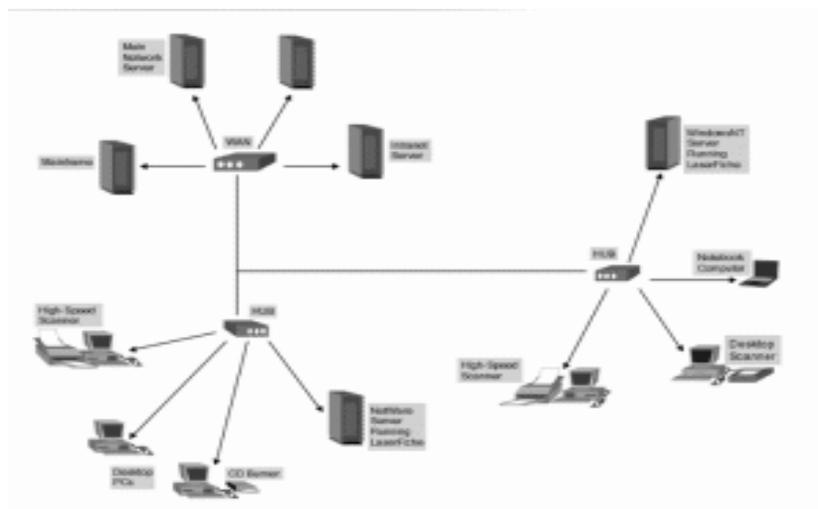
WIDE AREA NETWORK (WAN) :

“A network which connects together computers on a number of sites in different areas”.

A WAN or Wide Area Network is a group of widely dispersed computers that are connected together. These could be across the same town, or across a country or even across the world”.

Apart from distance, the other feature that distinguishes as WAN from a LAN is that the WAN would make use of a range of communication technologies such as telephone, microwave and satellite links.

Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of minutes, without paying enormous phone bills. A WAN is complicated.



ADVANTAGES OF NETWORK

- **SPEED.**

Networks provide a very rapid method for sharing and transferring files. Without a network, files are shared by copying them to memory cards or discs, then carrying or sending the discs from one computer to another. This method of transferring files can be very time-consuming.

- **COST.**

Networkable versions of many popular software programs are available at considerable savings when compared to buying individually licensed copies.

- **SECURITY.**

Files and programs on a network can be designated as "copy inhibit," so that you do not have to worry about illegal copying of programs. Also, passwords can be established for specific directories to restrict access to authorized users.

- **CENTRALIZED SOFTWARE MANAGEMENT.**

One of the greatest benefits of installing a network at a school is the fact that all of the software can be loaded on one computer (the file server). This eliminates that need to spend time and energy installing updates and tracking files on independent computers throughout the building.

- **RESOURCE SHARING.**

Sharing resources is another advantage of school networks. Most organizations cannot afford enough laser printers, fax machines, modems, scanners, and CD players for each computer. However, if these or similar peripherals are added to a network, they can be shared by many users.

- **ELECTRONIC MAIL.**

The presence of a network provides the hardware necessary to install an e-mail system. E-mail aids in personal and professional communication for all personnel, and it facilitates the dissemination of general information to the entire staff. Electronic mail on a LAN can enable students to communicate with teachers and peers at their own institute. If the LAN is connected to the Internet, we can communicate with others throughout the world.

- **FLEXIBLE ACCESS.**

Networks allow users to access their files from computers throughout the institute. Like Students can begin an assignment in their classroom, save part of it on a public access area of the network, then go to the media center after school to finish their work. Students can also work cooperatively through the network.

- **WORKGROUP COMPUTING.**

Collaborative software allows many users to work on a document or project concurrently. For example, educators located at various schools within a county could simultaneously contribute their ideas about new curriculum standards to the same document, spreadsheets, or website.

NETWORK TOPOLOGY

Network topology refers to the **layout** used to wire the computers together.

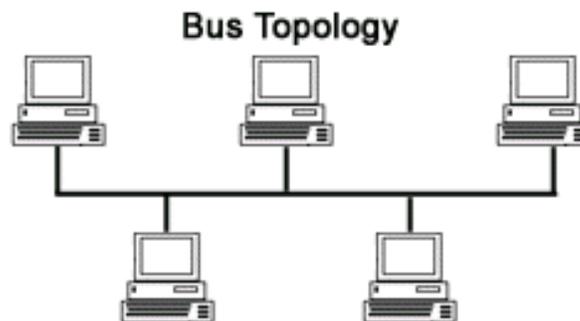
TYPES OF TOPOLOGY

There are four main topologies that are used.

1. BUS
2. STAR
3. RING

BUS TOPOLOGY

Each computer is connected to a single cable which connects all of the computers. All nodes (file server, workstations, and peripherals) are connected to the linear cable.



Advantages of Bus Topology

- Easy to connect a computer or peripheral to a linear bus.
- Requires less cable length than a star topology.

Disadvantages of a Bus Topology

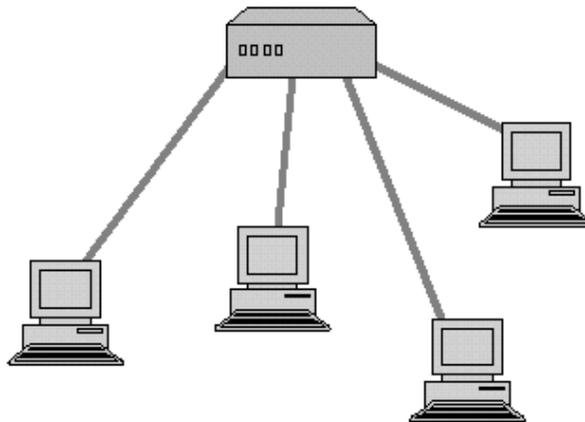
- Entire network shuts down if there is a break in the main cable.
- Terminators are required at both ends of the backbone cable.
- Difficult to identify the problem if the entire network shuts down.
- Not meant to be used as a stand-alone solution in a large building.

STAR TOPOLOGY

“All communication takes place via a central computer or **HUB** device.”

A star topology is designed with each node connected directly to a central network hub, switch, or concentrator.

Data on a star network passes through the hub, switch before continuing to its destination. The hub, switch, or concentrator manages and controls all functions of the network. It also acts as a repeater for the data flow.



Advantages of a Star Topology

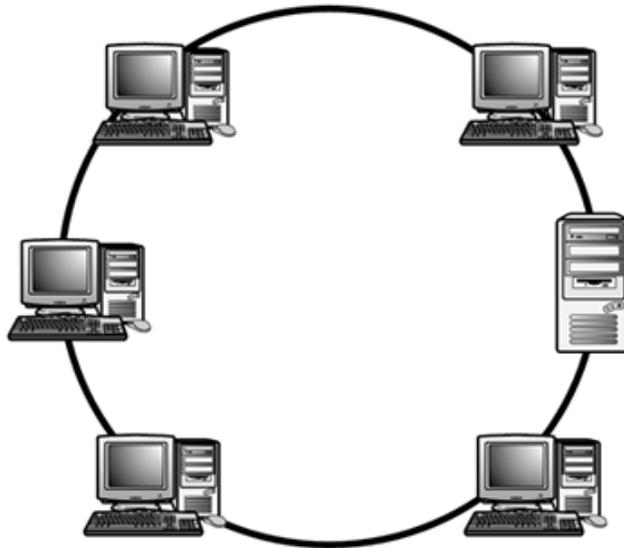
- Easy to install and wire.
- No disruptions to the network then connecting or removing devices.
- Easy to detect faults and to remove parts.

Disadvantages of a Star Topology

- Requires more cable length than a linear topology.
- If the hub or concentrator fails, nodes attached are disabled.
- More expensive than bus topologies because of the cost of the HUB device.

RING TOPOLOGY

Each computer is connected to the two computers on either side of it. The last computer is linked to the first to form a ring.



Advantages of a Ring Topology

- Easy to install and wire.
- Equal Access to devices no one computer will use all the bandwidth
- Easy to detect faults and to remove parts.

Disadvantages of a Ring Topology

- Slow since signals goes in sequential order
- If the concentrator fails, nodes attached are disabled.
- Single break in cable can disrupt the flow of network.

INTERNET

DEFINATION:

Internet is global “**Network of Networks**”. The internet is a worldwide public network of computers on which people can join and use multiple services such as sharing of information.

By internet users at any one computer can get information from any other computer.



HISTORY OF INTERNET

It was developed by the United States Defense Advanced Research Projects Agency in the 1970s and was initially known as **ARPANET**.

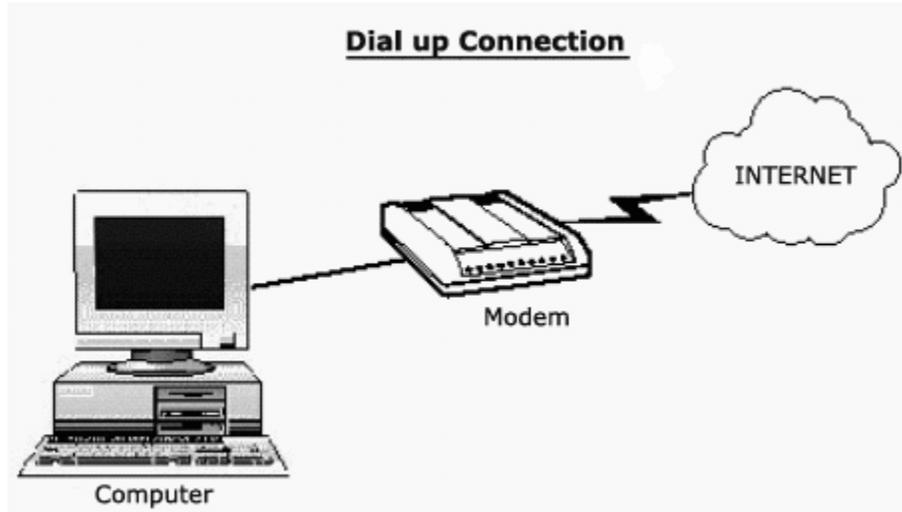
The Internet was designed to be used by companies and Universities doing military research so that they could share information. Since then the number of people who use the Internet and the services that are provided on the Internet have grown tremendously. There are now over 200,000,000 people who regularly make use of it.

CONNECTING METHODS TO THE INTERNET

To connect to the Internet the following are needed:

- a computer
- telephone line
- modem and/or router
- an ISP (Internet Service Provider)

- Web browser, e.g. Internet Explorer, Firefox, Chrome, Safari, Opera etc.



WHAT IS MODEM?

A device which convert analog signals to digital signals and digital signals to analog for transmitting data over internet.

WHAT IS WEB BROWSER?

Web Browser is Software used to display the Web pages. Internet explorer is an example of web browser

Here are some types of web browser:

- Internet explorer
- Firefox
- Chrome
- Safari
- Opera





WHAT IS WEB SITE ADDRESS?

Every web site has a specific address which is also called URL that is Uniform Resource Locator.

EXAMPLE:

<http://www.paknews.com>

HTTP: Hyper Text Transfer Protocol, is rule to send and receive text on internet

WWW: World Wide Web, It consists of a large number of web servers that host websites. Each website will normally consist of a number of web pages. A web page can contain text, images, video, animation and sound.

Paknews: Domain Name

Com: type of web site there are many other types of web sites like

Pak: Pakistan

Edu: education

Mil: military

Gov: govt

Com: commercial

ADVANTAGES OF INTERNET

There many advantages to using the internet such as:

- Email.
- Sharing Information.
- Services.
- Buy or sell products.
- Communities.
- News
- Searching jobs
- Advertisement
- Communication
- Entertainment
- Online education
- Online education and research

DISADVANTAGES OF INTERNET

Although there are huge advantages of internet but there is always another side of picture.

So internet has some disadvantages like

- Viruses
- Security problem
- Immorality
- Many information is not accurate
- Wastage of time

EMAIL

Electronic Mail (**email**) is a system which allows users of a computer network to send messages to each other. Users can usually:

- Send a message to another user, or group of users.
- Keep their messages in a mailbox.
- Read, print and delete messages from their mailbox.

It is not only typewritten messages that can be sent using Electronic Mail. Pictures, music, videos, in fact almost any sort of information you can think of, can also be sent.

Each user has to have his or her own address that other users need to know to send messages to him or her.

Electronic mail is good because it is much faster than the ordinary post. It is also very accessible since you can read your email on any suitable computer anywhere in the world. On the other hand not everybody has an electronic mailbox at the moment, so you cannot use email to send messages to everyone, and you certainly can't send a parcel by email.

There are many email service provider companies which allow any user to send and receive electronic mail like

- **Hotmail**
 - www.hotmail.com
- **Yahoo**
 - www.yahoo.com/mail
- **Gmail**
 - www.gmail.com

WHAT IS SEARCH ENGINE

“Internet search engines are special sites on the Web that are designed to help people find information stored on other sites.”

Tool for finding information, especially on the Internet or World Wide Web. Search engines are essentially massive databases that cover wide swaths of the Internet. Search engines are the primary method Internet surfers use to locate information on the Web.

We can search any information by use of search engines. There are thousands of different search engines to help people navigate the Internet. These include major commercial search engines—like Yahoo!, Lycos, AltaVista, and Excite, as well as many smaller, industry-specific directories. There are even Meta searchers, which work by querying a number of other search engines and processing the results.

Many of the major search engines are created through an automated process in which a program called a spider "crawls" across the Web to gather information about existing sites. The spider captures this basic information and organizes its findings into categories, which are then used to generate search results for users. Small businesses hoping to list an existing Web site with a major search engine may find that the process has already been completed for them by an automated spider

Major search engines URLs are define below:

Yahoo: www.yahoo.com

Google: www.google.com

Alta vista: www.altavista.com

Lycos: www.lycos.com

Msn: www.msn.com

CHAPTER NO 12

INTRODUCTION TO WINDOWS

WHAT IS WINDOWS?

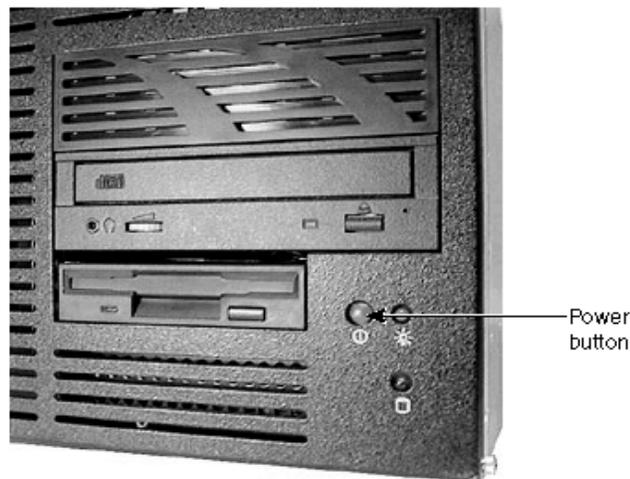
DEFINATION:

“Microsoft windows is an operating system for personal computers and users. It is developed by Microsoft Corporation. Many of computers are working with the windows operating system. Remaining computers use Linux or Macintosh operating systems.”

Windows work with GUI (Graphical User Interface) in which we have a cursor and a screen to operate computer with the help of peripheral devices.

HOW TO START A COMPUTER

- On the front of the system unit you will find the start button which has a symbol like this on it:



(Fig: Start Button)

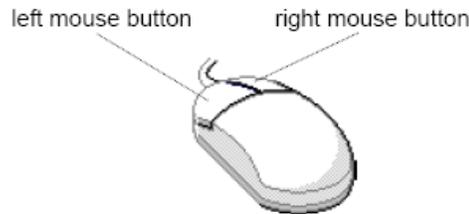
- Press it firmly and then let go.
- You will also need to turn on the monitor by pressing a button with a similar symbol on it:
- The computer then starts the process of ‘booting up’



- In order to start up successfully the computer first has to check that all it's' parts are working properly. You can hear the computer working away at this task, and see text on the screen which tells you what is happening.
- The computer then has to load the Operating System the instructions that help it to run other programs.
- Once this process is completed successfully you will see the Windows start up screen which tells you which version of the operating system is running e.g. Windows XP or Windows Vista.
- Finally, you will see the Windows desktop screen & Taskbar and you will know that the computer is ready for use...

USING THE MOUSE AND CURSOR

The mouse when you move the mouse on the table, you will see the cursor moving on screen. Put your hand on the mouse so you can move it around on the table and also click the buttons with your fingers.



Task ①		Selecting icons	
 My Documents	 My Documents	To select one icon: 1. Move your cursor to the middle of the folder 2. Click the left mouse button	 1x
 My Documents	 My Documents	To select more icons: 1. Select the first icon (see above) 2. Press the Ctrl-key on your keyboard and hold it down 3. Move to the next icon and click the left mouse button	 1x
 My Computer	 My Computer		
Task ②		'Dragging' or moving icons	
 My Documents	 My Documents	To move an icon to another place: 1. Click the left mouse button on an icon and keep the button pressed down 2. Move the mouse to 'drag' the icon elsewhere	 ↓ →
Task ③		Opening icons	
 My Documents	 My Documents	You can always open and look inside an icon. To open a folder for example: 1. Move your cursor to the middle of the folder 2. Double-click the left mouse button: two quick clicks 3. A 'Window' appears to show its contents	 2x
Task ④		Using the right button	
 My Documents	 My Documents	The right button always gives access to functions: 1. Select an icon and keep your cursor on the folder 2. Click the right button: A function menu appears 3. Move the cursor to choose an option and click again	 ↓

FEATURES OF WINDOWS

GRAPHICAL USER INTERFACE:

Windows using graphical user interface environment that simplifies the user's interaction with the computer by representing programs, commands, files, and other options as visual elements, such as icons, pull-down menus, buttons, scroll bars, windows, and dialog boxes.

START BUTTON

On very left corner a Start button is located in windows. By clicking it we can access many of the main programs within the computer. It is very easy way to interact by computer programs just click on start button and access these programs like open a document, paint, calculator, manage files , maintain systems and many more.

TASK BAR

In the bottom section of the screen, there is (or there may be) a long bar. It is called the Taskbar:



On the left side of the taskbar, there is an object labeled Start  or . The appearance of this object depends on the type of Windows you are using but it plays the same role.

On the right side of Start, there is a wide area that is empty when the computer starts. This is actually referred to as the taskbar.

In some versions (Windows 95, 98, Windows Server 2003), the color of the taskbar may be gray (or Silver). In some other versions (Windows Millennium), the taskbar may be yellowish. In Windows XP, it may be blue.

On the far right side of the taskbar is a section called the tray area. One of the things that this area displays is the current time (as set on your computer).

ICONS

Icons are small graphical images that can represent your computer's programs, files, folders and printers amongst other things.

To activate the program/file/folder that an icon represents you simply double click (two clicks in quick succession) on it with the left mouse button. This will activate the icon and either start a program or open a file/folder.

The icons on your desktop can be renamed by right clicking on them and selecting **rename**. They can be deleted by right clicking and selecting **delete**. It's possible to create your own Windows desktop icons for programs, files, folders, etc.

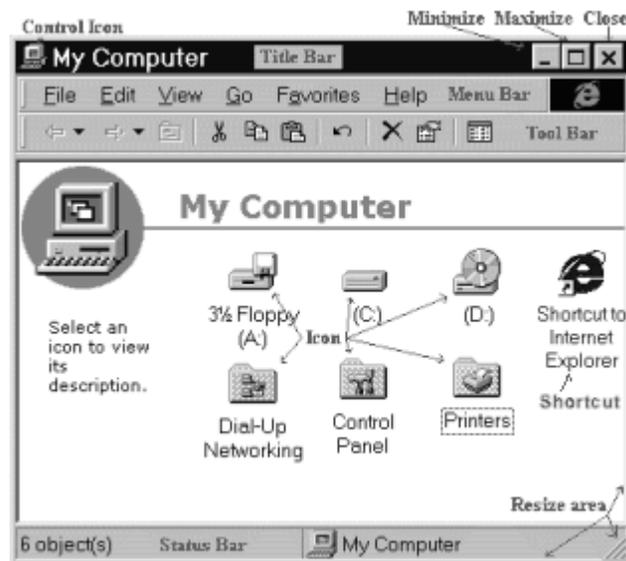
Examples of icons are

- My computer
- My document
- Recycle bin
- Shortcut



MY COMPUTER:

My computer icon has information displays all the components of the computer including disk drives and networks all parts of the computer can be accessed through My Computer's hierarchical structure double click on any icon to view the contents of a disk, folder or run a program.



(Fig: my computer)

MY DOCUMENT:

My Documents is the name of a special folder on the computer's hard disk that the system commonly uses can store his documents, music, pictures, downloads, and other files.



(Fig: My Document)

RECYCLE BIN:

When you delete a file, Windows XP will place the file into the recycle bin (instead of deleting it altogether), this allows you to **restore** the file in case you deleted it by mistake.

For example, if you deleted a file by accident you could double click on the recycle bin icon to see its contents. Inside you will see the file/folder that you deleted, to restore the file back to where you deleted it from, right click on it and then select **restore** from the menu that appears.

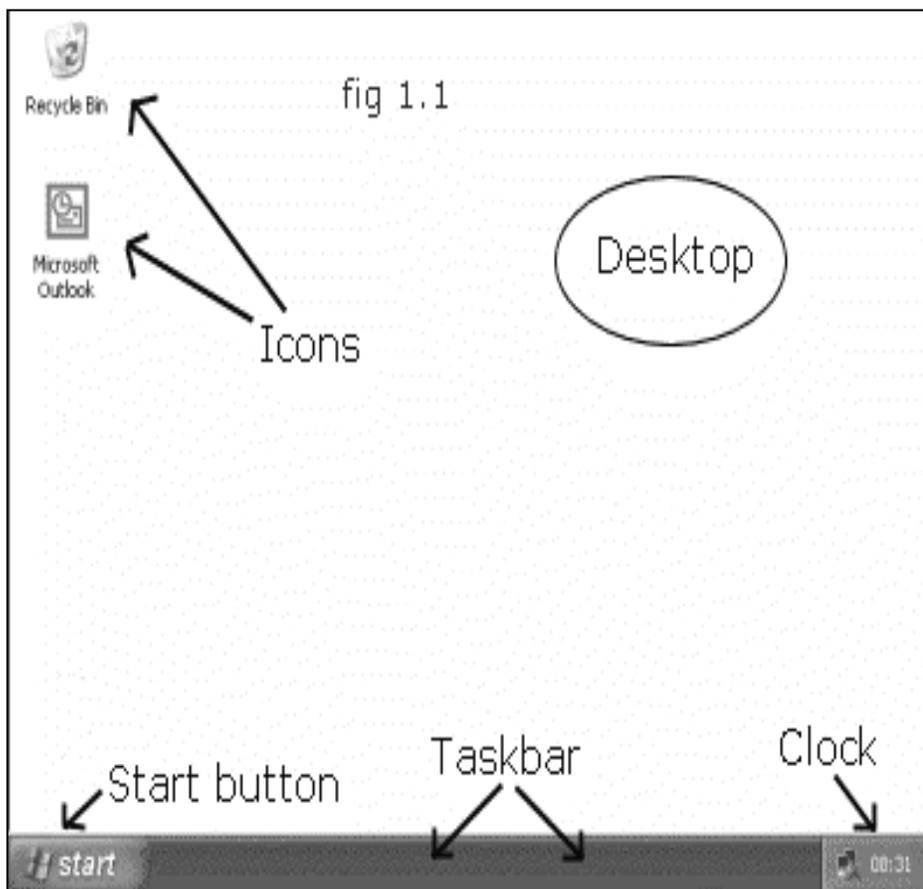


(Fig: Recycle bin)

DESKTOP

After you have started the computer, the area you are looking at is called the desktop. The desktop is usually different from one computer to another. This is because some items get added as new programs are installed on a computer, and other items get deleted at will. Eventually, you will know how to change the way your desktop looks.

The Microsoft Windows desktop is made of various parts. From the upper left to the lower left side of the screen, there are small pictures or images called **icons**. Each one is used to make the computer do something. Here is an example:



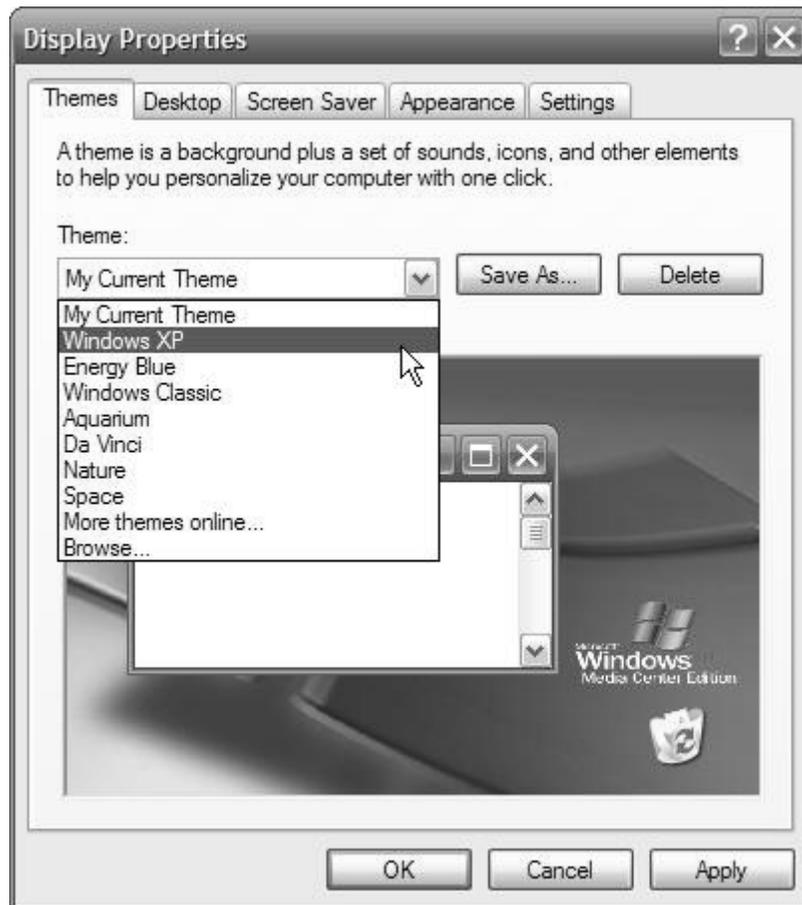
(Fig: Desktop)

HOW TO MANAGE AND CUSTOMIZE YOUR DESKTOP APPEARANCE

Lots of computer users just leave their desktop with the default windows settings, but if you are a little bit creative and want your computer to be more "you", you have various options for customization.

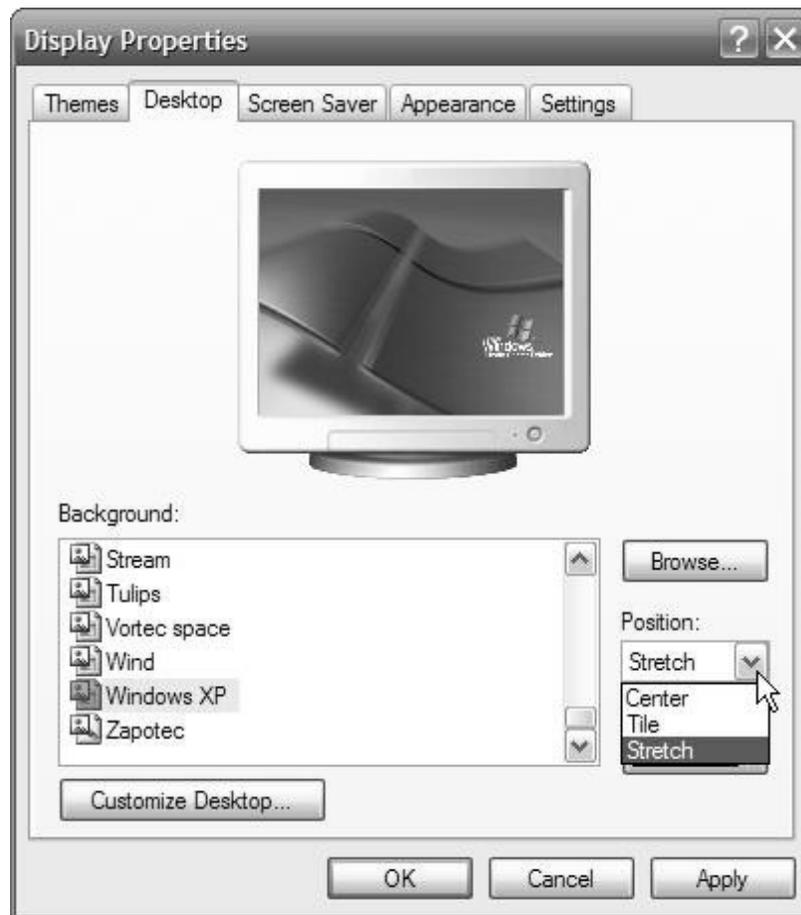
To get to where you make changes to the look & feel

- **Right-click on an empty area of your desktop**
- **Click Properties**



From the drop-down menu under the "Themes" tab, you can choose a **Theme**. A theme will give you a background and a set of sounds, Icons and other elements that will change the Look & feel.

You don't have to choose a **Theme** - you can also make your own settings.



From the **Desktop** tab in your properties window you can choose between many different pre-installed patterns and pictures. Scroll through them and pick one, if you can find one you like. The images have different proportions, so you get another option on the right hand side of the window. You can choose to:

- **Center** the image
- **Tile** the image
- or **Stretch** the image

If you have a picture stored on your computer, you can choose to add your own picture to the list and use it as a wallpaper image.

- **Click the browse button on the right side of the window**
- **In the drop-down menu on top of the window choose the location of your picture**
- **Select the picture by clicking on it**
- **Click open**

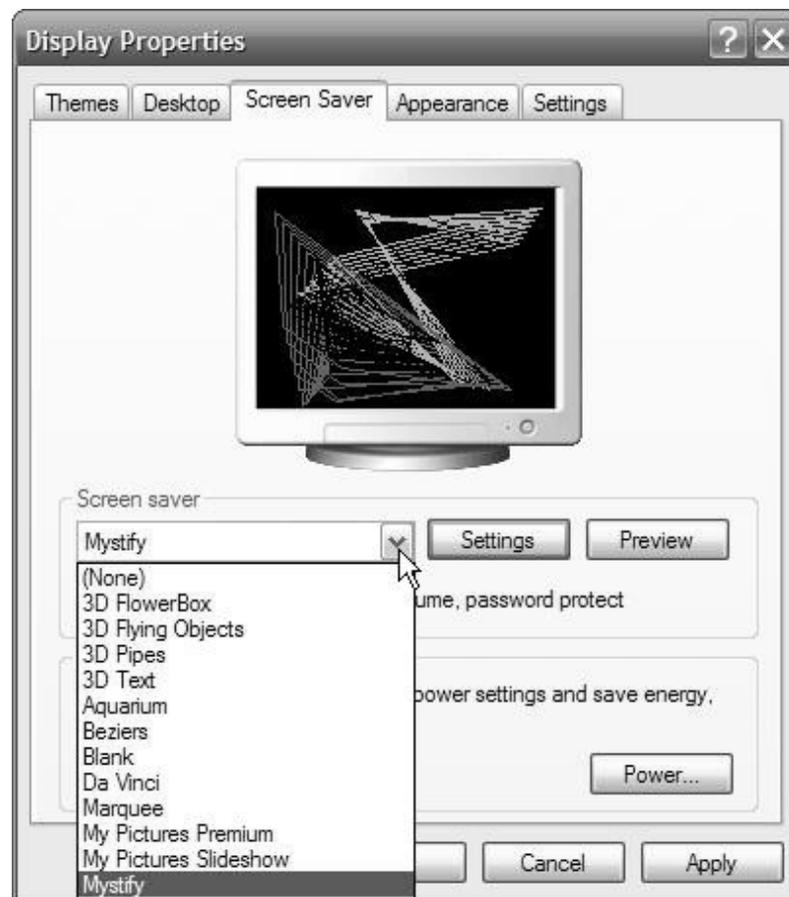
THE SCREEN SAVER

A screen saver is a moving design that appears on a computer screen when there has been no input for a specified period of time. Screen savers prevent the damage that occurs when the same areas of light and dark are displayed too long.

It would actually take many hours to burn in an image on today's color monitors, but a lot of people find screen savers nice to look at and it "covers" up your work, if you have to leave the computer for a while.

Pressing a key or moving the mouse restores the screen.

To change the look of your screen saver choose the "Screen saver" tab in your desktop properties window.

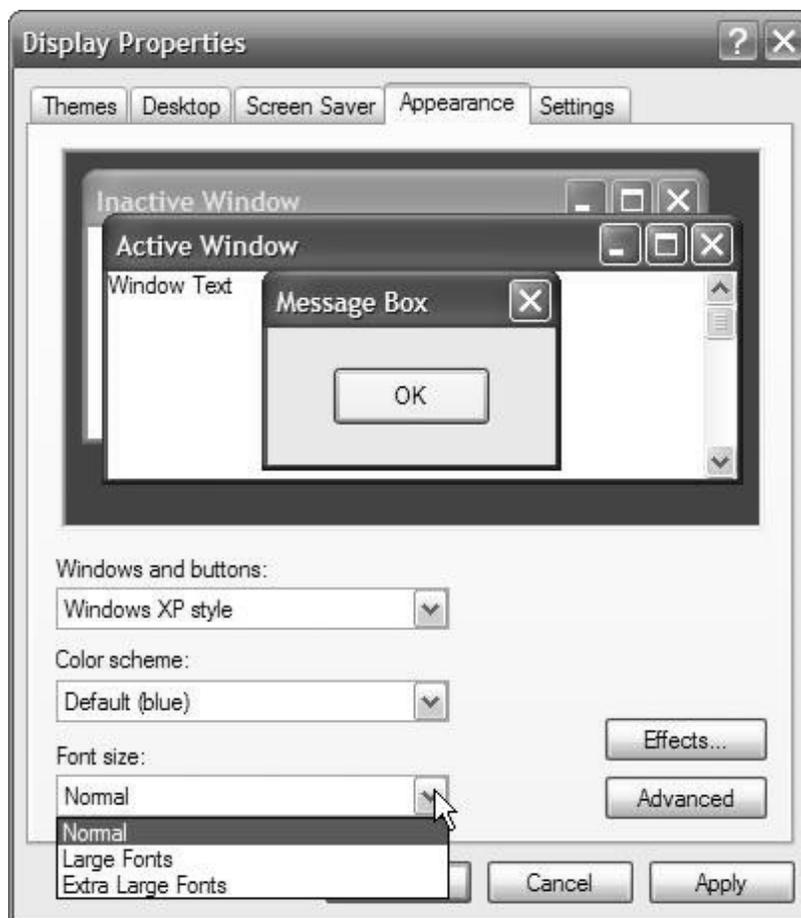


From the drop-down menu choose one of the pre-installed screen savers. When you click on the screen savers in the menu, you will be able to preview, what it looks like. You can see a small sample desktop inside the window - or you can click the "preview" button to the right and see what it would look like on your monitor. To get out of the preview mode, simply click once anywhere on the screen.

Another thing you are able to change is how your windows and buttons look, as well as the size of the font.

- **CLICK THE APPEARANCE TAB**

Depending on which Windows operating system you are using, you will find several choices in font-sizes and styles the drop-down menu.



START BUTTON AND START MENU:

The Start Button starts programs, opens documents, and access most parts of the system. Windows Program menus can be customized as needed.

- **Program** displays a list of the programs that are installed through Windows available to use.
- **Documents** displays a list of the last 15 documents used allowing the user to open them directly from this menu
- **Settings** displays system components, such as printers, control panel and taskbar
- **Find/Search** has search abilities to find files, folders and phrases in documents on your computer
- **Help** displays help topics broken up into contents, index and find components
- **Run** allows you to start a program from a command line
- **Shut down** shuts down the computer, restarts the computer or logs you off a network
- **Favorites** and **Active Desktop** is an option available to Windows 98+ (or Internet Explorer 4x) users.



DETAILS

- **PROGRAMS**

The program contains a list of programs that are installed and store in your computer while you installed your operating system. All programs contain many sub options like:

- **Accessories:** calculator, paint, word pad, Note pad and command prompt etc.
- **Internet explorer:** a web browser to explore web site on internet.
- **Ms. Office:** Very important application software contains, Ms. Word, Excel and Power point.

- **DOCUMENTS:**

This option contains the resent copies of files. It displays a list of the last 15 documents used allowing the user to open them directly from this menu and it is updated after some time whenever user modify or changed file.

- **CONTROL PANEL & SYSTEM PREFERENCES**

Control panel is used for setting hardware, programs, software and drivers of all components of system. It is used to change system settings like screen savers, time, screen colors.

It is also used to add and remove programs, fonts add and make changes to hardware and software settings.





- **USING HELP**

Help is to get help about a specific procedure click the help button in the top right corner of the screen

- Contents list general topics grouped by subject
- Index list specific topics accessed by scroll bars or typing the topic
- Find creates an index of words in Help and allows searches by word or phrase
- click Help Topics to return to the Help menu
- Troubleshooters will step you through a series of steps to solve computer problems.

SEARCH

To search for a file or folder:

- Click **Start**, and then click **Search**.
- In the **Search Companion** dialog box, click **All files and folders**.
- Type part or all of the name of the file or folder, or type a word or phrase that is in the file.
- In the **Look in** box, click the drive or drives, folder, or network location that you want to search.
- Choose one of the following options:
 - Click **When was it modified** to look for files that were created or modified on or between specific dates.
 - Click **What size is it** to look for files that are specific size.
 - Click **More advanced options** to specify additional search criteria.
- Click **Search**.



TURN OFF COMPUTER:

- Close all programs that you have open, by clicking on the close button in the top right hand corner of the screen. 
- Don't forget to close any programs that you have open, but minimized, on the task bar at the bottom of the screen:



- One of the strange things about the PC is that you stop it from the Start Menu.
- Using your mouse click on the Start button in the bottom left hand corner of the screen which opens the start menu.



- Click on Turn Off Computer button
- Click on the Turn off button.
- This will complete the process of closing down the PC, but just as the computer takes time to boot up, so the shutting down process takes time as the computer shuts down all its' operations safely.

CHAPTER NO 13

MANAGING FILES AND FOLDERS IN WINDOWS

WHAT ARE FILES?

Our computer network is like a huge filing cabinet that stores all our compute information. Each drive is like a separate drawer in the cabinet. A file is a single “**document**” that is saved to a drawer that means in diskette, USB, hard drive or any other storage device.

Each letter, slide show, spreadsheet, or database you create is stored as a file. Every file saved has a *filename*. You can use multiple words for the filename; for example, *Letter to Sam*. Do NOT use special characters, \ / : * ? " < > | .

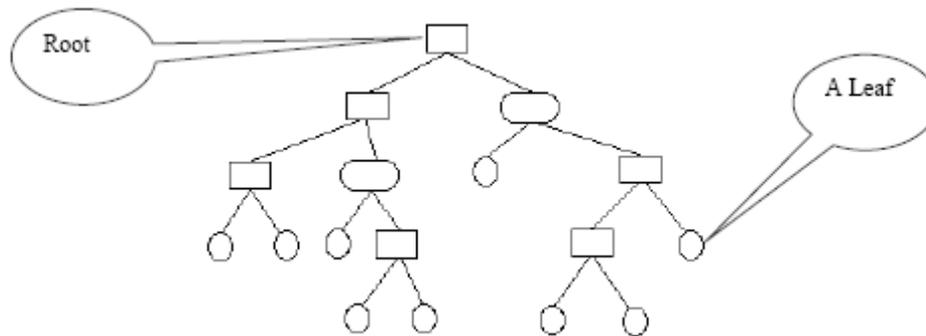
Every file also has a three-letter **extension**, assigned by the Windows system that associates it with a specific program. For example, a WordPerfect complete file name would be "Letter to Sam.wpd" and a Word file name would be "Letter to Sam.doc".

WHAT ARE FOLDERS?

"Folders," also known as "**directories**," on your computer work in much the same way that file folders in the real world work. Folders are used to organize the data stored on your drives. The files that make up a program are stored together in their own set of folders.

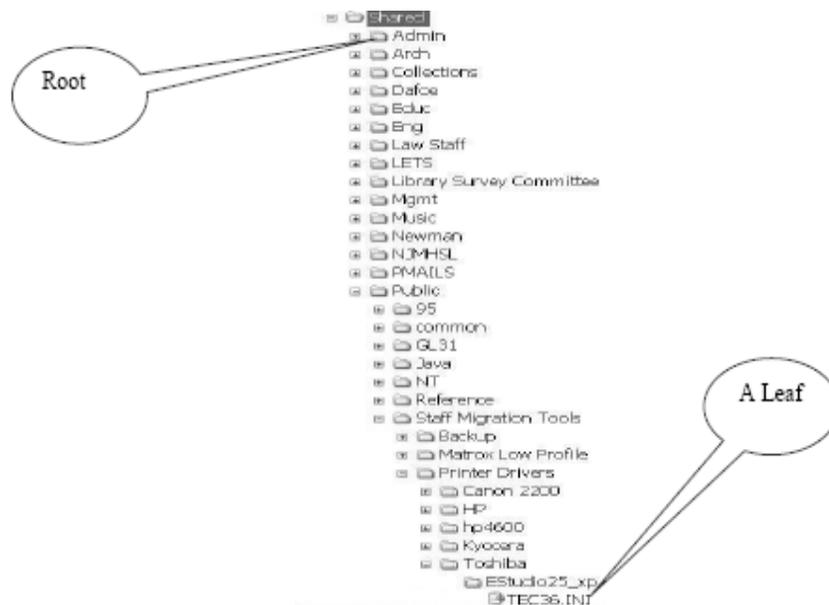
FILE STRUCTURE

The file structure is best described and understood in a tree structure format. A **tree structure** is one way of representing any hierarchical structure in a graphical form.



It is called a "tree structure" because the graph looks like an upside down tree meaning that the root of the tree is on the top and the leaves at the bottom.

Microsoft Windows uses the same structure and we all use it everyday at work, even though it may not look like the figure above. Our shared drive data structure looks like the following:

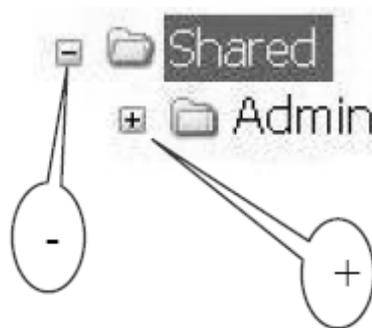


ORGANIZING FILES AND FOLDERS

As you can see in the previous example, the libraries shared drive is organized in a tree format. S:\ is the root and all other folders are contained inside it. Most departments have their own folders which is the root for their department. For example: UE examination department.

Here is another way to think about it. Just imagine a filing cabinet with many drawers. Inside the drawers are many folders and within the folders there are other folders or individual documents.

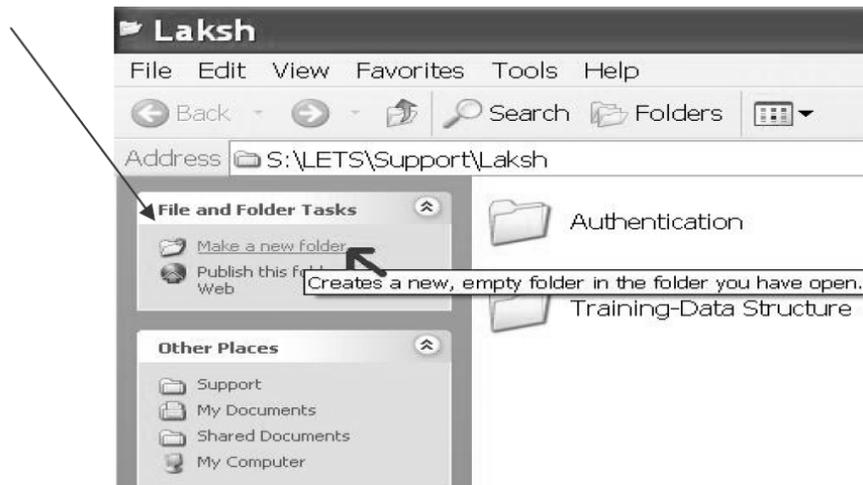
Notice the minus sign besides the shared folder. Whenever you see a minus sign beside a folder, it means the folder is fully expanded and does not contain anything else other than what is showing below it. A plus sign means that the folder contains at least one file or folder inside it. Clicking the plus sign will expand the folder and make known everything inside it.



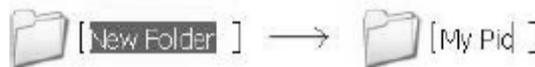
HOW TO CREATE A FOLDER

Here are the two most common ways of creating folders:

1. In My Computer, double click on the folder where you would like to create a new folder.
2. You can then create a new folder by selecting “Make a new folder” in the File and Folder Tasks
3. Tasks drop-down menu. In the following example, a new folder will be created inside a previously created folder named “officework”.

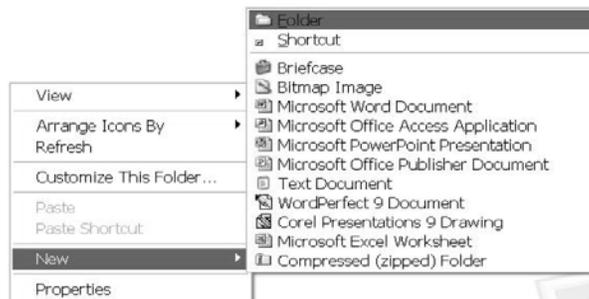


4. A folder icon will appear. Please rename the folder with a descriptive name:

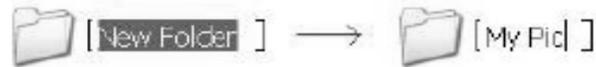


OR

5. You can also create a new folder by *right clicking* on an empty space in your H:\My Documents folder and selecting New and then Folder (this is all still in My Computer).



A folder icon will appear. Please rename the folder with a descriptive name:



NAMING A FILE

Definitions:

File: A file is a single “document” that is saved to a diskette, USB, hard drive or any other storage device.

Folder: A folder is where files are stored.

Path: A path is the line of folders you must follow to locate a specific file; it begins with the drive letter designation and includes the folders. For example, **H:\data\reports\status.doc** is a path with file named **status.doc** that is on the H: drive and is in the **reports** subfolder of the **data** folder.

All file systems follow the same general conventions: a base file name and an optional extension, separated by a period e.g. abc.doc.

MAXIMUM LENGTH

In Windows, the maximum length for a **path** is 255 characters including spaces, hyphens, underscore and any other character you use (no periods allowed). A path is structured in the following order: drive letter, colon, backslash, components separated by backslashes, for

Example:

H:\my documents\personal\trips-I-have-taken-in-the-past-few-years\I-have-onlytaken-one-trip|i_need_to_go_travel_some-more\my-pictures\year- 2006\May\first_week\hiking-in-the-mountains\this-is-the-maximum-length-of-a-filename\ including-the-folders\LK.html.

Note: As you may have noticed above the actual file name is only two characters (not including the .html extension) but remember the maximum length for a file **path** is 255 characters, so depending on how many folders you have inside a folder where you are storing the file, the length of the actual file name will be restricted.

NAMING CONVENTIONS

Do not assume case sensitivity. Consider names such as OFFICE, office, and office to be the same.

Use a consistent method for file and folder naming.

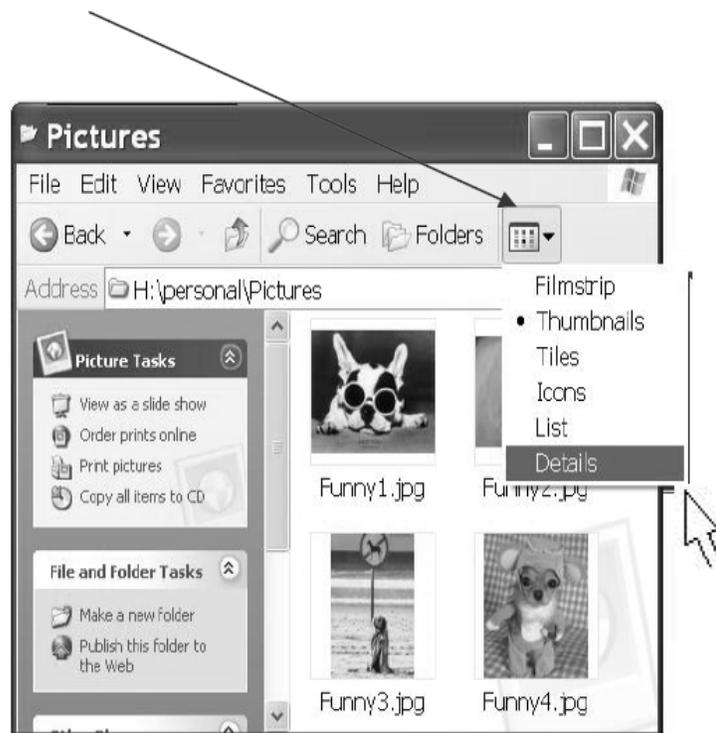
Avoid too many folders inside a folder (remember the path length limit).

BROWSING FILES

Even when you know where a file is stored, sometimes there are so many files in the folder that it is difficult to find the file you want. The best way to search through a large folder is to use the “Details” view. The “Details” view allows you to quickly sort your files and view different types of information about all the files in a folder.

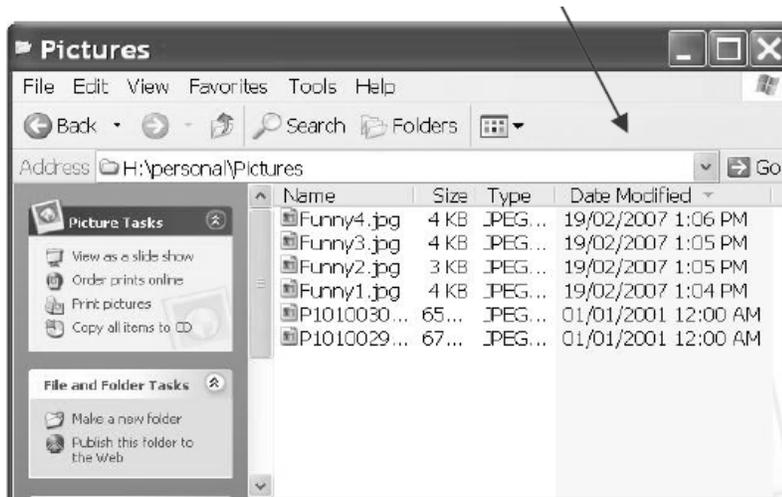
To use the Details view

1. Open the folder you want to browse. In the example, I am in my “Pictures” folder.
2. Click the “**Views**” button, and then click “**Details**”.

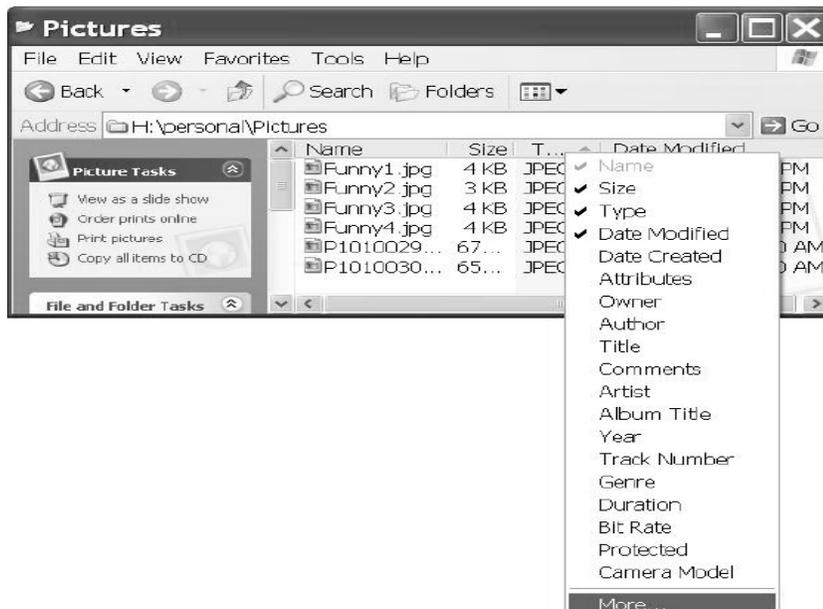


3. Sometimes it is easier to find a file if all the files are sorted in a particular way. Suppose you created a file yesterday afternoon but do not remember what you named it.

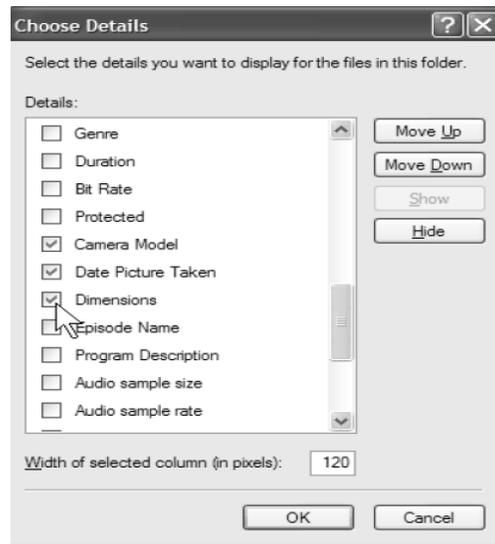
4. Click the column heading that you want to sort by. For example, to sort files from oldest to newest, click the **“Date Modified”** heading. To reverse the sort order (for example, to sort from newest to oldest), click the column heading twice.



5. By default, the **“Details”** view shows the file name, date, size, and type. You can add other information as well. To add or remove columns, right-click a column heading, and then click **“More”**.



6. In the **Choose Details** dialog box, select the columns you want to see in the Details view. For pictures and videos, you can add **Dimensions** to sort by size. For music, you can add **Artist**, **Album Title**, and **Genre** to make it easier to find the songs you want.



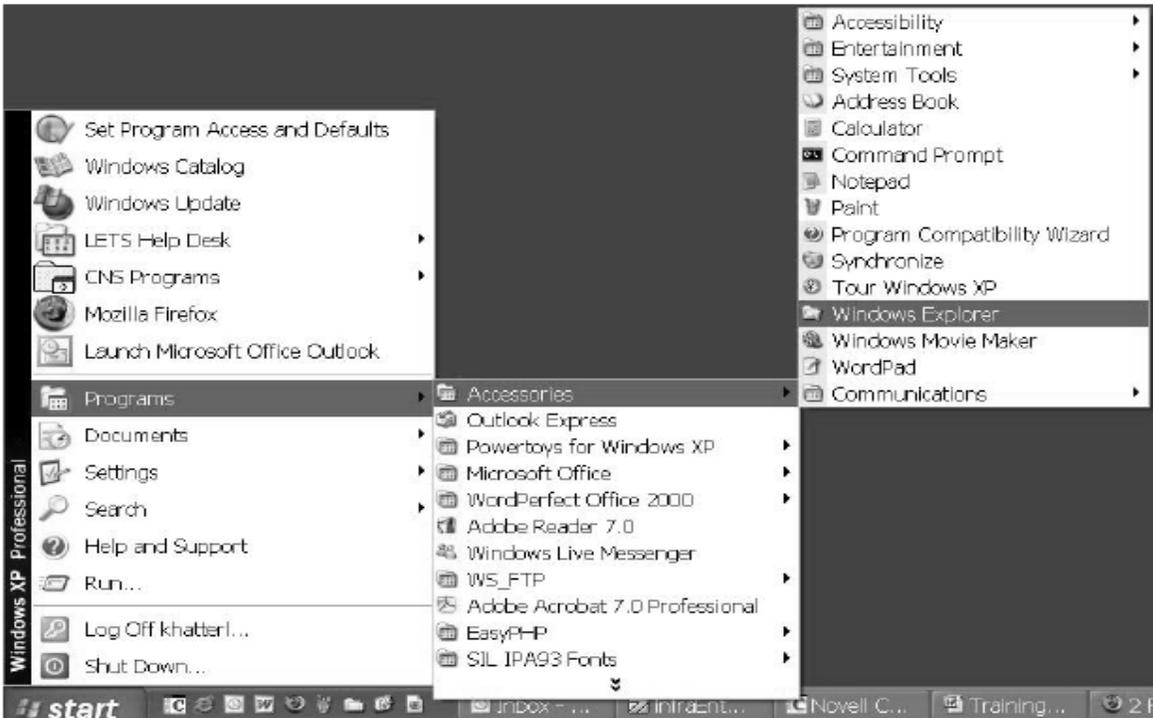
7. Click **“OK”** to add the columns to your Details view.
8. When you modify the columns in the Details view, it affects only the folder you are viewing.

MOVING FILES FROM ONE FOLDER TO ANOTHER

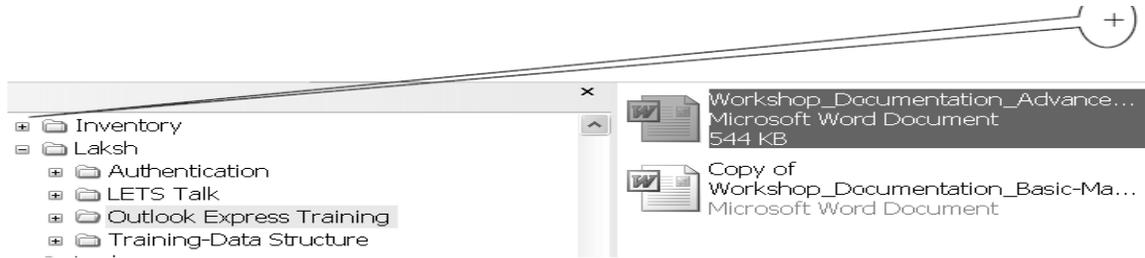
Sometimes you need to move files that you have already created into another location. It has two methods for exploring any document defined below:

METHOD 1

1. Click “Start” → “Programs” → “Accessories” → “Windows Explorer”.



2. In “Window Explorer”, locate and select the file or folder you need to move using the tips above.
3. Expand to the destination folder by clicking on the “+” sign if needed

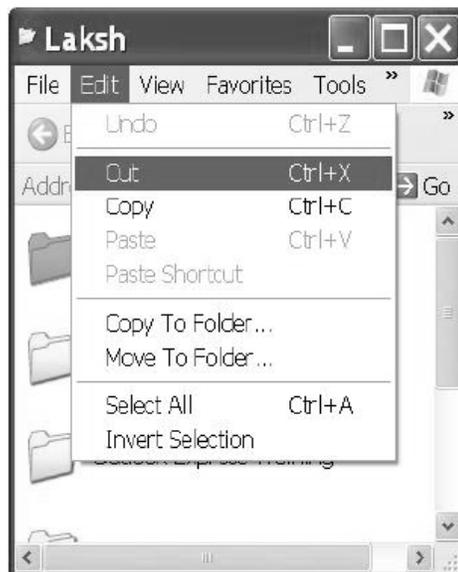


4. Drag the file or folder to the destination and drop it in.

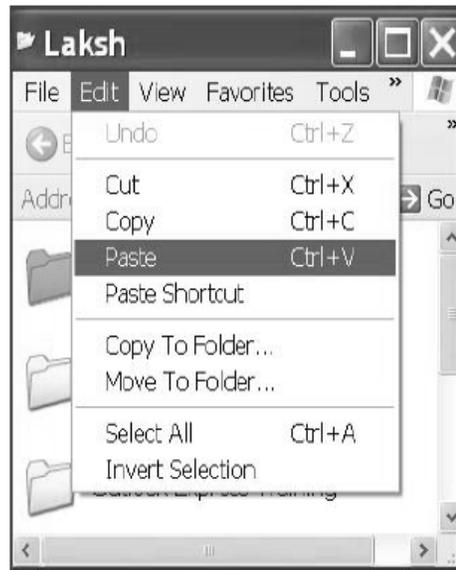


METHOD 2

1. In “My Computer”, locate and select the file or folder you need to move using the tips above.
2. Click “Edit” → “Cut” or press Ctrl + x on the keyboard to cut the file.



3. Open the destination folder.
4. Click “Edit” → “Paste” or press Ctrl + v on the keyboard to paste the file.



OPENING FILES

Sometimes you open up Microsoft Word and click “File” → “Open” and pick the file you want to open and you get the following error message:



This happens because you are trying to open a file in Microsoft Word that is not a “Word” file

(.doc) but rather in some other format such as power point (.jpg, .ppt, .pdf), etc.

Another way to open a file is by navigating to the file in “My Computer” and then double clicking on the file. The file will automatically open in the appropriate program whether it is Microsoft Word or PowerPoint.

HOW TO CREATE SHORTCUTS?

Shortcuts can make your life easier or harder depending on how you use them. By creating too many shortcuts you will clutter up your desktop. A shortcut is just a **reference link** on your desktop to a file or a program.

Example:

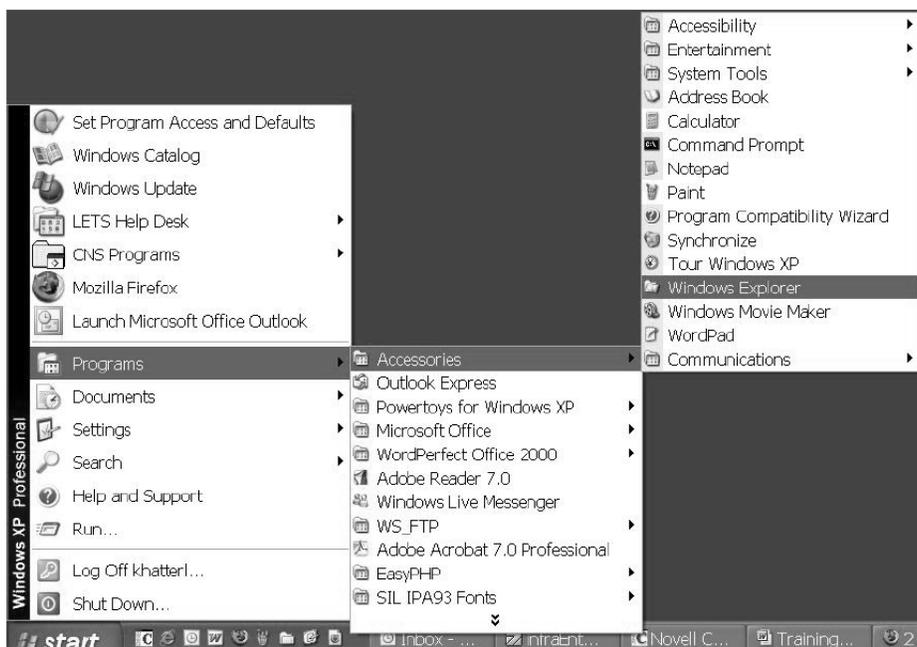
You could create a shortcut on your desktop of a file saved on your H:\ drive that you access everyday or quite frequently. This way your file stays on the H:\ drive but you create a link to the file by creating a shortcut. This allows you easy access to the file without compromising the file in case of hard drive failure.

Note: Copying or saving a file to your desktop is not the same thing as creating a shortcut. When you copy a file to the desktop, you actually make a duplicate copy of the original. This means you have two files now, one on the desktop and another in the original location. Making any changes to one of the files will not change the other.

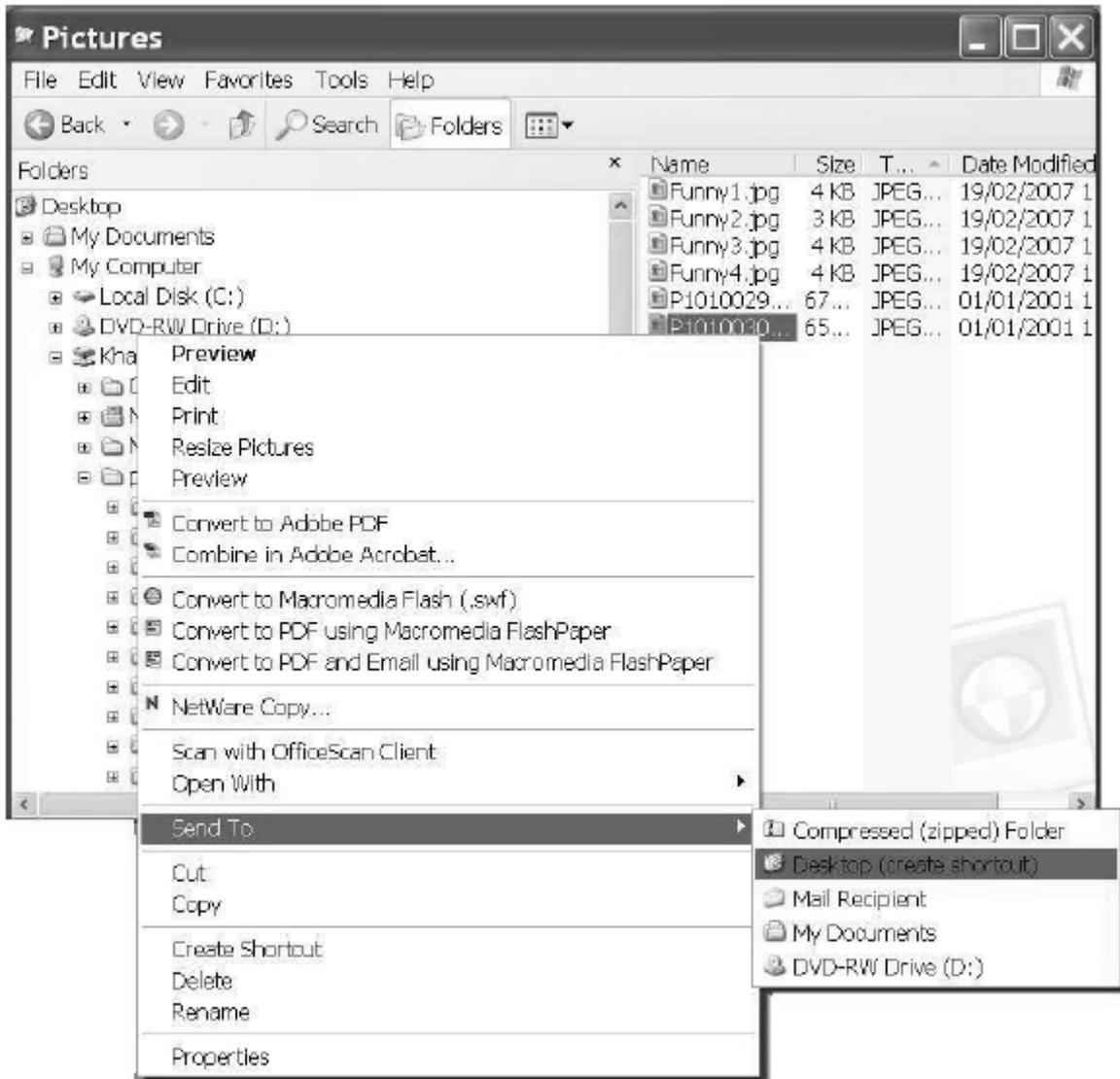
CREATING SHORTCUTS:

Here is one way to create shortcuts:

1. Click on Start → Programs → Accessories → Windows Explorer.



2. Find the file or program you want to create a shortcut for.
3. Right click on the file, then click on “Send to” and then click “Desktop (create shortcut)”
4. You should now see a shortcut icon on your desktop.



NOTE: A black arrow on the icon means that it is a shortcut. Otherwise, it may be a copy of the file.



CHAPTER NO 14

MICROSOFT WORD 2007

WHAT IS WORD PROCESSOR?

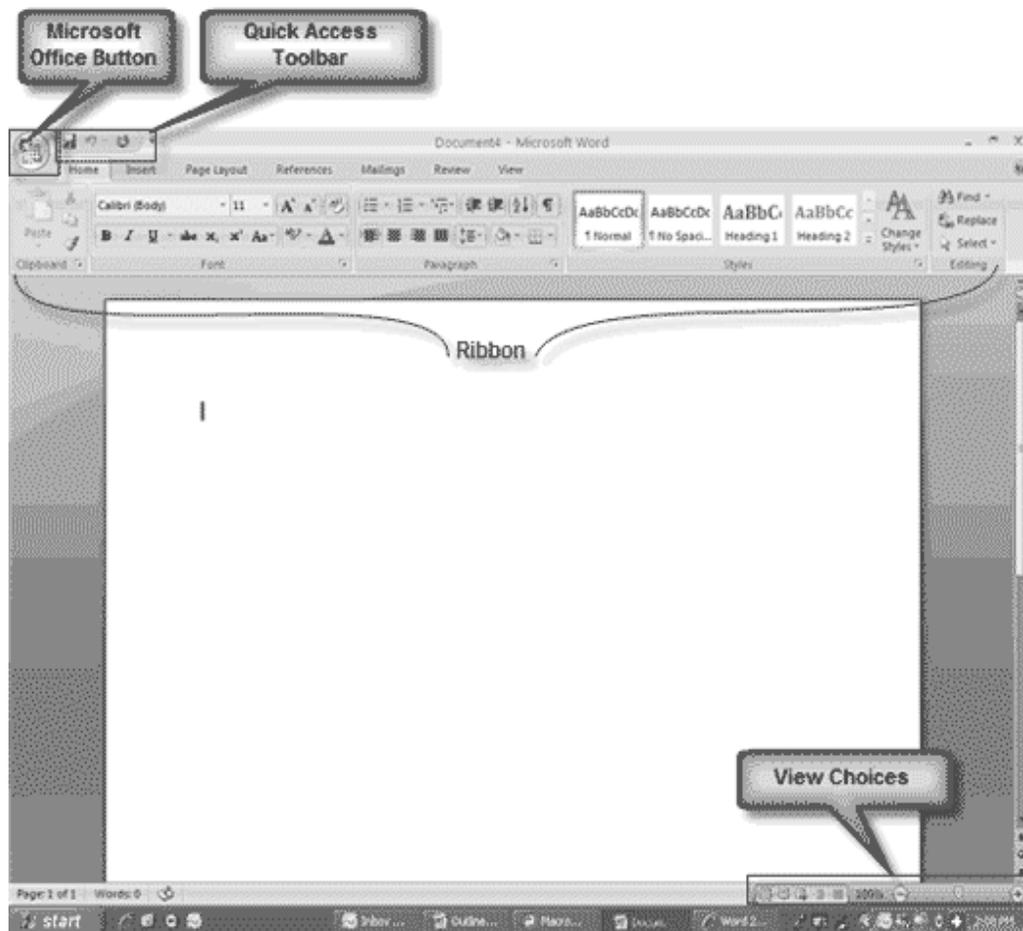
A word processing package is used to prepare and edit text. Word processors are used to create all types of documents such as letters, reports and essays. Using a word processor you can type, revise and correct a document on the screen before printing it out. The layout of the page can be changed and a wide variety of different styles of text can be used to improve the presentation of a document. Tools such as spelling checkers can help ensure that the contents of a document are accurate.

The functions of a word processor can be divided up into several different categories:

- **Page Layout**: The page layout functions let you decide how each page will be set out.
- **Text Presentation**: The appearance of text can be easily altered. Different fonts and styles can be used and the size of text can be varied. Text can be neatly lined up on the page.
- **Editing of Text**: Text editing functions are used to revise and change text that you have entered.
- **Blocks of Text**: The style and position of selected blocks of text can be changed.
- **Text Analysis**: The word processor can look at your document and try to highlight any errors such as spelling or grammatical mistakes that you have made.
- **Templates**: Template files let you save favorite document layouts that you have created so that you can use them over and over again.
- **Other Features**: Most modern word processors will offer lots of extra features such as tables, bullet points and fancy text effects.
- **Mail Merging**: A database of names and addresses can be used to personalize letters that have been created in a word processor.

GETTING STARTED

SCREEN LAYOUT



To get started first familiarize you with the layout of Microsoft Word 2007. If you will analyze the layout then you will notice it does not have the regular menu system. It now has tabs and buttons.

1. OFFICE BUTTON
2. QUICK ACCESS TOOLBAR
3. TABS
4. RIBBON.

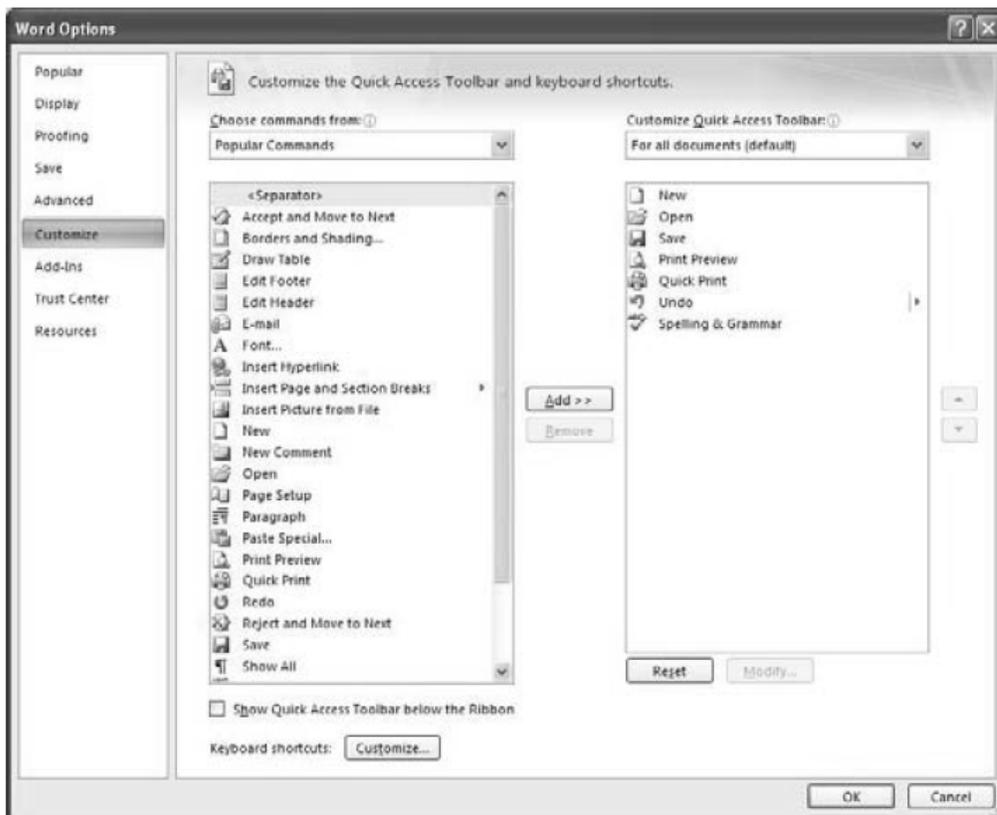
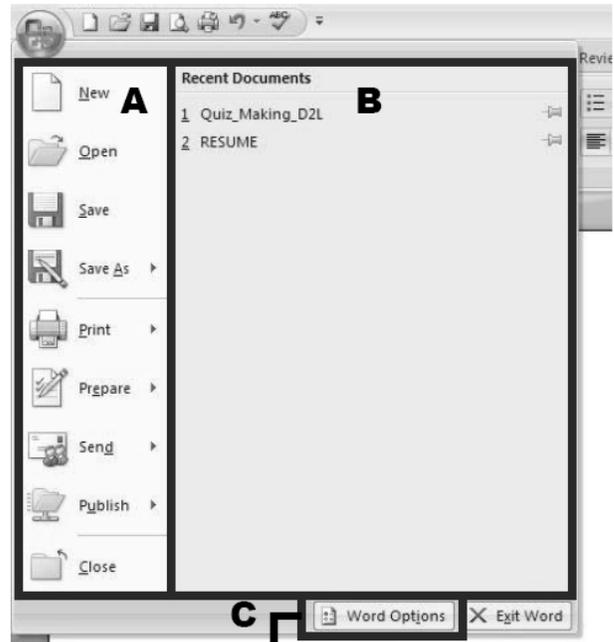


1) OFFICE BUTTON

The Microsoft Office button performs many of the functions that were located in the File menu of older versions of Word. This button allows you to create a new document, open an existing document, save or save as, print, send (through email or fax), publish or close.

This is also where you can customize your Quick Access Toolbar.

- Start new project; Open a Project, Save, Print, etc.
- This shows recent documents and is a quick way to open a recent project.
- This opens the Word Options window where you can change settings and customize your Quick Access Toolbar.



2) QUICK ACCESS TOOLBAR:

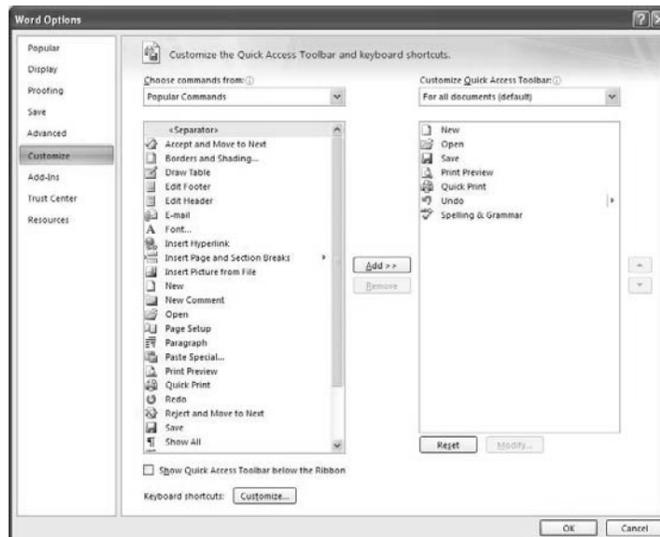
The quick access toolbar is a customizable toolbar that contains commands that you may want to use. You can place the quick access toolbar above or below the ribbon. To change the location of the quick access toolbar, click on the arrow at the end of the toolbar and click on Show below the Ribbon.



With this tool bar one can set it up to fit his/her needs. To do so just click the arrow at the end of this bar and select which items best suit your needs. it will be placed in the order that are selected.

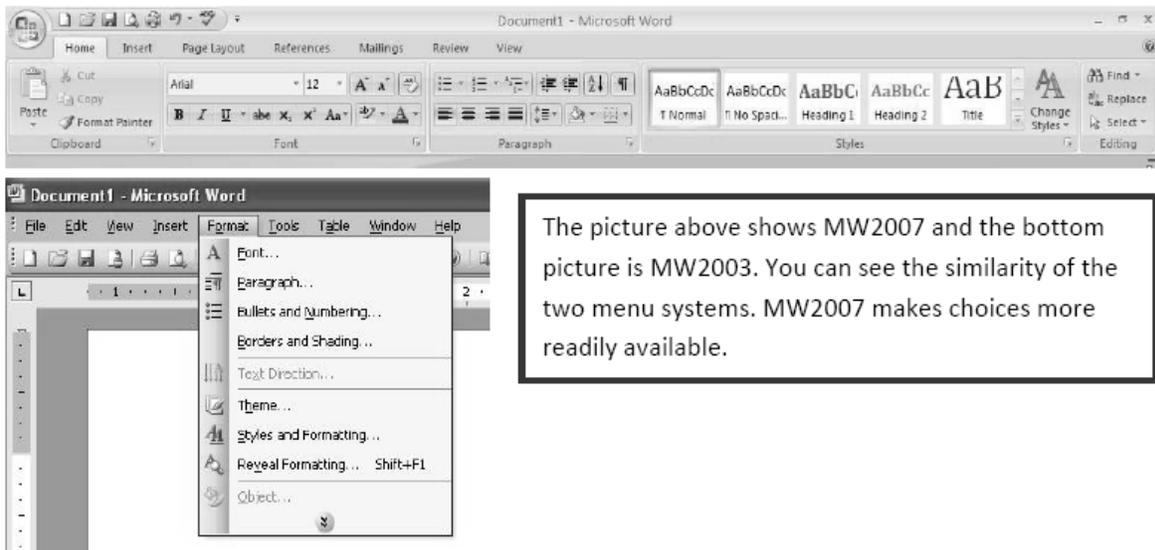
Again to customize this Quick Access Toolbar

- Go to the office button and select Word Options.
- Click customizes on the left and you can search for any buttons that suit your needs.
- A Shortcut to customize this bar is to right click in the Tabs bar and select Customize Quick Access Toolbar.



3) TAB

Tabs are similar to the menu system of MW2003 (Microsoft Word 2003) instead of having dropdown menus MW2007 (Microsoft Word 2007) created the Tab and Ribbon system. When you select a tab it will display the Ribbon associated with that tab. Here everything has been changed into button form.



4) RIBBON

The Ribbon is the panel at the top portion of the document. It has mainly seven tabs: Home, Insert, Page Layout, References, Mailings, Review, and View that contain many new and existing features of Word. Each tab is divided into groups.

The groups are logical collections of features designed to perform functions that you will utilize in developing or editing your Word document. Commonly used features are displayed on the Ribbon, to view additional features within each group, click on the arrow at the bottom right of each group.

HOME	Clipboard, Fonts, Paragraph, Styles, and Editing.
INSERT	Pages, Tables, Illustrations, Links, Header & Footer, Text, and Symbols.
PAGE LAYOUT	Themes, Page Setup, Page Background, Paragraph, Arrange
REFERENCES	Table of Contents, Footnote, Citation & Bibliography, Captions, Index, and Table of Authorities

MAILING	Create, Start Mail Merge, Write & Insert Fields, Preview Results, Finish
REVIEW	Proofing, Comments, Tracking, Changes, Compare, Protect
VIEW	Document Views, Show/Hide, Zoom, Window, Macros

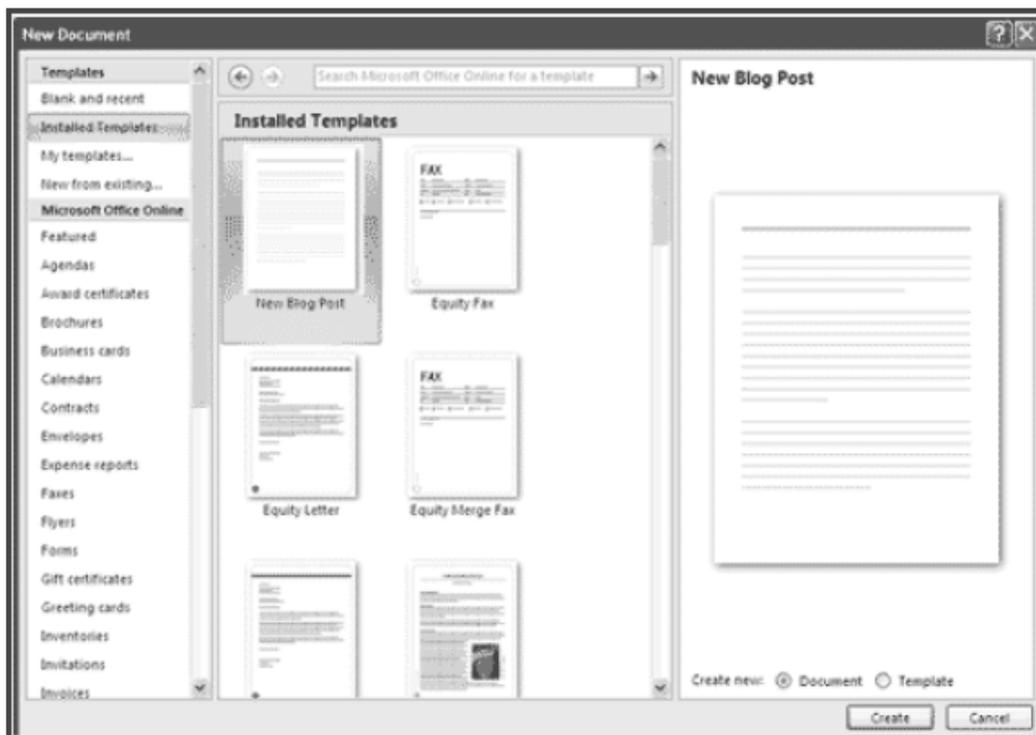
WORKING WITH DOCUMENTS

CREATE A NEW DOCUMENT

There are several ways to create new documents, open existing documents, and save documents in Word:

- Click the **Microsoft Office Button**  and Click **New**
- Or
- Press **CTRL+N** (Depress the CTRL key while pressing the “N”) from the keyboard

You will notice that when you click on the Microsoft Office Button and Click **New**, you have many choices about the types of documents you can create. If you wish to start from a blank document, click **Blank**. If you wish to start from a template, you can browse through your choices on the left, see the choices on center screen, and preview the selection on the right screen.



OPENING AN EXISTING DOCUMENT

- Click the **Microsoft Office Button**  and Click **Open**,
OR
- Press **CTRL+O** (Depress the CTRL key while pressing the “O”) from the keyboard,
OR
- If you have recently used the document you can click the **Microsoft Office Button**  and click the name of the document in the **Recent Documents** section of the window
Insert picture of recent docs

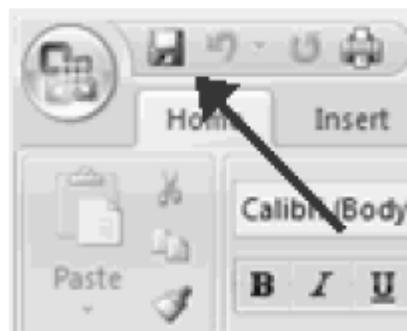
SAVING A DOCUMENT

- Click the **Microsoft Office Button**  and Click **Save** or **Save As**

Note:

if you're sending the document to someone who does not have Office 2007, you will need to click the **Office Button**, click **Save As**, and Click **Word 97-2003 Document**),

- OR
- Press **CTRL+S** (Depress the CTRL key while pressing the “S”) from the keyboard,
OR
- Click the **File** icon on the Quick Access Toolbar



RENAMING DOCUMENTS

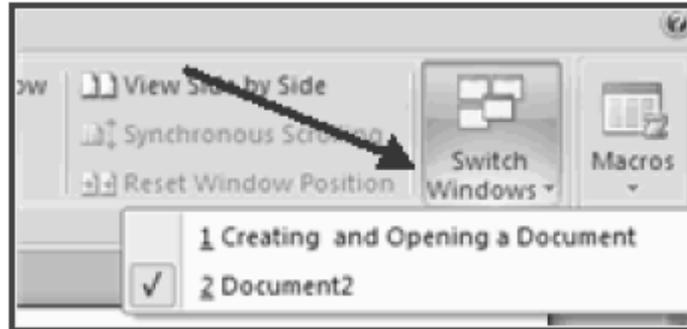
To rename a Word document while using the program:

- Click the **Office Button**  and find the file you want to rename.
- Right-click the document name with the mouse and select **Rename** from the shortcut menu.
- Type the new name for the file and press the **ENTER** key.



WORKING ON MULTIPLE DOCUMENTS

Several documents can be opened simultaneously if you are typing or editing multiple documents at once. All open documents will be listed in the **View Tab** of the Ribbon when you click on Switch Windows. The current document has a checkmark beside the file name. Select another open document to view it.



DOCUMENT VIEWS

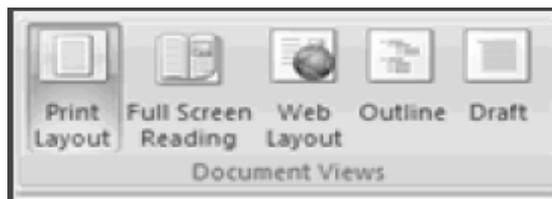
There are many ways to view a document in Word.

- **Print Layout:** This is a view of the document, as it would appear when printed. It includes all tables, text, graphics, and images.
- **Full Screen Reading:** This is a full view length view of a document. Good for viewing two pages at a time.
- **Web Layout:** This is a view of the document, as it would appear in a web browser.
- **Outline:** This is an outline form of the document in the form of bullets.
- **Draft:** This view does not display pictures or layouts, just text.

To view a document in different forms, click the document views shortcuts at the bottom of the screen



OR



CLOSE A DOCUMENT

- To close a document:
- Click **Close**



EDITING WITH DOCUMENT

TYPING AND INSERTING TEXT

To enter text just starts typing! The text will appear where the blinking cursor is located. Move the cursor by using the arrow buttons on the keyboard or positioning the mouse and clicking the left button.

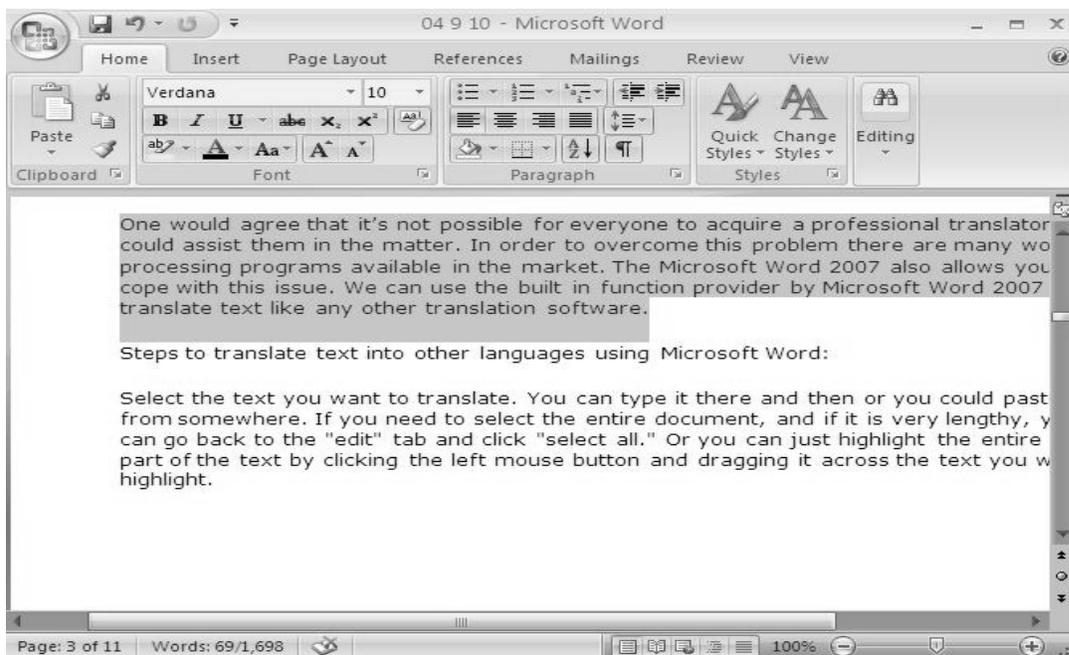


The keyboard shortcuts listed below are also helpful when moving through the text of a document:

MOVE ACTION	KEYSTROKE
Beginning of the line	HOME
End of the line	END
Top of the document	CTRL+HOME
End of the document	CTRL+END

SELECTING TEXT

To change any attributes of text it must be *highlighted* first. Select the text by dragging the mouse over the desired text while keeping the left mouse button depressed, or hold down the **SHIFT** key on the keyboard while using the arrow buttons to highlight the text.



The following table contains shortcuts for selecting a portion of the text:

SELECTION	TECHNIQUE
Whole word	double-click within the word

Whole paragraph	triple-click within the paragraph
Several words or lines	drag the mouse over the words, or hold down SHIFT while using the arrow keys
Entire document	choose Editing Select Select All from the Ribbon, or press CTRL+A

Deselect the text by clicking anywhere outside of the selection on the page or press an arrow key on the keyboard.

INSERTING ADDITIONAL TEXT:

Text can be inserted in a document at any point using any of the following methods:

- I. **Type Text:** Put your cursor where you want to add the text and begin typing
- II. **Copy and Paste Text:** Highlight the text you wish to copy and right click and click **Copy**, put your cursor where you want the text in the document and right click and click **Paste**.
- III. **Cut and Paste Text:** Highlight the text you wish to copy, right click, and click **Cut**, put your cursor where you want the text in the document, right click, and click **Paste**.
- IV. **Drag Text:** Highlight the text you wish to move, click on it and drag it to the place where you want the text in the document.

- **TYPE TEXT:**

Put your cursor where you want to add the text and begin typing. (Describe above)

- **COPY & PASTE TEXT:**

- Select text which you want to copy by using mouse or key board (by shift and arrow keys)
 - Press **CTRL+C** (Depress the CTRL key while pressing the “C”) from the keyboard,

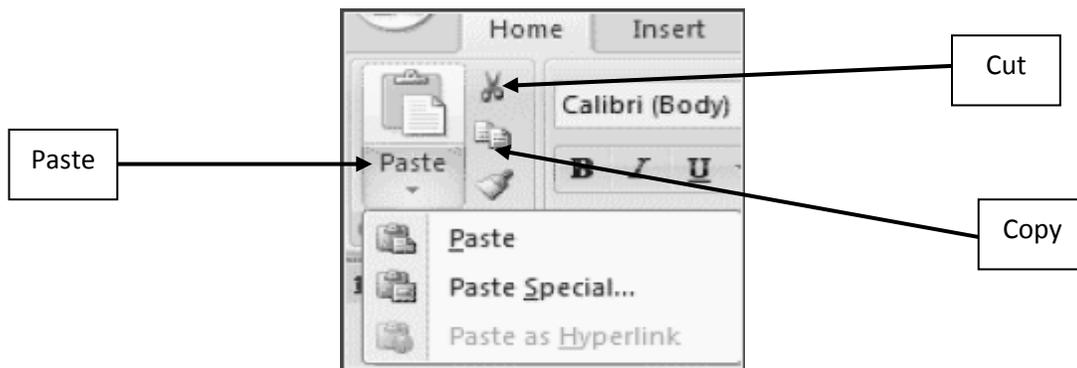
OR

- You can select a shortcut button on ribbon a copy.

- Where you want to paste, you have to take cursor by using key board arrow keys Or by mouse click.
 - Press **CTRL+V** (Depress the CTRL key while pressing the “V”) from the keyboard, for paste the text. Which you already copy.

OR

- You can select a shortcut button on ribbon as “Paste”.



- **CUT AND PASTE TEXT:**

- Select text which you want to cut by using mouse or key board (by shift and arrow keys)

- Press **CTRL+X** (Depress the CTRL key while pressing the “X”) from the keyboard,

OR

- You can select a shortcut button on ribbon a cut.

- Where you want to paste, you have to take cursor by using key board arrow keys Or by mouse click.

- Press **CTRL+V** (Depress the CTRL key while pressing the “V”) from the keyboard, for paste the text. Which you already copy.

OR

- You can select a shortcut button on ribbon as “Paste”.

NOTE:

Text which is selected for paste is saved in Clipboard. Until you never paste it at desire location.

- **DRAG TEXT:**

Highlight/select the text you wish to move, click on it and drag it to the place where you want the text in the document.

SEARCH/FIND AND REPLACE TEXT

To **find** a particular word or phrase in a document:

- Click **Find** on the **Editing Group** on the Ribbon

OR

- Press **CTRL+F** (Depress the CTRL key while pressing the “F”) from the keyboard.

A dialog box will appear and to find any word write it in “find what” text box.

To **replace** a particular word or phrase in a document:

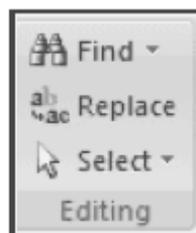
- Click **Replace** on the **Editing Group** on the Ribbon

OR

- Press **CTRL+H** (Depress the CTRL key while pressing the “H”) from the keyboard.

In Find/Replace dialog box write word which you want to replace instead of the previous one and click replace or replace all according to requirement. Difference between replace and replace all is, to replace a single selected text or replace all where ever that particular text exists.

Both options are also available in Ribbon:



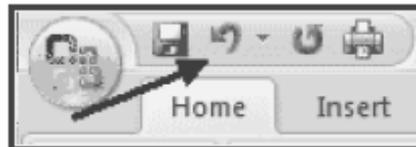
UNDO CHANGES

To undo changes:

- Click the **Undo Button** on the Quick Access Toolbar

OR

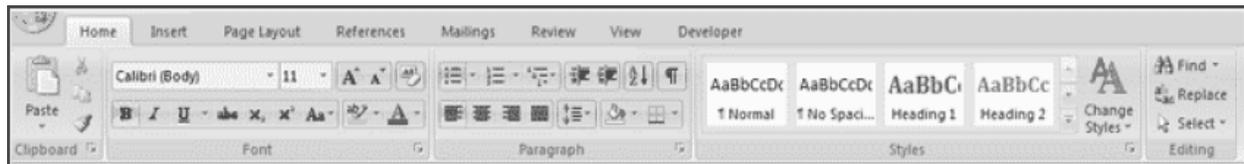
- Press **CTRL+Z** (Depress the CTRL key while pressing the “Z”) on the keyboard.



FORMATING WITH TEXT

STYLES

A style is a format-enhancing tool that includes font typefaces, font size, effects (bold, italics, underline, etc.), colors and more. You will notice that on the Home Tab of the Ribbon, that you have several areas that will control the style of your document: Font, Paragraph, and Styles.



WHAT IS FONT?

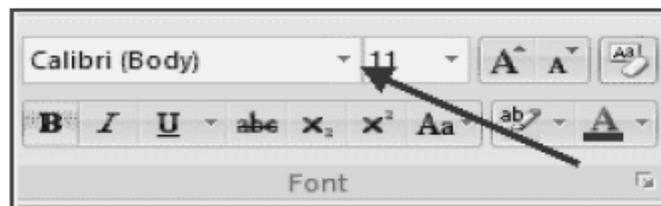
A font is a **style of writing**. Modern word processors are supplied with a wide range of fonts for you to choose from. Different fonts are useful for different purposes.

Plain fonts such as Arial and Times New Roman are good for writing letters and reports. Fancier fonts such as Keystroke and Lincoln are suitable for use on posters.

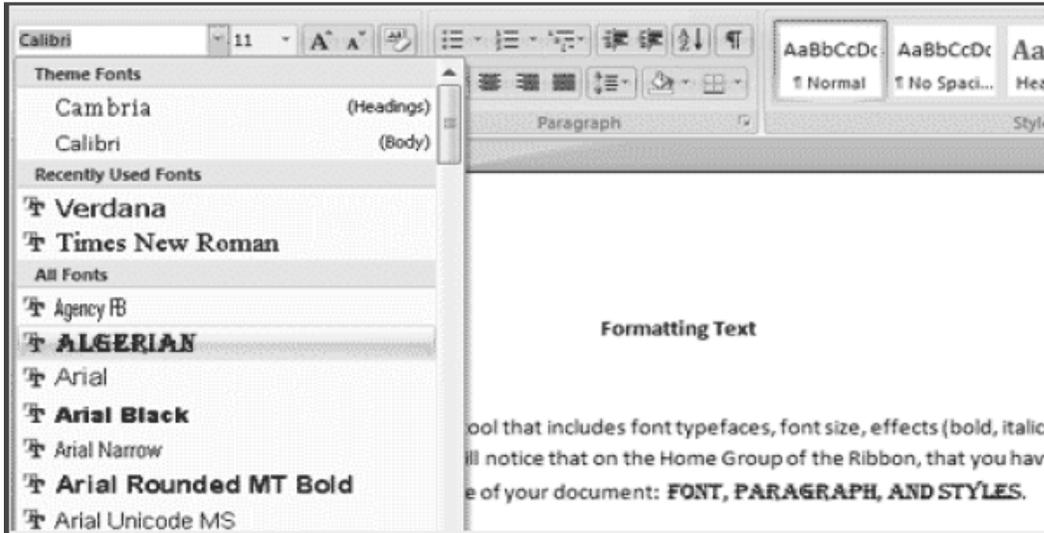
CHANGE FONT TYPEFACE AND SIZE

To change the font typeface:

- Click the **arrow** next to the font name and choose a font.



You can preview how the new font will look by highlighting the text, and hovering over the new font typeface.



To change the font size:

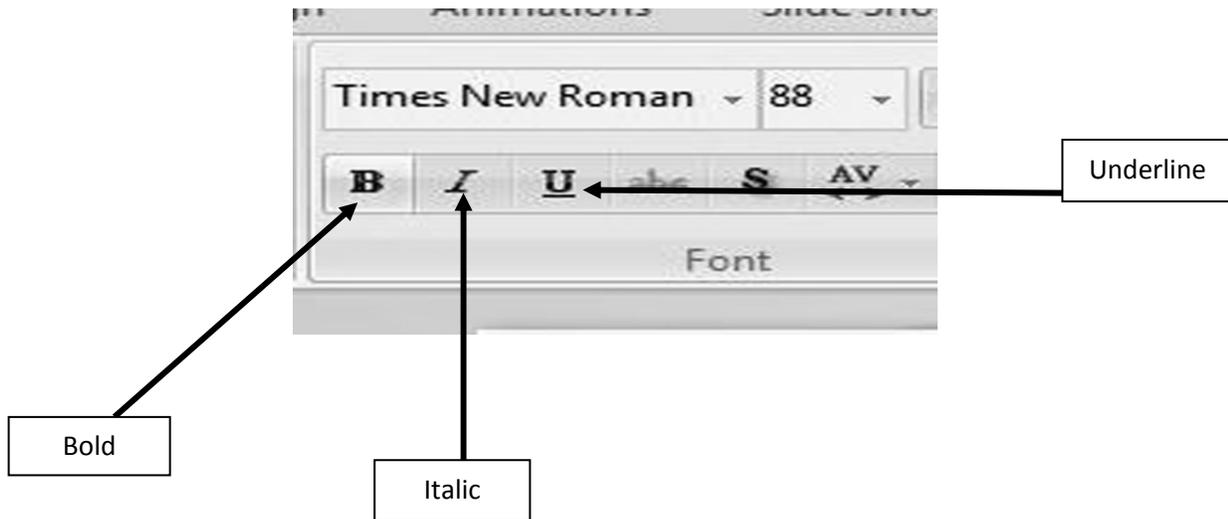
- Click the **arrow** next to the font size and choose the appropriate size, or
- Click the **increase** or **decrease** font size buttons.



FONT EFFECTS

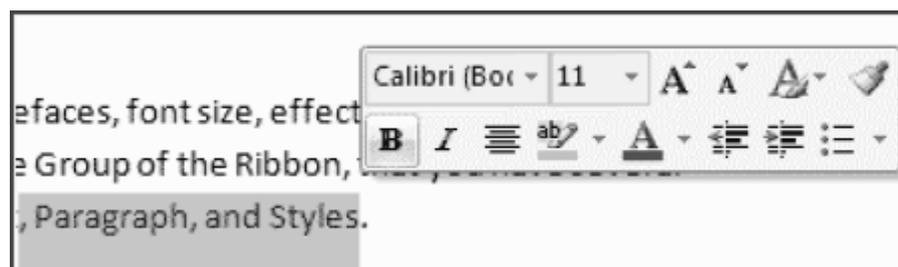
Font styles are predefined formatting options that are used to emphasize text. They include: Bold, Italic, and Underline. To add these to text:

- Select the text and click the **Font Styles** included on the Font Group of the Ribbon, or
- Select the text and right click to display the font tools



For Bold:

- Select text which you want to bold
 - Click the **Bold Button** included on the Font Group of the Ribbon.
- OR
- Press **CTRL+B** (Depress the CTRL key while pressing the “B”) from the keyboard.



For Italic:

- Select text which you want to view as italic
 - Click the **Italic Button** included on the Font Group of the Ribbon.

OR

- Press **CTRL+I** (Depress the CTRL key while pressing the “B”) from the keyboard.

For Underline:

- Select text which you want to underline
 - Click the **Underline Button** included on the Font Group of the Ribbon.

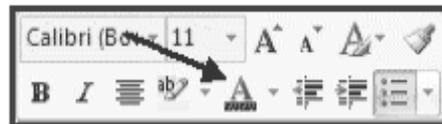
OR

- Press **CTRL+U** (Depress the CTRL key while pressing the “U”) from the keyboard.

CHANGE TEXT COLOR

To change the text color:

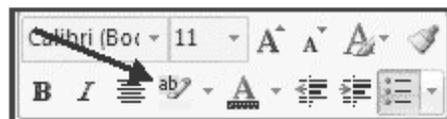
- Select the text and click the **Colors** button included on the Font Group of the Ribbon, or
- Highlight the text, right click, and choose the colors tool.
- Select the color by clicking the down arrow next to the font color button.



HIGHLIGHT TEXT

Highlighting text allows you to use emphasize text as you would if you had a marker. To highlight text:

- Select the text
- Click the **Highlight Button** on the Font Group of the Ribbon, or
- Select the text and right click and select the highlight tool
- To change the color of the highlighter click on down arrow next to the highlight button.



COPY FORMATTING

If you have already formatted text the way you want it and would like another portion of the document to have the same formatting, you can copy the formatting. To copy the formatting, do the following:

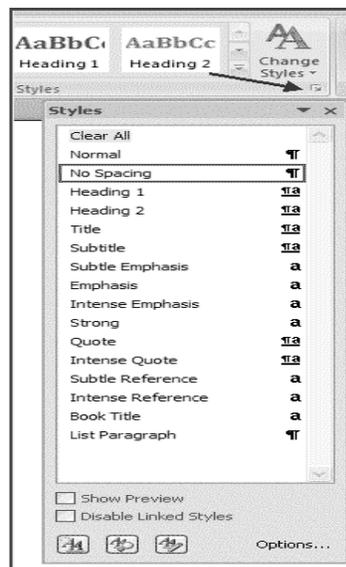
- Select the text with the formatting you want to copy.
- Copy the format of the text selected by clicking the **Format Painter** button on the Clipboard Group of the Home Tab
- Apply the copied format by selecting the text and clicking on it.



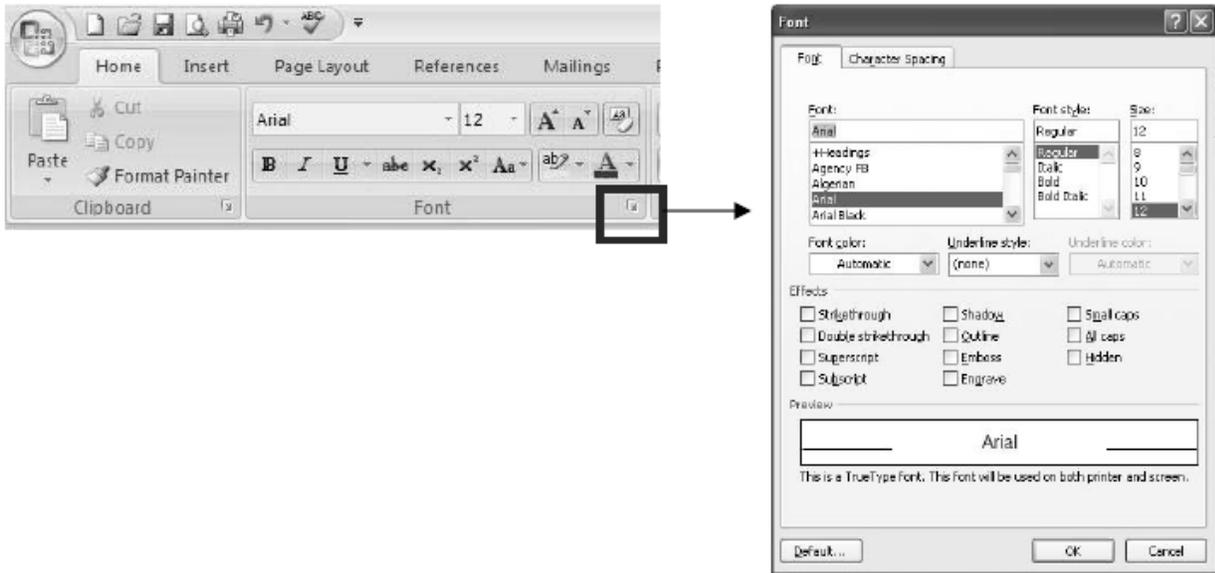
CLEAR FORMATTING

To clear text formatting:

- Select the text you wish to clear the formatting
- Click the **Styles** dialogue box on the Styles Group on the Home Tab
- Click **Clear All**

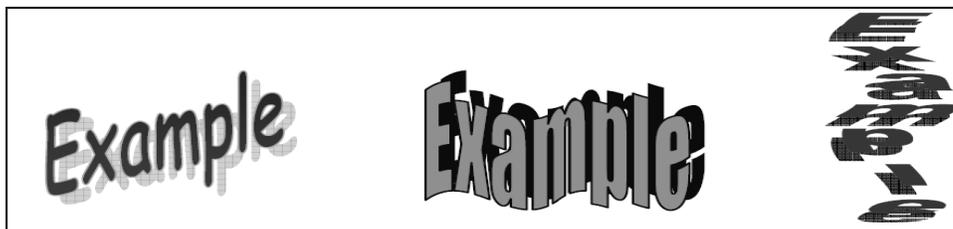


Now the categories in each Ribbon may have a button at the end of its bar. If you click this button it will expand into a window and show more options. For example the Font category will expand into a window where it will have all the settings for the font and character spacing.



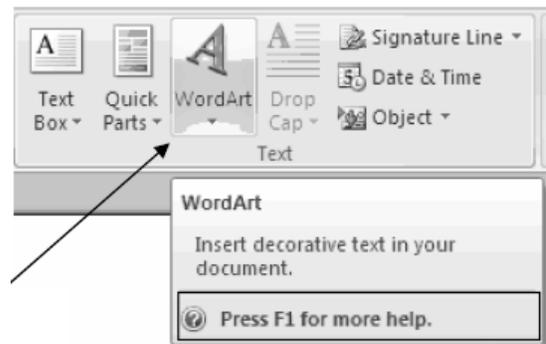
WHAT IS WORDART?

WordArt allows you to use special effects such as bending, twisting and rotating text in your documents. Any text can be formatted and there is a gallery from which styles can be selected. Some examples of WordArt are as follows;



INSERTING WORDART

- From the insert tab, select WordArt from the text options available. This can be found on the right hand side of the toolbar.
- From the WordArt gallery, select a WordArt style.
- Click here to open the WordArt gallery



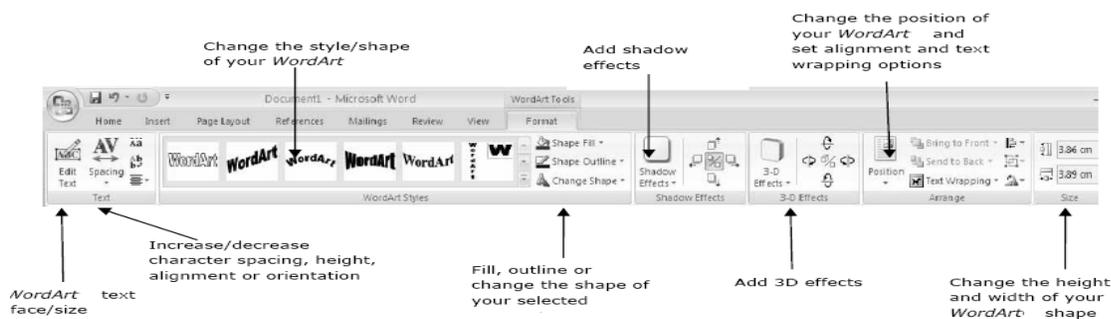
- From the WordArt **gallery**, select a **WordArt style**.
- Type your text in the space provided and if you would like to, choose a new Type face, size or style.

Tip: Large, bold, sans serif typefaces such as Arial, Arial Black or Helvetica make good choices for WordArt

- Click ok. Your WordArt will be inserted onto the page and the WordArt toolbar will appear at the top of the window.
- To close WordArt, move the pointer away from your inserted WordArt and click once.

EDITING WORDART WITH THE WORDART TOOLBAR

- Double click on your inserted WordArt to make the toolbar reappear.
- The toolbar will appear as follows.

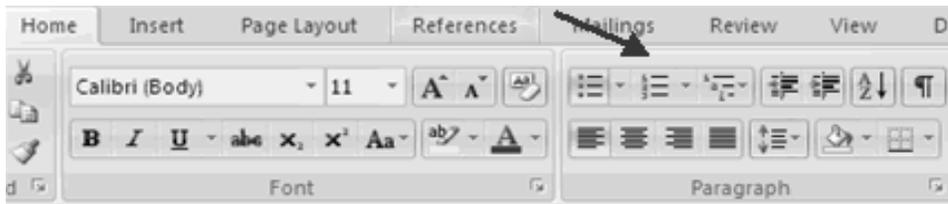


BULLET AND NUMBERING

Bulleted lists have bullet points, numbered lists have numbers, and outline lists combine numbers and letters depending on the organization of the list.

To **add** a list to existing text:

- Select the text you wish to make a list
- From the Paragraph Group on the Home Tab, Click the **Bulleted or Numbered Lists** button



To **create** a new list:

- Place your cursor where you want the list in the document
- Click the **Bulleted or Numbered Lists** button
- Begin typing

NESTED LISTS

A nested list is list with several levels of indented text. (mean list within the list) To create a nested list:

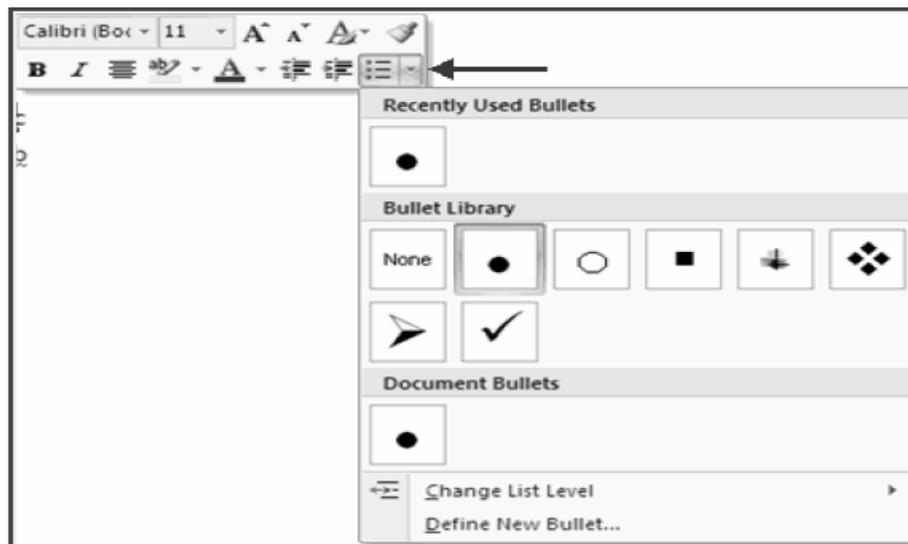
- Create your list following the directions above
- Click the **Increase or Decrease Indent** button



FORMATTING LISTS

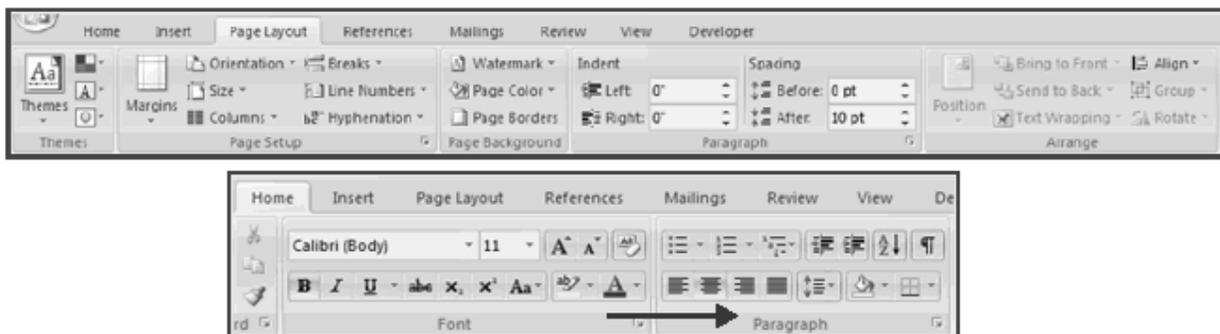
The bullet image and numbering format can be changed by using the **Bullets or Numbering** dialog box.

- Select the entire list to change all the bullets or numbers, or Place the cursor on one line within the list to change a single bullet
- Right click
- Click the **arrow** next to the bulleted or numbered list and choose a bullet or numbering style.



FORMATING WITH PARAGRAPH

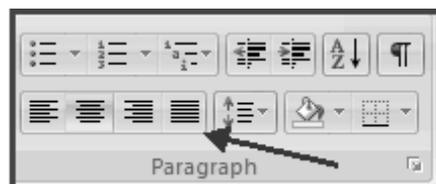
Formatting paragraphs allows you to change the look of the overall document. You can access many of the tools of paragraph formatting by clicking the **Page Layout** Tab of the Ribbon or the **Paragraph** Group on the Home Tab of the Ribbon.



CHANGE PARAGRAPH ALIGNMENT

The paragraph alignment allows you to set how you want text to appear. To change the alignment:

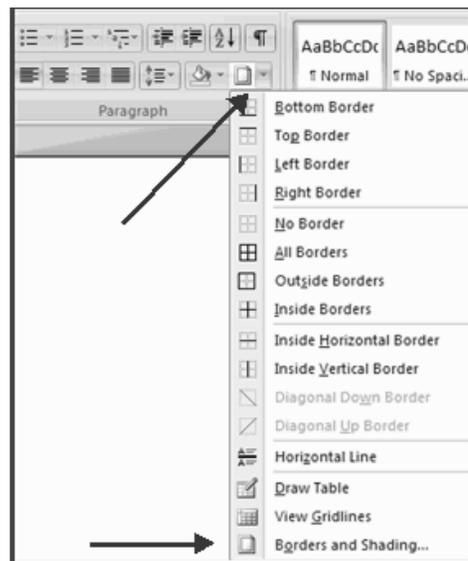
- Click the **Home Tab**
- Choose the appropriate button for alignment on the Paragraph Group.
 - **Align Left:** the text is aligned with your left margin
 - **Center:** The text is centered within your margins
 - **Align Right:** Aligns text with the right margin
 - **Justify:** Aligns text to both the left and right margins.



ADD BORDERS AND SHADING

You can add borders and shading to paragraphs and entire pages. To create a border around a paragraph or paragraphs:

- Select the area of text where you want the border or shading.
- Click the **Borders** Button on the Paragraph Group on the Home Tab
- Choose the **Border and Shading**
- Choose the appropriate options

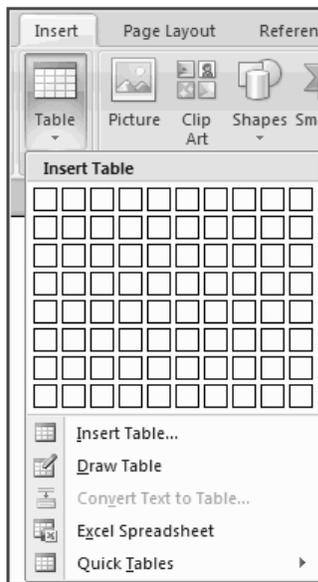


ADDING TABLE

CREATE A TABLE

To create a table:

- Place the cursor on the page where you want the new table
- Click the **Insert** Tab of the Ribbon
- Click the **Tables** Button on the Tables Group. You can create a table one of four ways:
 - Highlight the number of row and columns
 - Click **Insert Table** and enter the number of rows and columns
 - Click the **Draw Table**, create your table by clicking and entering the rows and columns
 - Click **Quick Tables** and choose a table



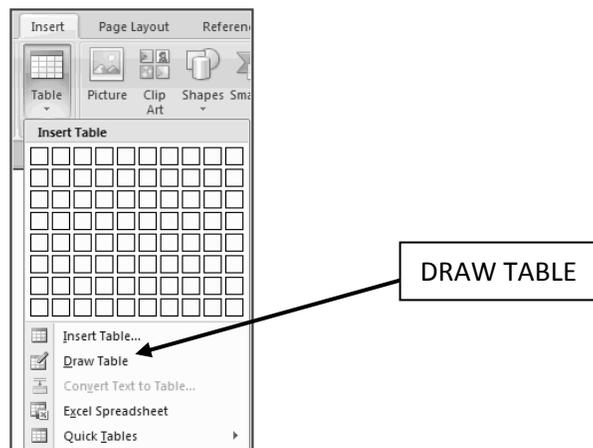
ENTER DATA IN A TABLE

Place the cursor in the cell where you wish to enter the information. Begin typing.

DRAW TABLE

You can draw a complex table — for example, one that contains cells of different heights or a varying number of columns per row. As below:

For that purpose we need draw table option from table in insert tab. Process of draw table is as:



- Click where you want to create the table
- On the Insert tab, in the Tables group, click Table, and then click Draw Table.
- The pointer changes to a pencil

- To define the outer table boundaries, draw a rectangle. Then draw the column lines and row lines inside the rectangle.
- To erase a line or block of lines, under Table Tools, on the Design tab, in the Draw Borders group, click Eraser.
- Click the line that you want to erase. To erase the entire table, see Delete a table or clear its contents.
- When you finish drawing the table, click in a cell and start typing or insert a graphic.

MODIFY THE TABLE STRUCTURE AND FORMAT A TABLE

To **modify** the structure of a table:

- Click the table and notice that you have two new tabs on the Ribbon: **Design and Layout**. These pertain to the table design and layout.

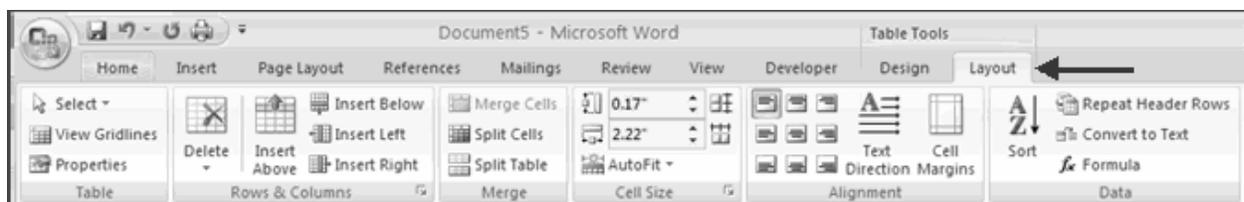


On the Design Tab, you can choose:

- Table Style Options
- Table Styles
- Draw Borders

To **format** a table, click the table and then click the **Layout** Tab on the Ribbon. This Layout tab allows you to:

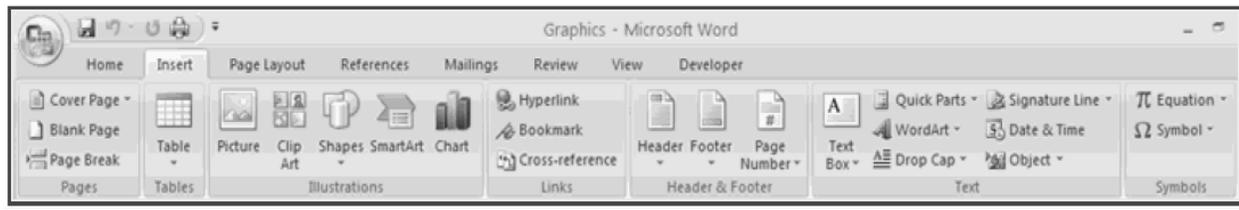
- **View Gridlines and Properties** (from the Table Group)
- **Insert Rows and Columns** (from the Rows & Columns Group)
- **Delete the Table, Rows and/or Columns** (from the Rows & Columns Group)
- **Merge or Split Cells** (from the Merge Group)
- **Increase and Decrease cell size** (Cell Size Group)
- **Align text within the cells and change text directions** (Alignment Group)



GRAPHICS

Word 2007 allows you to insert many graphical objects as

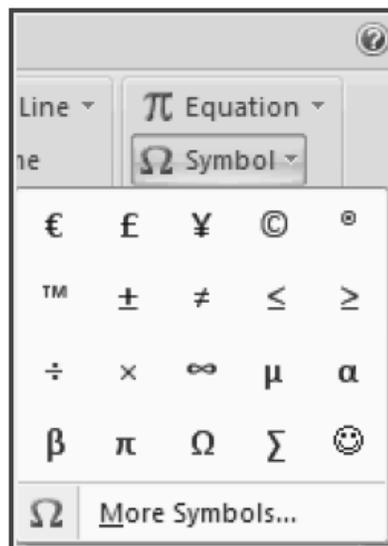
- **Special Characters & Symbols**
- **Equations**
- **Pictures**
- **Watermarks.**



SYMBOLS SPECIAL CHARACTERS:

Special characters are punctuation, spacing, or typographical characters that are not generally available on the standard keyboard. To insert symbols and special characters:

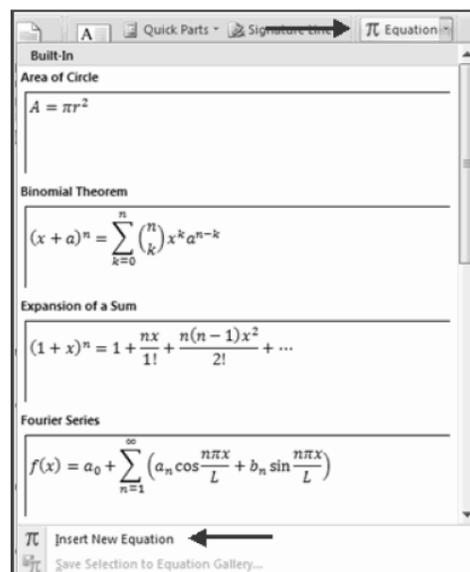
- Place your cursor in the document where you want the symbol
- Click the **Insert** Tab on the Ribbon
- Click the **Symbol** button on the Symbols Group
- Choose the appropriate symbol.



EQUATIONS

Word 2007 also allows you to insert mathematical equations. To access the mathematical equations tool:

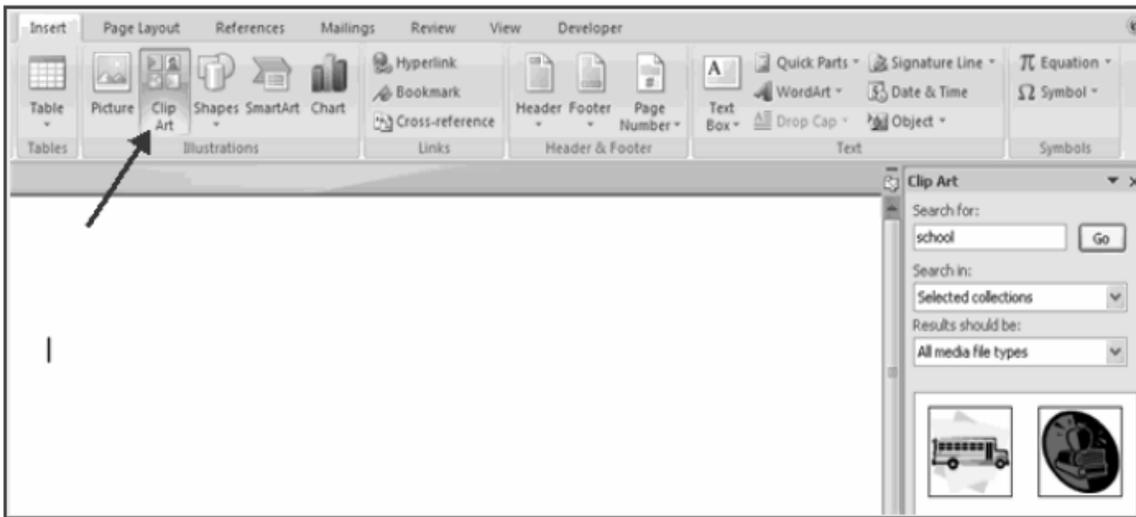
- Place your cursor in the document where you want the symbol
- Click the **Insert** Tab on the Ribbon
- Click the **Equation** Button on the Symbols Group
- Choose the appropriate equation and structure.
- You can make new equation as well by insert equation.



PICTURES/CLIP ART

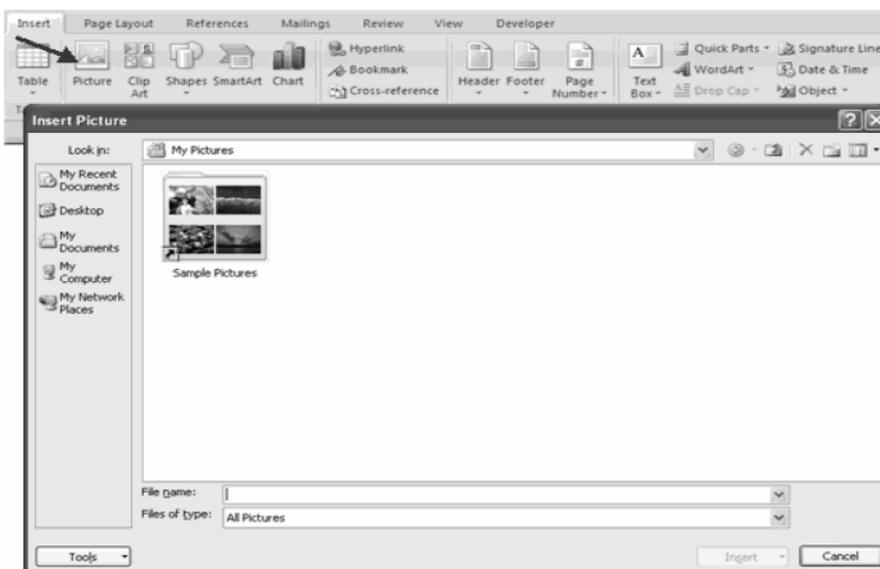
Word 2007 allows you to insert Clip Art/ Pictures into a document. To insert :

- Place your cursor in the document where you want the picture
- Click the **Insert** Tab on the Ribbon
- Click the **Clip Art** Button
- The dialog box will open on the screen and you can search for clip art.
- Choose the picture you wish to include



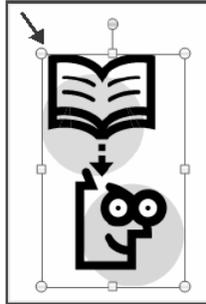
To insert any **picture**:

- Place your cursor in the document where you want the picture
- Click the **Insert** Tab on the Ribbon
- Click the **Picture** Button
- Browse to the picture you wish to include
- Click the **Picture**
- Click **Insert**



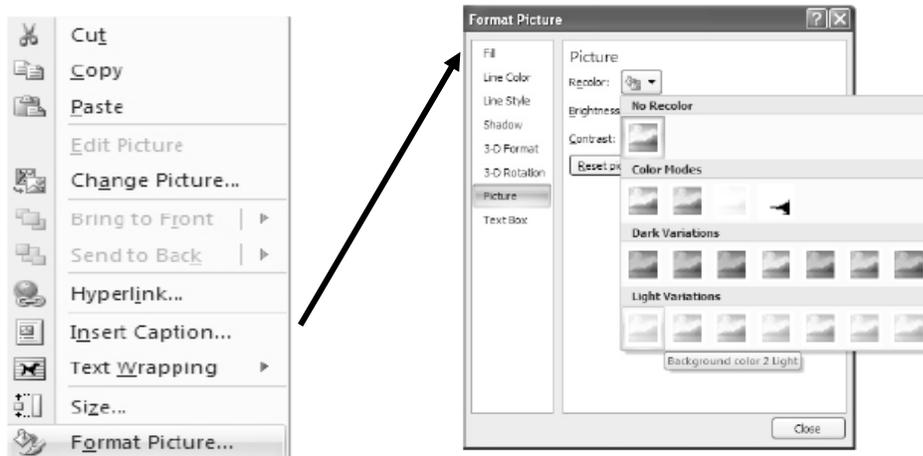
RESIZE GRAPHICS

All graphics can be resized by clicking the image and clicking one corner of the image and dragging the cursor to the size you want the picture.



FORMAT PICTURES

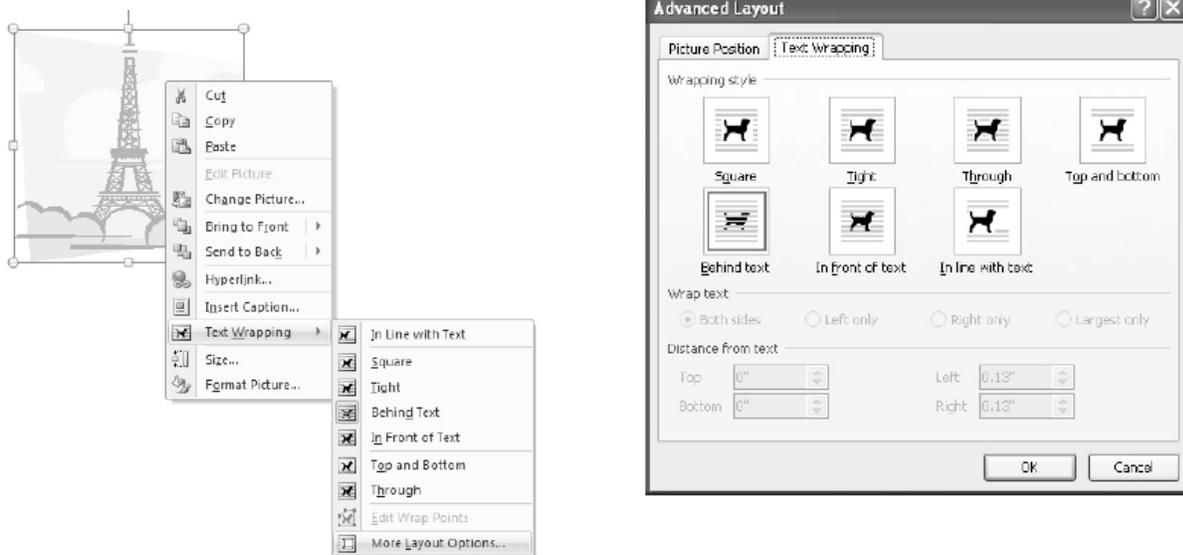
- Picture can be resized by clicking the image and right clicks that image and select **format picture**.
- It has many other options like color 3-D format, Line color and fill.
- You can select any combination up to your requirement.



APPLY WRAPPING STYLES TO A GRAPHIC

Once you have inserted a picture into your document, you can control the way text will wrap around it

- Click your graphic to select it.
- On the **Format** menu, click **Picture**.
- In the **Format Picture** dialog box, click the **Layout** tab.
- Click a wrapping style, and then click **OK**.



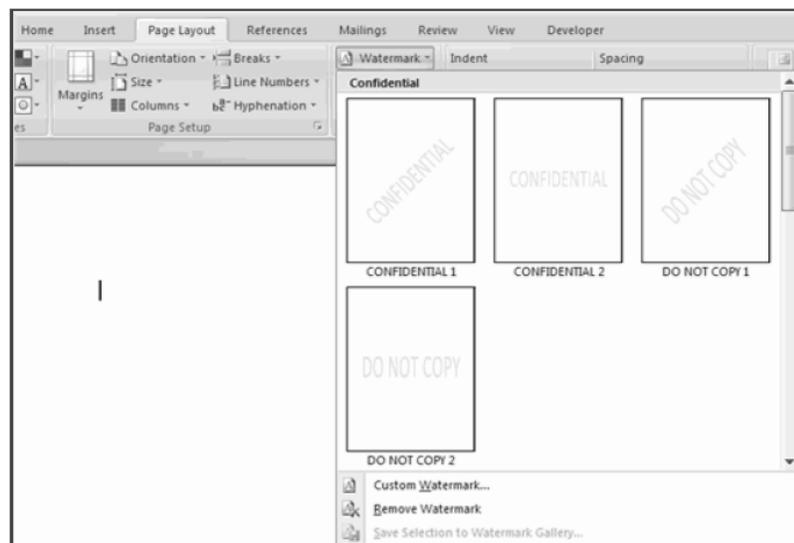
By these options we can manage many you can arrange the layout of text and picture wrapping. There are many options in wrapping layout like

- Square
- The line with text
- Tight
- Behind text
- In line with text

WATERMARKS

A watermark is a translucent image that appears behind the primary text in a document. To insert a watermark:

- Click the **Page Layout** Tab in the Ribbon
- Click the **Watermark** Button in the Page Background Group
- Click the **Watermark** you want for the document or click **Custom Watermark** and create your own watermark
- To remove a watermark, follow the steps above, but click **Remove Watermark**



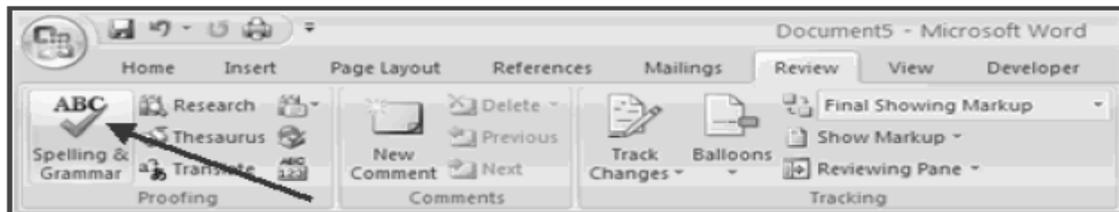
PROOFING A DOCUMENT

There are many features to help you proofread your document. These include: Spelling and Grammar and Thesaurus.

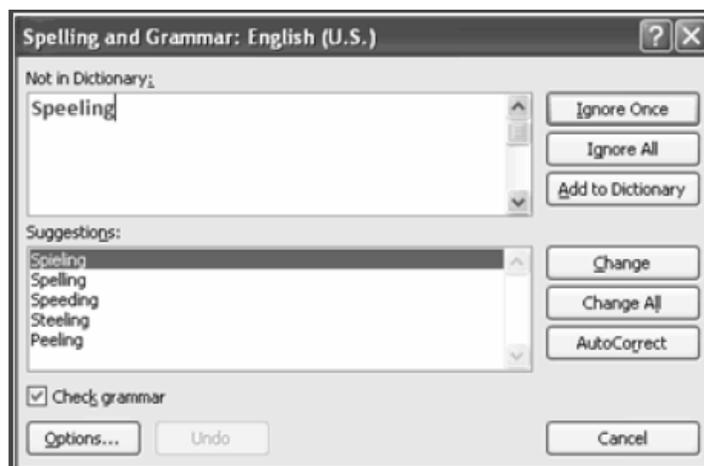
SPELLING AND GRAMMAR

To check the spelling and grammar of a document

- Place the cursor at the beginning of the document or the beginning of the section that you want to check
- Click the **Review** Tab on the Ribbon
- Click **Spelling & Grammar** on the Proofing Group.



- Any errors will display a dialog box that allows you to choose a more appropriate spelling or phrasing.

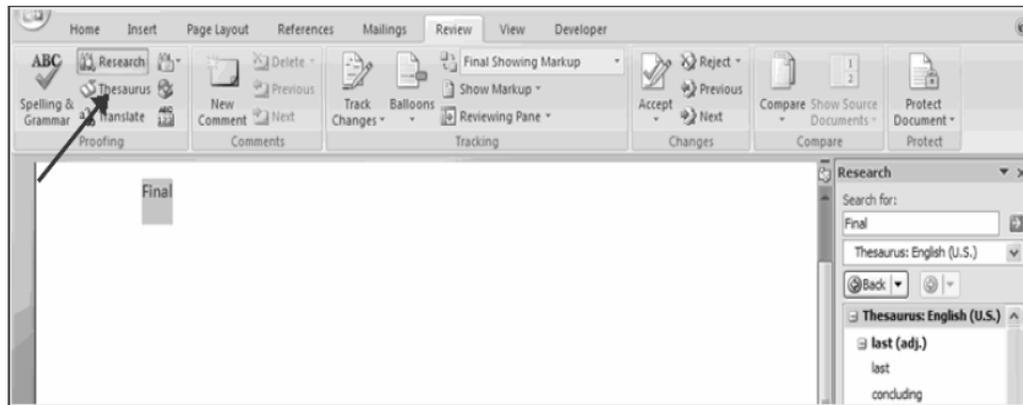


- If you wish to check the spelling of an individual word, you can right click any word that has been underlined by Word and choose a substitution.

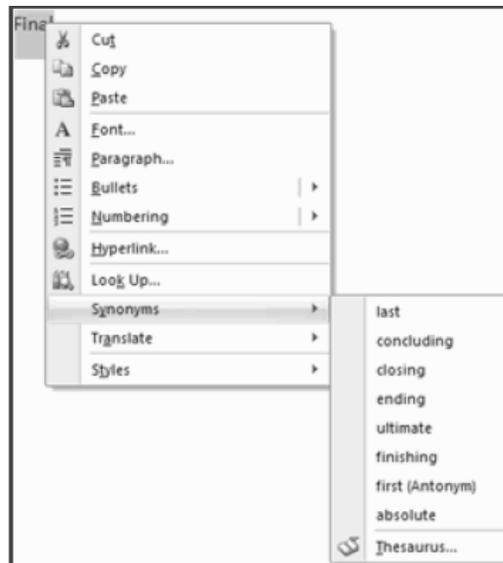
THESAURUS

The Thesaurus allows you to view synonyms. To use the thesaurus:

- Click the **Review** Tab of the Ribbon
- Click the **Thesaurus** Button on the Proofing Group.
- The thesaurus tool will appear on the right side of the screen and you can view word options.



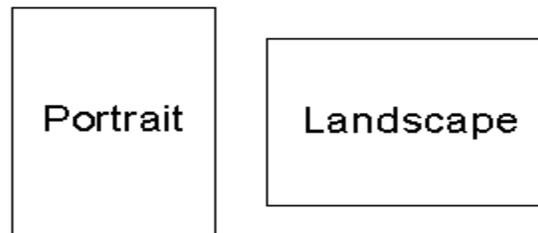
- You can also access the thesaurus by right-clicking any word and choosing **Synonyms** on the menu.



PAGE FORMATING

ORIENTATION

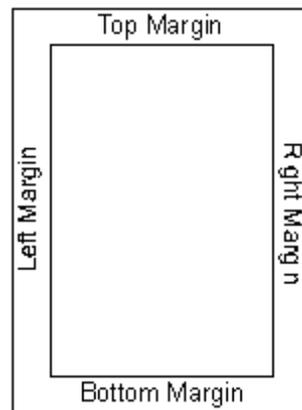
You can print onto a piece of paper in one of two orientations, which are usually known as **portrait** and **landscape**. These two orientations look like this:



Sometimes portrait is known as tall and landscape is known as wide.

MARGINS

It is usual to leave a small gap between the writing on a page and the edge of the page. This gap is called a **margin**. Leaving a margin is especially important when you need to bind a document together. Even if you do not want to leave a margin you will probably have to. Most printers cannot print right to the edge of the page.

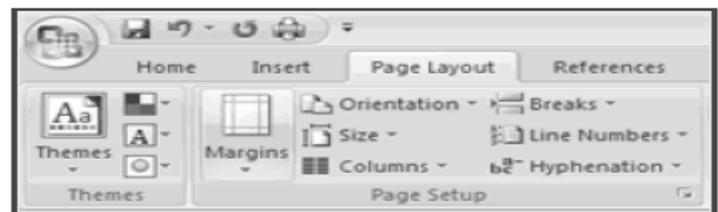
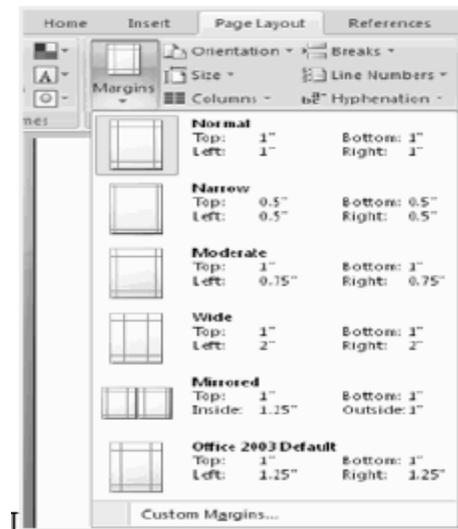


You can normally set the size of the top, bottom, left and right margins separately by typing in the distance from the edge of the page to the text.

MODIFY PAGE MARGINS AND ORIENTATIONS

The page margins can be modified through the following steps:

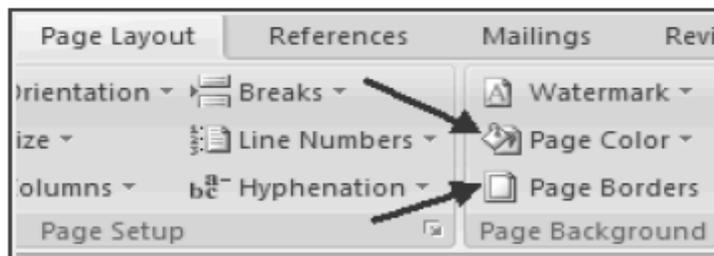
- Click the **Page Layout** Tab on the Ribbon
- On the **Page Setup** Group, Click **Margins**
- Click a **Default Margin**, or
- Click **Custom Margins** and complete the dialog box.



APPLY A PAGE BORDER AND COLOR

To apply a page border or color:

- Click the **Page Layout** Tab on the Ribbon
- On the Page Background Group, click the **Page Colors** or **Page Borders** drop down menus

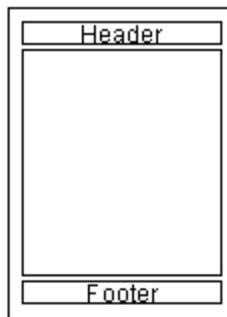


HEADERS AND FOOTERS

When writing a document containing many pages such as a report you may want the same information to appear at the top and bottom of each page.

For example you may want the name of the document and your name to appear at the top of each page. You may want to print each page's number at the bottom of the pages.

- **Header:** Text appearing at the top of each page is known as a header.
- **Footer:** Text appearing at the bottom of each page is known as footer.

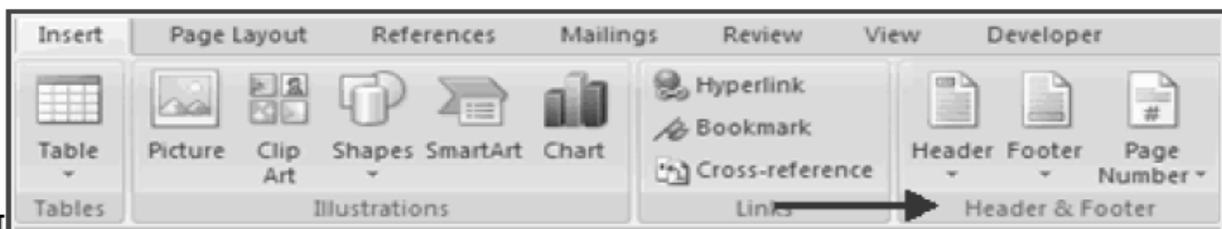


Many word processors will let you type special codes which will automatically insert Information such as the current date or current page number into the header or footer of a document.

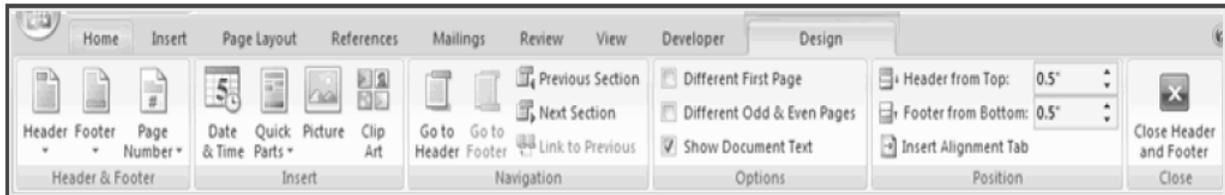
INSERT COMMON HEADER AND FOOTER INFORMATION

To insert Header and Footer information such as page numbers, date, or title, first, decide if you want the information in the header (at the top of the page) or in the Footer (at the bottom of the page), then:

- Click the **Insert** Tab on the Ribbon
- Click **Header or Footer**
- Choose a style

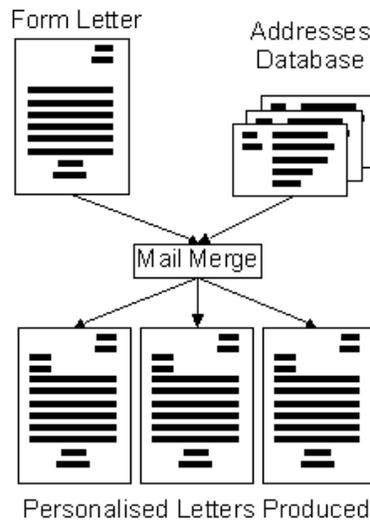


- The **Header/Footer Design** Tab will display on the Ribbon
- Choose the information that you would like to have in the header or footer (date, time, page numbers, etc.) or type in the information you would like to have in the header or footer



MAIL MERGING

Mail merging is a technique used mainly by companies and clubs to send personalized letters to customers or members. Using a standard (or form) letter and a database of names and addresses personalized letters addressed to the people in the database can be easily produced. The names and addresses of the people are automatically put onto the letters:



There are four main steps that must be followed to create mail merged letters. They are :

- **Create The Database:** If the database containing the names and addresses of the people to send the letter to does not already exist then it must be created.
- **Write The Letter:** The letter to send should be created in the word processor. Special codes must be placed in the letter where the names and addresses of the customers should appear.

- **Link The Letter And Database :** The database and letter must now be linked together so that the mail merge function knows which file contains the names and addresses to fill into the letters
- **Perform The Mail Merge:** When the mail merge is performed one letter will be produced for each person in the database. The names and addresses will be filled in on each letter.

CHAPTER NO 15

MICROSOFT POWER POINT 2007

WHAT IS POWER POINT PRESENTATION?

PowerPoint is a presentation software program that is part of the Microsoft Office package.

PowerPoint uses a graphical approach to presentations in the form of slide shows that accompany the oral delivery of the topic. This program is widely used in business and classrooms and is an effective tool when used for training purposes.

PowerPoint is one of the simplest computer programs to learn. It is the easy and good program used worldwide for presentations. Anyone can create stunning presentations that look like they were designed by a professional.

It is easy to customize presentations with your company logo and to dazzle your audience by using one of the many design templates that come with the programs. Many more free templates are available online from Microsoft and a host of other websites.

In addition to an on screen slide show, PowerPoint has printing options that allow the presenter to provide handouts and outlines for the audience as well as notes pages for the speaker to refer to during the presentation.

WHAT IS PRESENTATION?

A presentation is a collection of data and information that is to be delivered to a specific audience. A PowerPoint presentation is a collection of electronic slides that can have text, pictures, graphics, tables, sound and video. This collection can run automatically or can be controlled by a presenter.

GETTING START

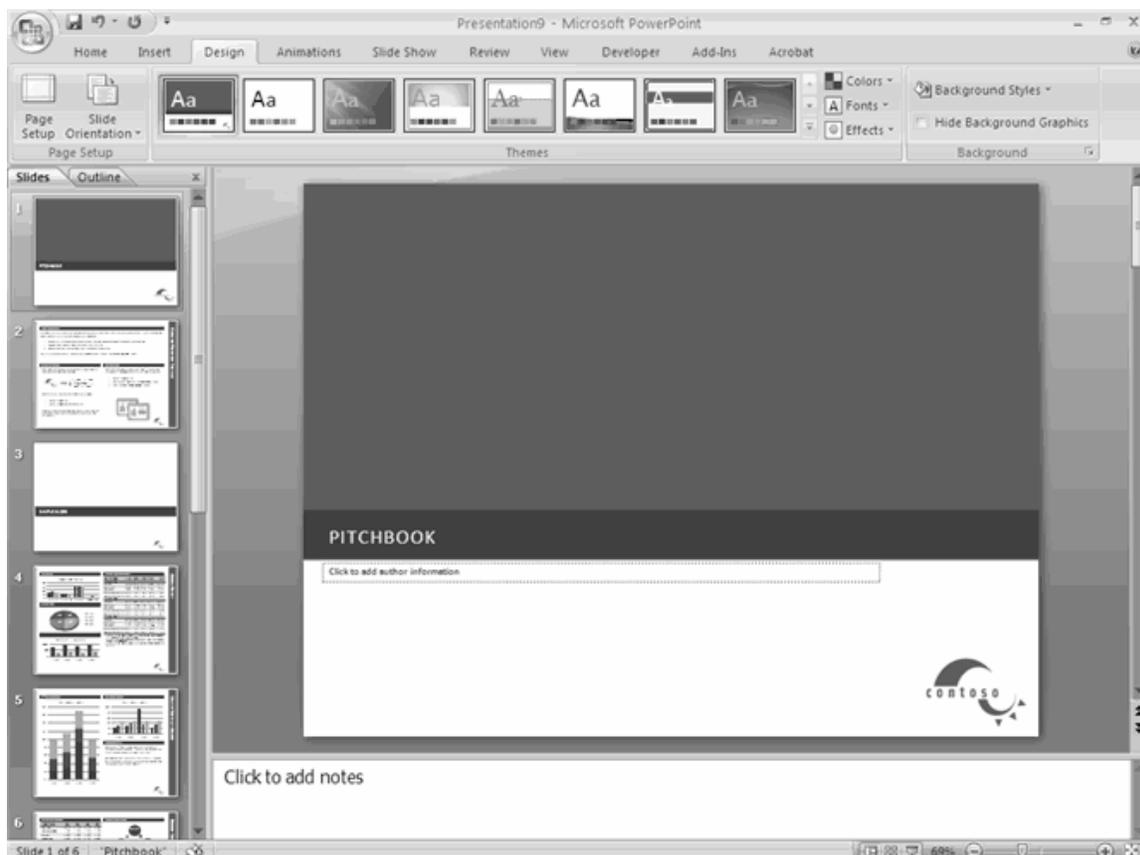
To start MS Power Point click on the Start Menu on the bottom left corner of your desktop and select *Start*→ *All Programs*→ *Microsoft Office* →*Microsoft Office Power Point 2007*.

SCREEN LAYOUT

Getting started with PowerPoint 2007 will notice that there are many features that you'll be able to utilize for presentation. There are three features that you should remember as you work within PowerPoint 2007:

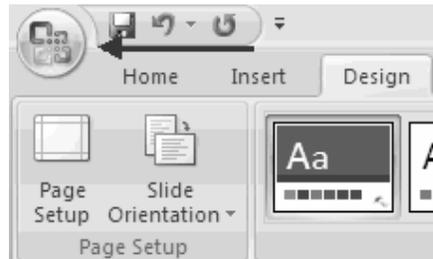
1. The Microsoft Office Button,
2. The Quick Access Toolbar,
3. The Ribbon.

The function of these features will be more fully explored below.



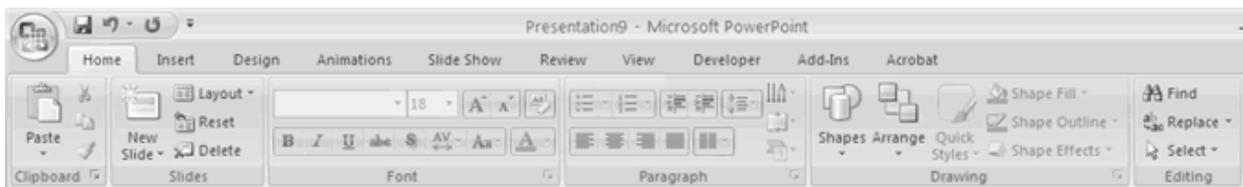
MICROSOFT OFFICE BUTTON

The Microsoft Office Button performs many of the functions that were located in the File menu of older versions of PowerPoint. This button allows you to create a new presentation, Open an existing presentation, save and save as, print, send, or close.



RIBBON

The ribbon is the panel at the top portion of the document it has seven tabs: Home, Insert, Design, Animations, Slide Show, Review and View. Each tab is divided into groups. The groups are logical collections of features designed to perform function that you will utilize in developing or editing your PowerPoint slides.

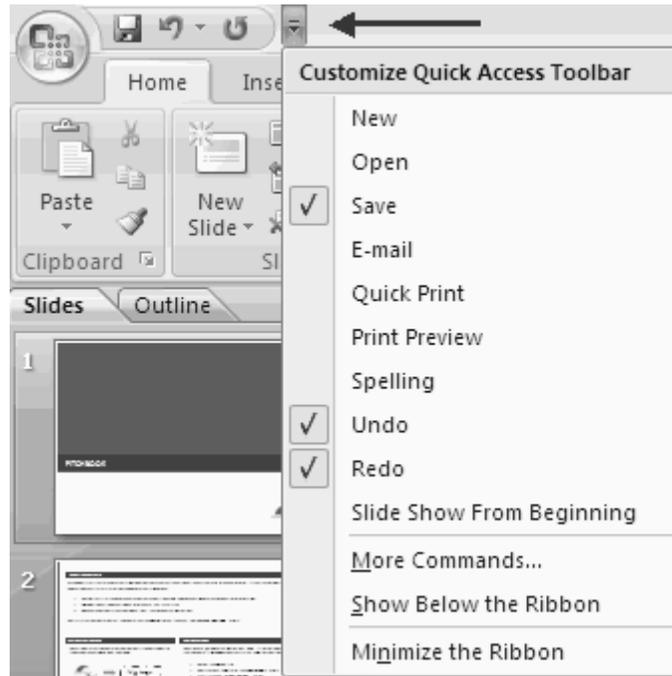


Commonly used features are displayed on the Ribbon, to view additional features within each group, click on the arrow at the bottom right of each group.

HOME:	Clipboard, Slides, Font, Paragraph, Drawing, and Editing
INSERT:	Tables, Illustrations, Links, Text, and Media Clips.
DESIGN:	Page Setup, Themes, Background.
ANIMATIONS:	Preview, Animations, Transition to this Slide
SLIDE SHOW:	Start Slide Show, Set Up, Monitors.
REVIEW:	Proofing, Comments, Protect.
VIEW:	Presentation Views, Show/Hide, Zoom, Window, Macros

QUICK ACCESS TOOLBAR

The **quick access toolbar** is a customizable toolbar that contains commands that you may want to use. You can place the quick access toolbar above or below the ribbon. To change the location of the quick access toolbar, click on the arrow at the end of the toolbar and click **Show Below the Ribbon**.



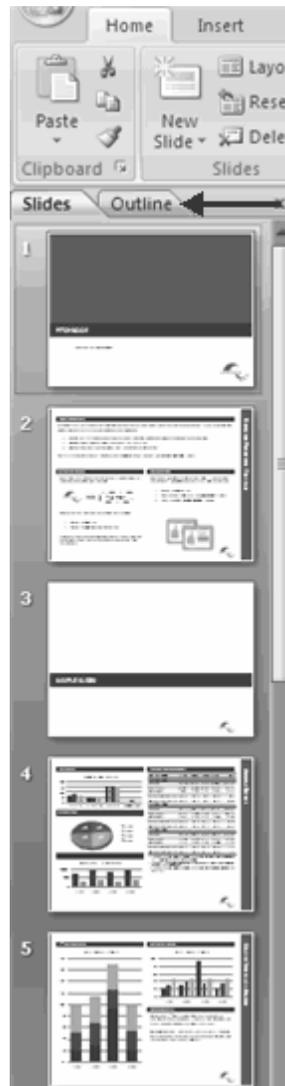
MINI TOOLBAR

A new feature in Office 2007 is the Mini Toolbar. This is a floating toolbar that is displayed when you select text or right-click text. It displays common formatting tools, such as Bold, Italics, Fonts, Font Size and Font Color.



NAVIGATION

Navigation through the slides can be accomplished through the Slide Navigation menu on the left side of the screen. Also, an outline appears from materials that have been entered in the presentation. To access the outline, click the outline tab.



SLIDE VIEWS

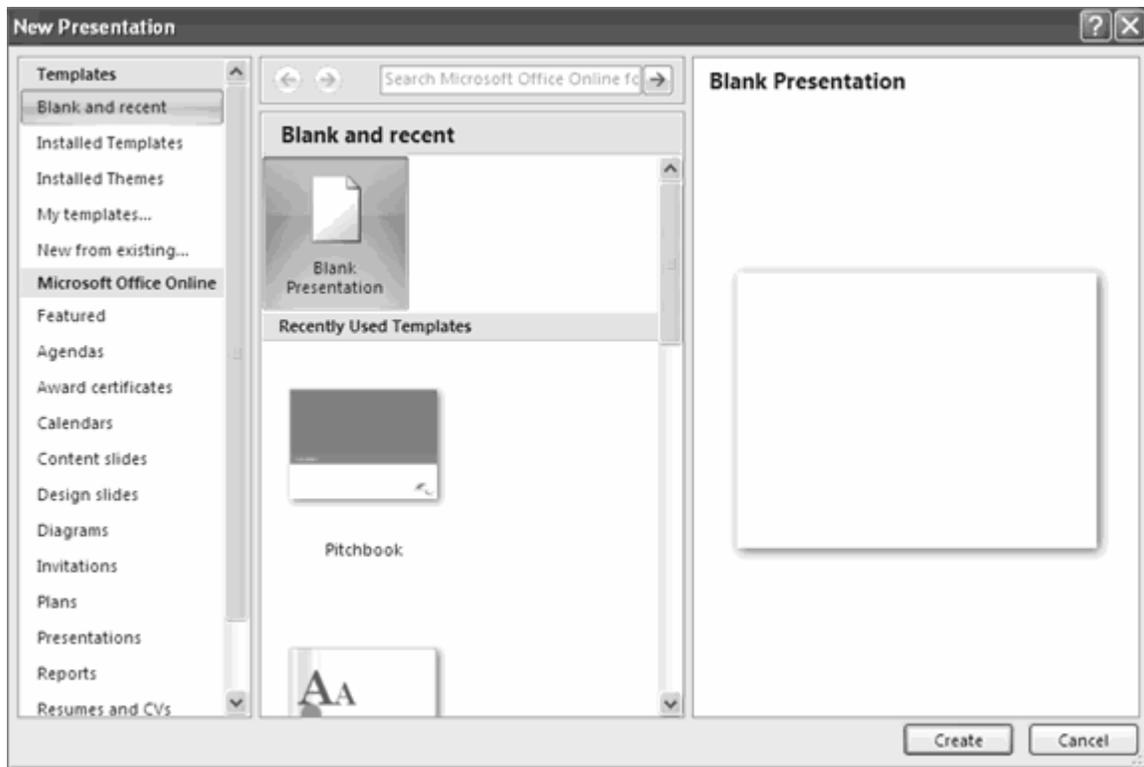
Presentations can be viewed in a variety of manners. On the View tab, the Presentation Views group allows you to view the slides as Normal, Slide Sorter, Notes Page, Slide Show, Slide Master, Handout Master, and Notes Master.



HOW TO MAKE NEW PRESENTATION

You can start a new presentation from a blank slide, a template, existing presentations, or a Word outline. To create a new presentation from a blank slide:

- Click the **Microsoft Office Button**
- Click **New**
- Click **Blank Presentation**

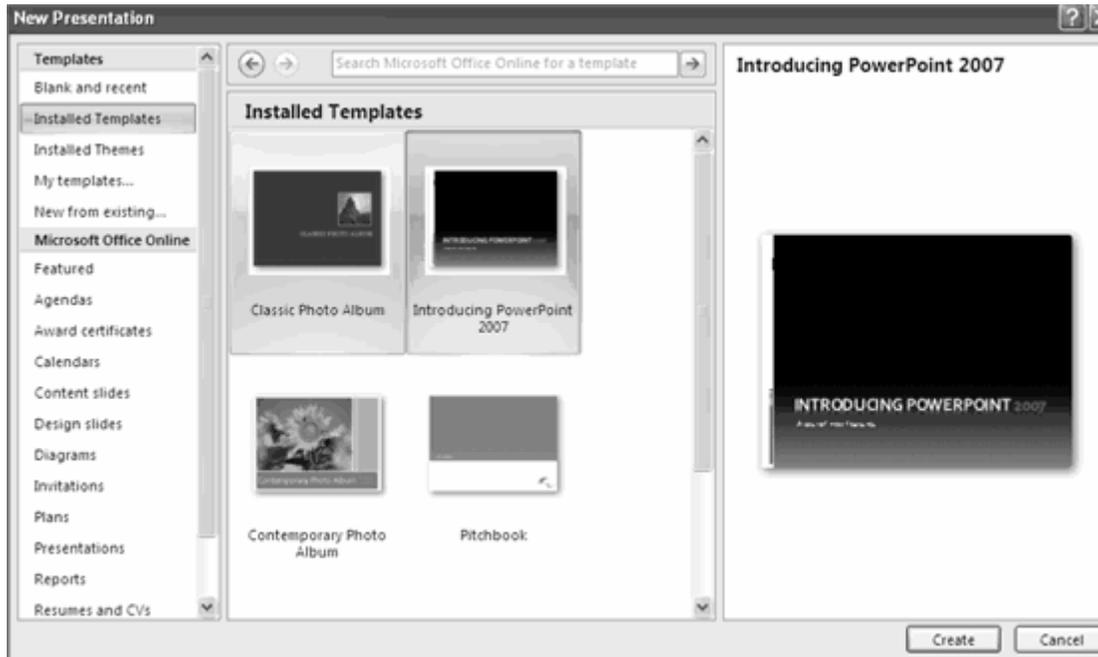


To create a new presentation from a template:

- Click the **Microsoft Office Button**
- Click **New**

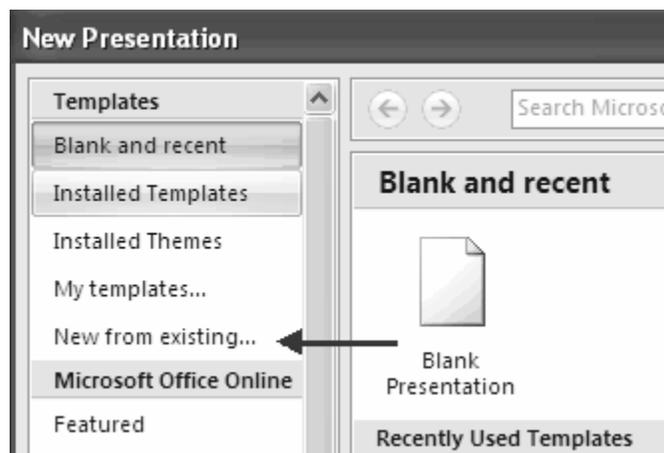


- Click **Installed Templates** or **Browse through Microsoft Office Online Templates**
- Click the template you choose



To create a new presentation from an existing presentation:

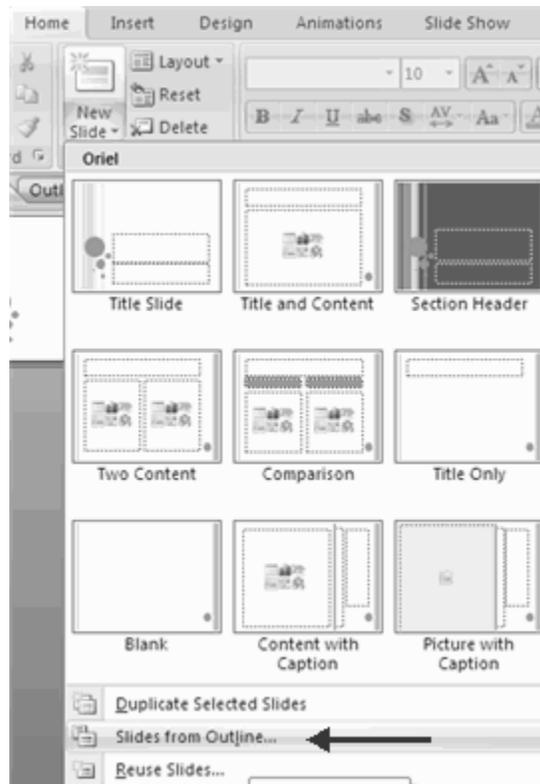
- Click the **Microsoft Office Button** 
- Click **New**
- Click **New from Existing**
- Browse to and click the presentation



To create a new presentation from a Word outline:

- Click the slide where you would like the outline to begin

- Click **New Slide** on the **Home** tab
- Click **Slides from Outline**
- Browse and click the Word Document that contains the outline

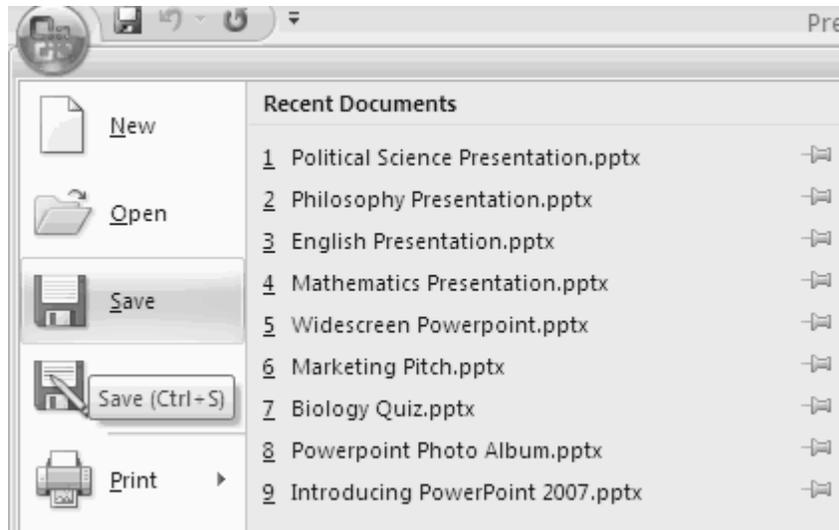


SAVE A PRESENTATION

When you save a presentation, you have two choices: **Save** or **Save As**. To save a document:

- Click the **Microsoft Office Button**
- Click **Save**

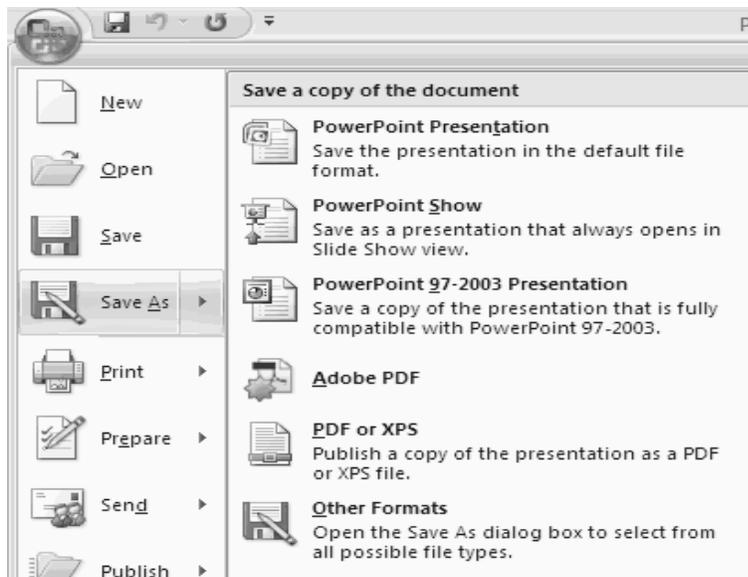




You may need to use the **Save As** feature when you need to save a presentation under a different name or to save it for earlier versions of PowerPoint. Remember that older versions of PowerPoint will not be able to open PowerPoint 2007 presentation unless you save it as a PowerPoint 97-2003 Format. To use the **Save As** feature:



- Click the **Microsoft Office Button**
- Click **Save As**
- Type in the name for the Presentation
- In the **Save as Type** box, choose **Excel 97-2003 Presentation**

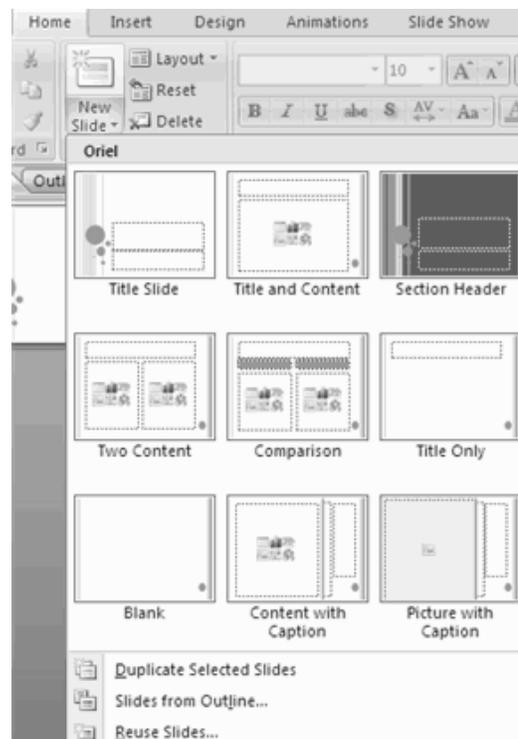


ADD SLIDES

There are several choices when you want to add a new slide to the presentation: Office Themes, Duplicate Selected Slide, or Reuse Slides.

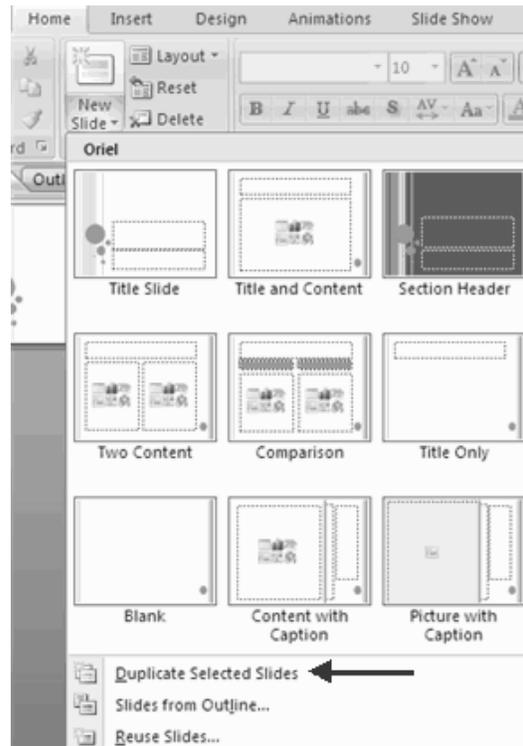
To create a new slide from Office Themes:

- Select the slide immediately **BEFORE** where you want the new slide
- Click the **New Slide** button on the **Home** tab
- Click the slide choice that fits your material



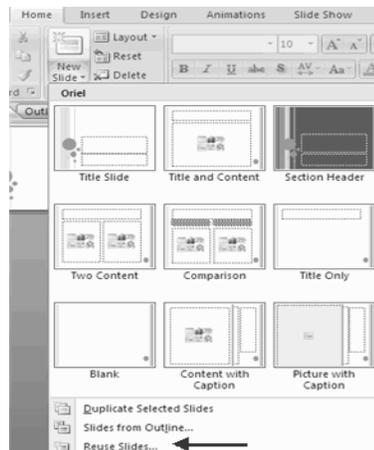
To create a slide as a duplicate of a slide in the presentation:

- Select the slide to duplicate
- Click the **New Slide** button on the **Home** tab
- Click **Duplicate Selected Slides**



To create a new slide from another presentation:

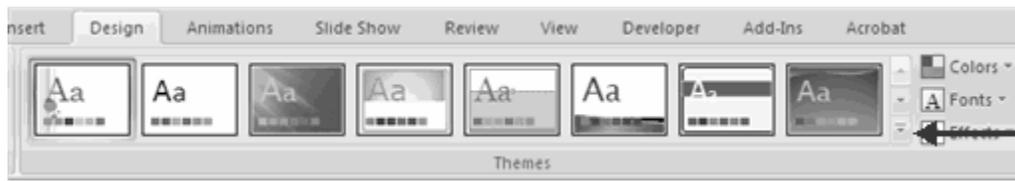
- Select the slide immediately BEFORE where you want the new slide
- Click the **New Slide** button on the Home tab
- Click **Reuse Slides**
- Click **Browse**
- Click **Browse File**
- Locate the slide show and click on the slide to import



THEMES

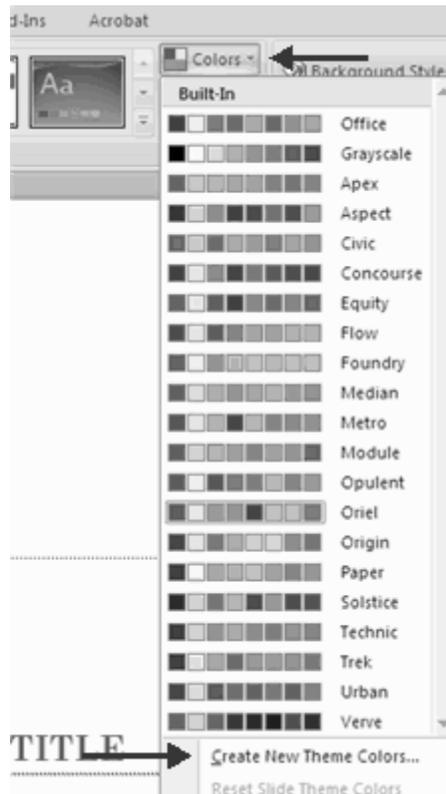
Themes are design templates that can be applied to an entire presentation that allows for consistency throughout the presentation. To add a theme to a presentation:

- Click the **Design** tab
- Choose one of the displayed **Themes** or click the **Galleries** button.



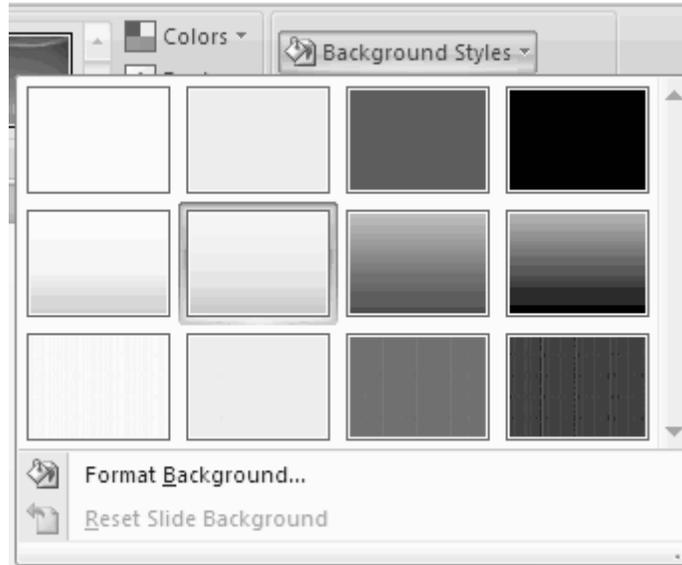
To apply new colors to a theme:

- Click the **Colors** drop down arrow
- Choose a color set or click **Create New Theme Colors**



To change the background style of a theme

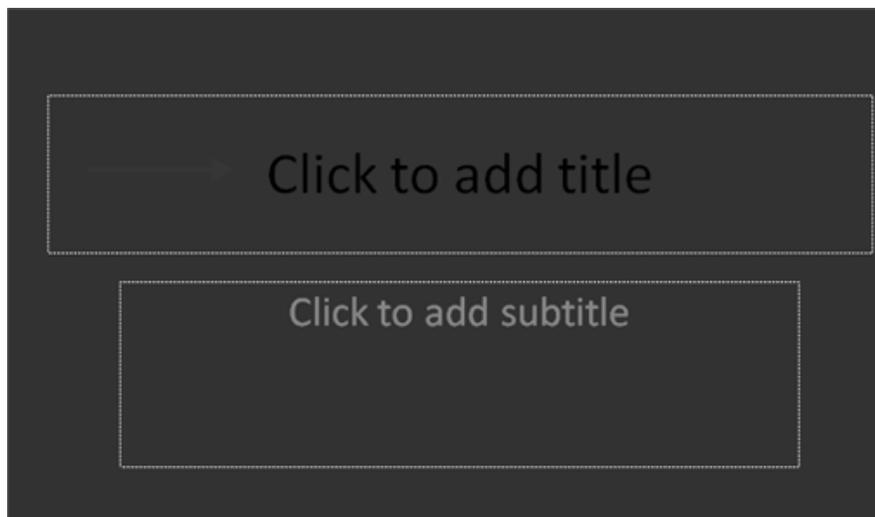
- Click the **Background Styles** button on the **Design** tab



ENTER TEXT

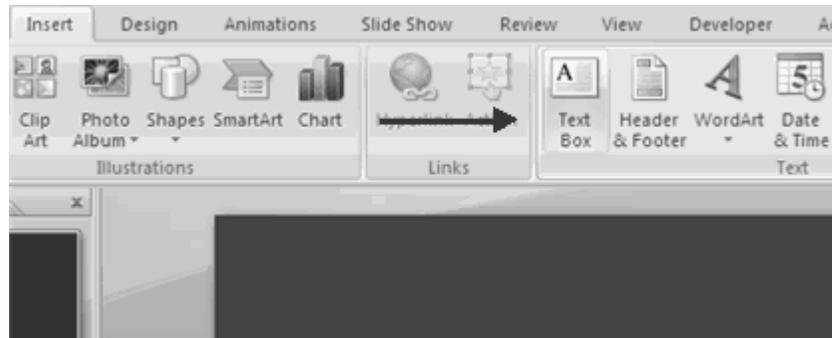
To enter text:

- Select the **slide** where you want the text
- Click in a **Textbox** to add text



To add a text box:

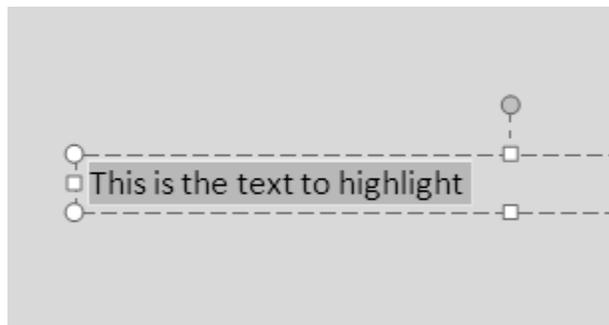
- Select the **slide** where you want to place the text box
- On the **Insert** tab, click **Text Box**
- Click on the slide and drag the cursor to expand the text box
- Type in the text



SELECT TEXT

To select the text:

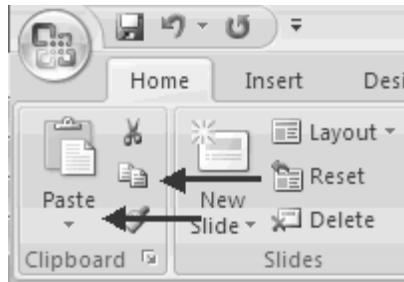
- Highlight the text



COPY AND PASTE

To copy and paste data:

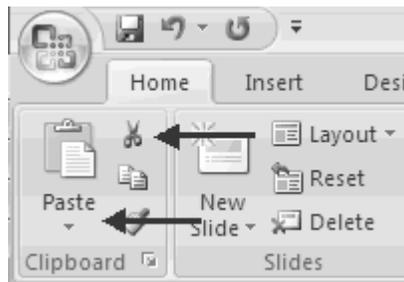
- Select the item(s) that you wish to copy
- On the **Clipboard Group** of the **Home Tab**, click **Copy**
- Select the item(s) where you would like to copy the data
- On the **Clipboard Group** of the **Home Tab**, click **Paste**



CUT AND PASTE

To cut and paste data:

- Select the item(s) that you wish to copy
- On the **Clipboard Group** of the **Home Tab**, click **Cut**
- Select the items(s) where you would like to copy the data
- On the **Clipboard Group** of the **Home Tab**, click **Paste**



UNDO AND REDO

To undo or redo your most recent actions:

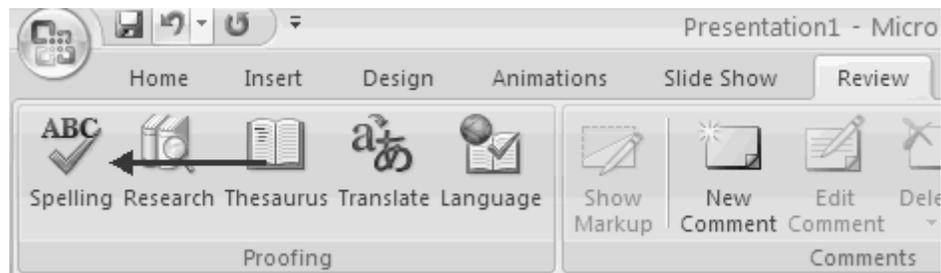
- On the **Quick Access Toolbar**
- Click **Undo** or **Redo**



SPELL CHECK

To check the spelling in a presentation:

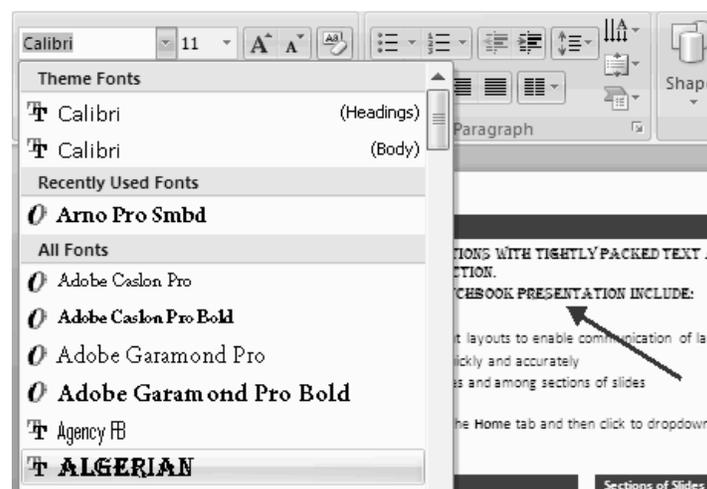
- Click the **Review** tab
- Click the **Spelling** button



CHANGE FONT TYPEFACE AND SIZE

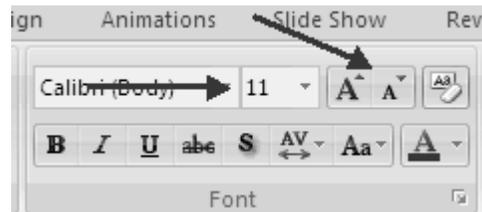
To change the font typeface:

- Click the **arrow** next to the font name and choose a font.
- Remember that you can preview how the new font will look by highlighting the text, and hovering over the new font typeface.



To change the font size:

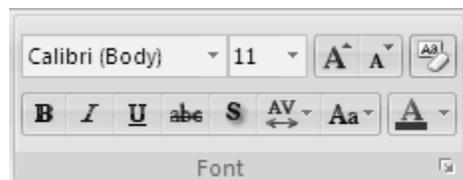
- Click the **arrow** next to the font size and choose the appropriate size, or
- Click the **increase or decrease** font size buttons.



FONT STYLES AND EFFECTS

Font styles are predefined formatting options that are used to emphasize text. They include: Bold, Italic, and Underline. To add these to text:

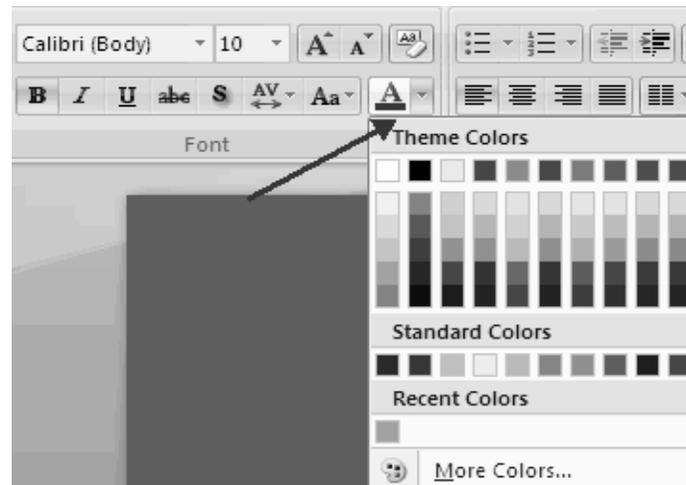
- Select the text and click the **Font Styles** included on the Font group of the Home tab or
- Select the text and right click to display the font tools



CHANGE TEXT COLOR

To change the text color:

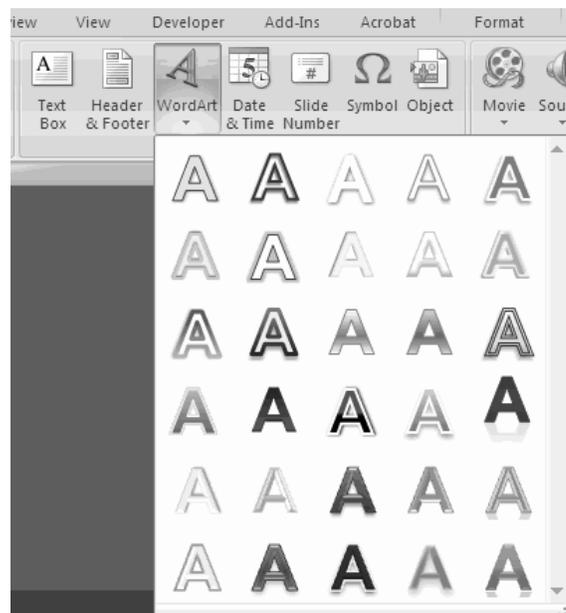
- Select the text and click the **Colors** button included on the Font Group of the Ribbon, or
- Highlight the text and right click and choose the colors tool.
- Select the color by clicking the down arrow next to the font color button.



WORDART

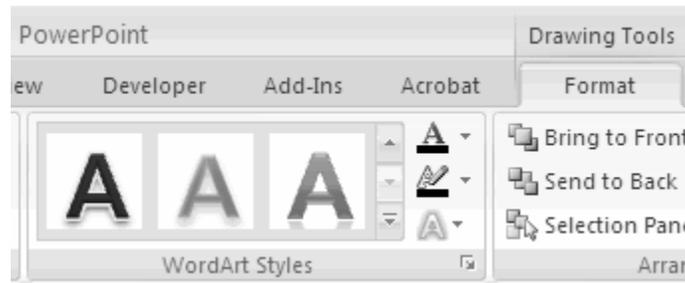
WordArt are styles that can be applied to text to create a visual effect. To apply Word Art:

- Select the text
- Click the **Insert** tab
- Click the **WordArt** button
- Choose the **WordArt**



To modify the styles of WordArt

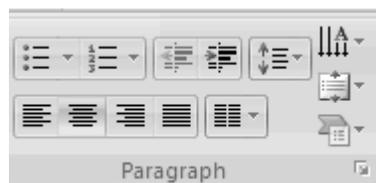
- Select the WordArt
- Click the Format tab for the Drawing Tools
- Click the **WordArt Fill** button, the **WordArt Outline** button, or the **Text Effects** button



CHANGE PARAGRAPH ALIGNMENT

The paragraph alignment allows you to set how you want text to appear. To change the alignment:

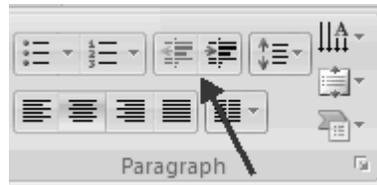
- Click the **Home Tab**
- Choose the appropriate button for alignment on the Paragraph Group.
 - **Align Left:** the text is aligned with your left margin
 - **Center:** The text is centered within your margins
 - **Align Right:** Aligns text with the right margin
 - **Justify:** Aligns text to both the left and right margins.



INDENT PARAGRAPHS

To indent paragraphs, you can do the following:

- Click the **Indent** buttons to control the indent.
- Click the **Indent** button repeated times to increase the size of the indent.



TEXT DIRECTION

To change the text direction:

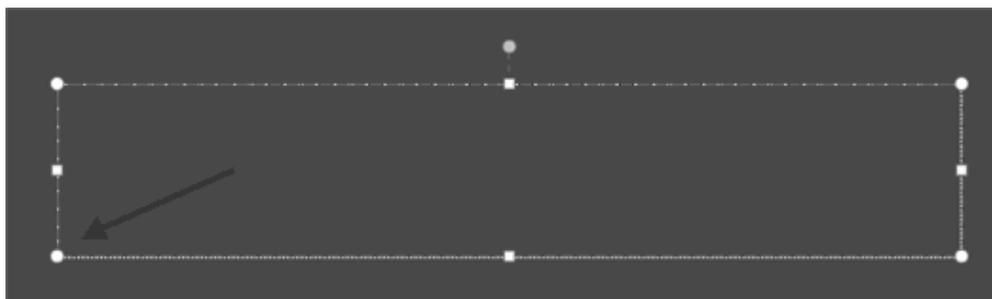
- Select the text
- Click the Text Direction button on the Home tab
- Click the selection



RESIZE A TEXTBOX

To resize a textbox:

- Click on the **textbox**
- Click the corner of the box and drag the cursor to the desired size



BULLETED AND NUMBERED LISTS

Bulleted lists have bullet points, numbered lists have numbers, and outline lists combine numbers and letters depending on the organization of the list.

To add a list to existing text:

- Select the text you wish to make a list
- Click the **Bulleted or Numbered Lists** button



To create a new list:

- Place your cursor where you want the list in the document
- Click the **Bulleted or Numbered Lists** button
- Begin typing

NESTED LISTS

A nested list is list with several levels of indented text. To create a nested list:

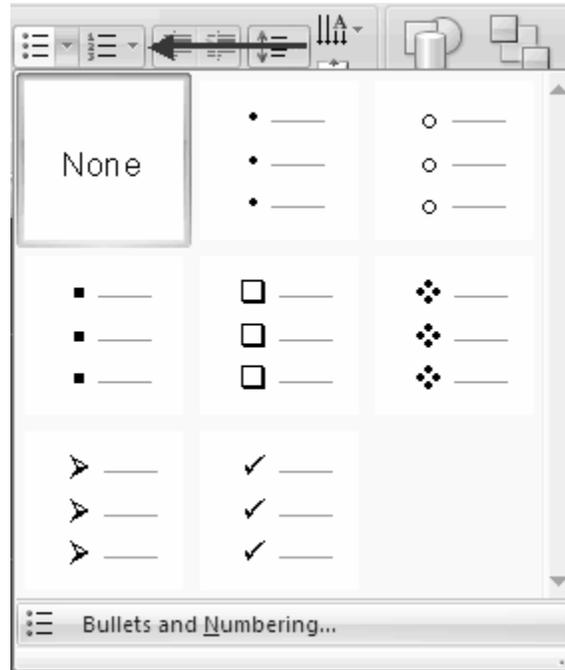
- Create your list following the directions above
- Click the **Increase or Decrease Indent** button



FORMATTING LISTS

The bullet image and numbering format can be changed by using the **Bullets or Numbering** dialog box.

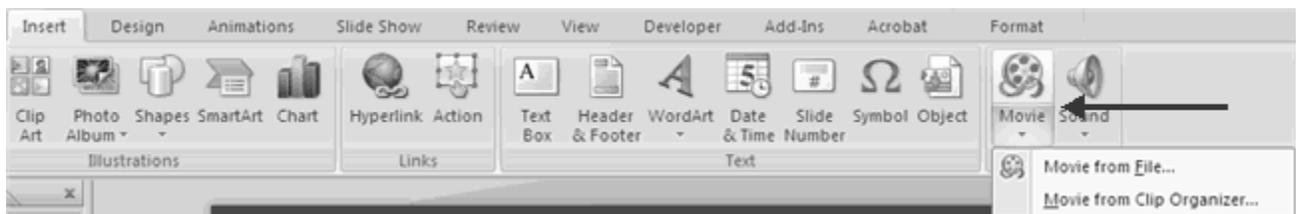
- Select the entire list to change all the bullets or numbers, or Place the cursor on one line within the list to change a single bullet.
- Click the **arrow** next to the bulleted or numbered list and choose a bullet or numbering style.



ADDING VIDEO

Video clips can be added to the presentation. To add a video clip:

- Click the **Movie** button on the Insert tab
- Choose **Movie from File** or **Movie from Clip Organizer**



To edit the video options:

- Click the movie icon

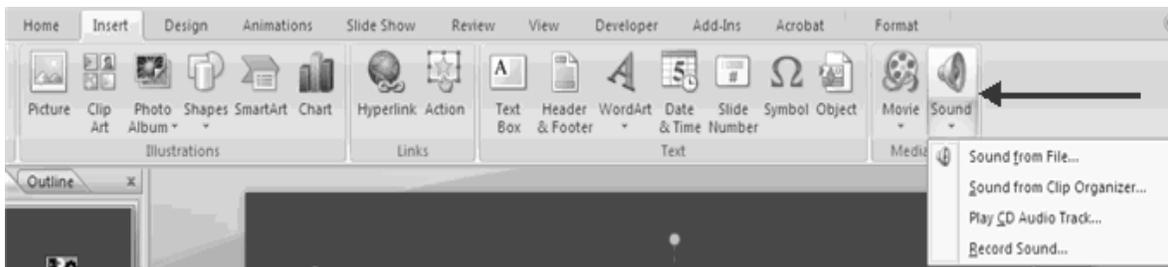
- Click the **Format** tab



ADDING AUDIO

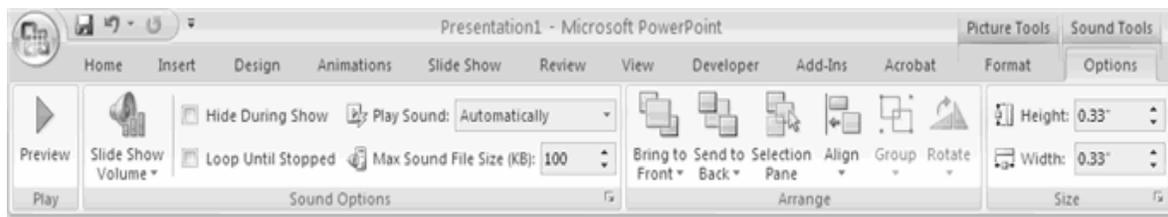
Audio clips can be added to the presentation. To add an audio clip:

- Click the **Audio** button on the Insert tab
- Choose **Sound from File**, **Sound from Clip Organizer**, **Play CD Audio Track**, or **Record Sound**



To edit the audio options:

- Click the audio icon
- Click the **Format** tab



ADDING PICTURE

To add a picture:

- Click the **Insert** Tab
- Click the **Picture** Button
- Browse to the picture from your files
- Click the **name** of the picture
- Click **insert**

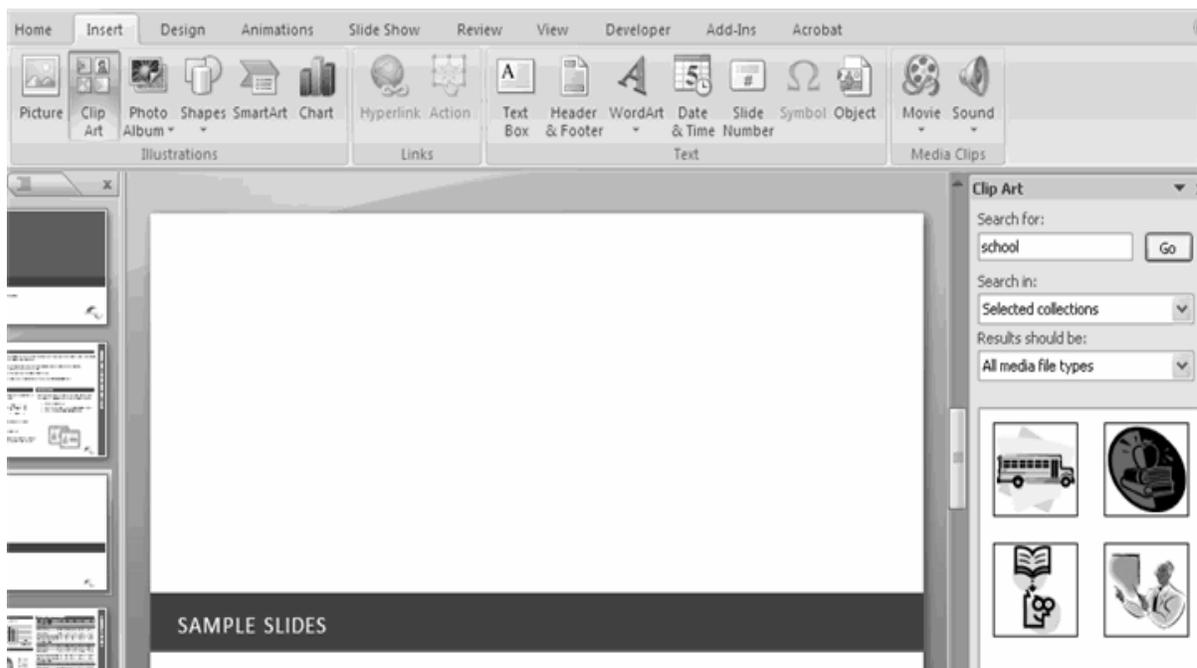


- To move the graphic, click it and drag it to where you want it

ADDING CLIP ART

To add Clip Art:

- Click the **Insert** Tab
- Click the **Clip Art** Button
- Search for the clip art using the search Clip Art dialog box



- Click the **clip art**

- To move the graphic, click it and drag it to where you want it

EDITING PICTURES AND CLIP ART

When you add a graphic to the presentation, an additional Tab appears on the Ribbon. The Format Tab allows you to format the pictures and graphics. This tab has four groups:

Adjust: Controls the picture brightness, contrast, and colors

Picture Style: Allows you to place a frame or border around the picture and add effects

Arrange: Controls the alignment and rotation of the picture

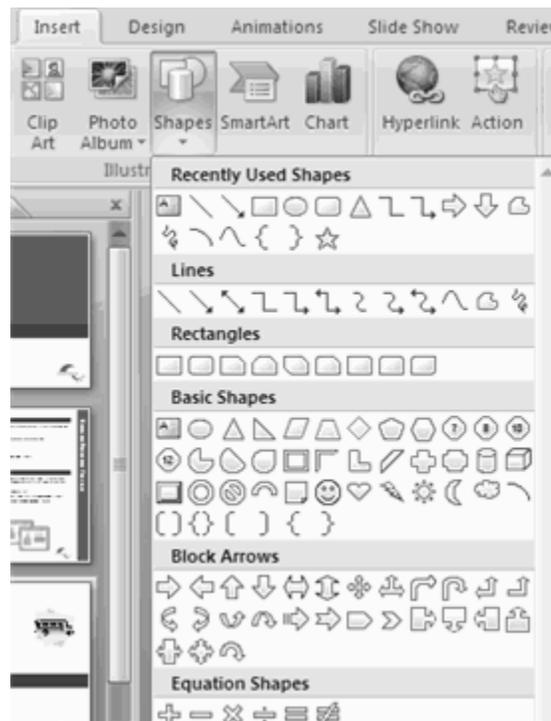
Size: Cropping and size of graphic



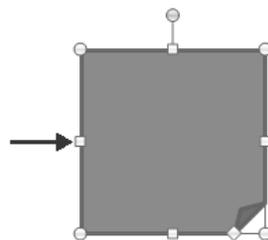
ADDING A SHAPE

To add Shapes:

- Click the **Insert** Tab
- Click the **Shapes** Button
- Click the shape you choose



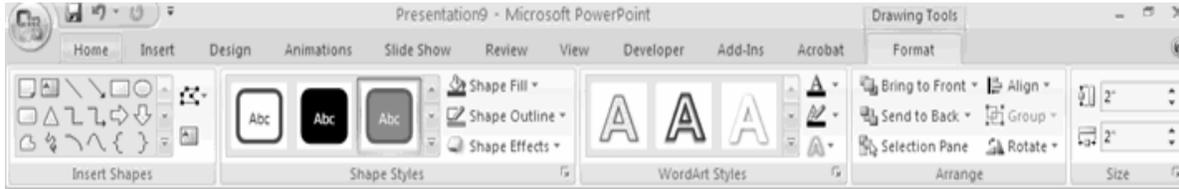
- Click the **Slide**
- Drag the **cursor** to expand the Shape



To format the shapes:

- Click the **Shape**

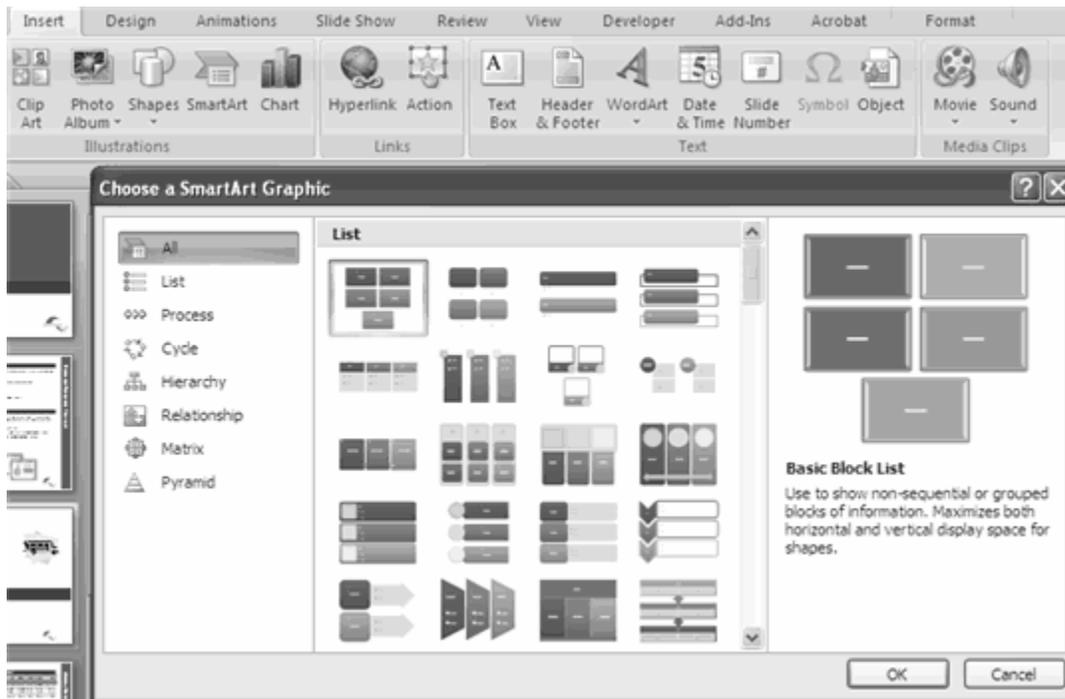
- Click the **Format** tab



ADDING SMARTART

SmartArt is a feature in Office 2007 that allows you to choose from a variety of graphics, including flow charts, lists, cycles, and processes. To add SmartArt:

- Click the **Insert** Tab
- Click the **SmartArt** Button
- Click the **SmartArt** you choose

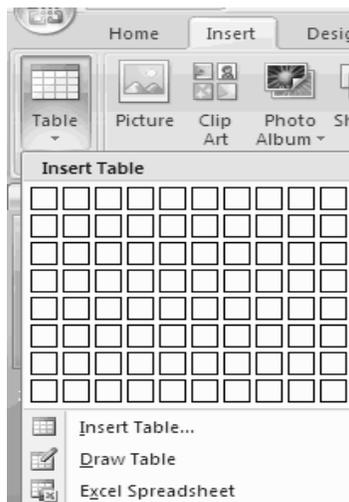


- Click the **SmartArt**
- Drag it to the desired location in the slide

CREATE A TABLE

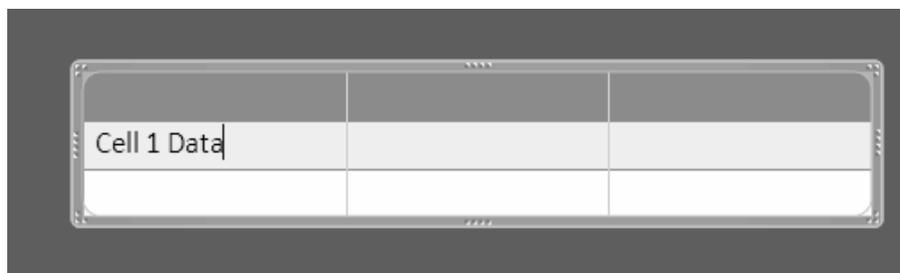
To create a table:

- Place the cursor on the page where you want the new table
- Click the **Insert** Tab of the Ribbon
- Click the **Tables** Button on the Tables Group. You can create a table one of four ways:
 - Highlight the number of row and columns
 - Click **Insert Table** and enter the number of rows and columns
 - Click the **Draw Table**, create your table by clicking and entering the rows and columns
 - Click **Excel Spreadsheet** and enter data



ENTER DATA IN A TABLE

Place the cursor in the cell where you wish to enter the information. Begin typing.



MODIFY THE TABLE STRUCTURE AND FORMAT A TABLE

To modify the structure of a table:

- Click the table and notice that you have two new tabs on the Ribbon: **Design and Layout**. These pertain to the table design and layout.

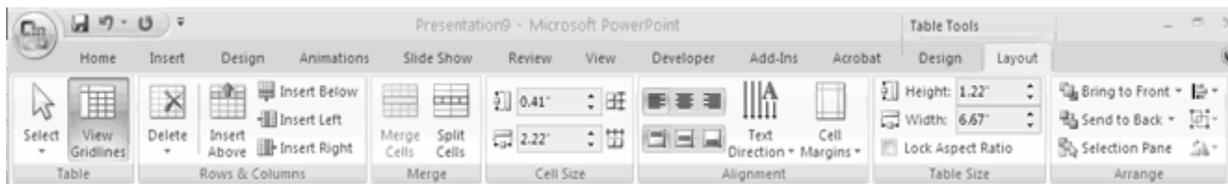
On the Design Tab, you can choose:

- **Table Style Options**
- **Table Styles**
- **Draw Borders**



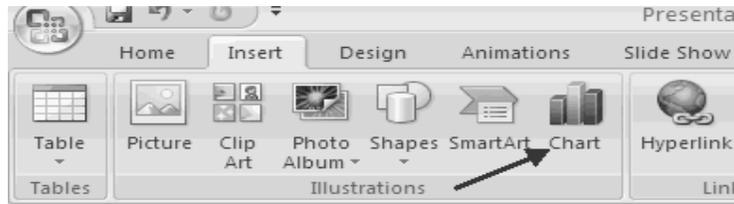
To format a table, click the table and then click the **Layout** Tab on the Ribbon. This Layout tab allows you to:

- **View Gridlines and Properties** (from the Table Group)
- **Insert Rows and Columns** (from the Rows & Columns Group)
- **Delete** the Table, Rows and/or Columns (from the Rows & Columns Group)
- **Merge or Split Cells** (from the Merge Group)
- Increase and decrease **cell size** (Cell Size Group)
- **Align text** within the cells and change text directions (Alignment Group)



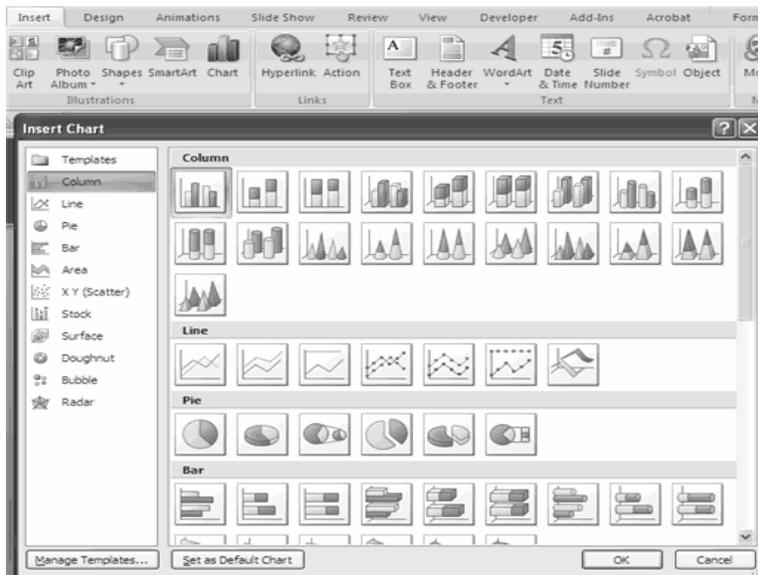
HOW TO CREATE CHARTS?

Charts allow you to present information contained in the worksheet in a graphic format. PowerPoint offers many types of charts including: Column, Line, Pie, Bar, Area, Scatter and more. To view the charts available click the Insert Tab on the Ribbon.



To create a chart:

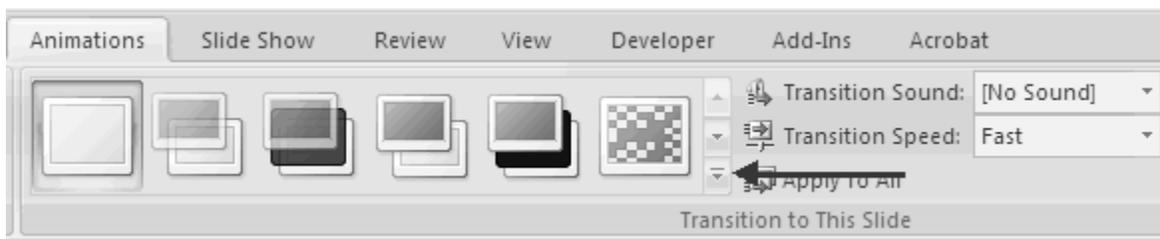
- Click the **Insert** tab on the ribbon
- Click the type of **Chart** you want to create
- Insert the **Data** and **Labels**



SLIDE TRANSITIONS

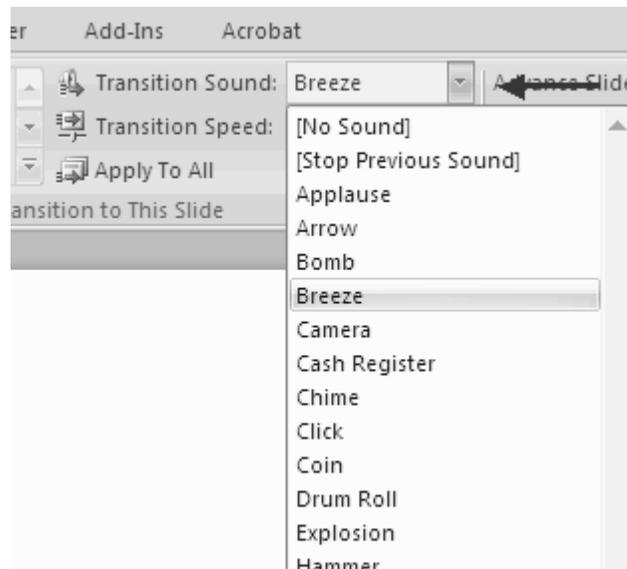
Transitions are effects that are in place when you switch from one slide to the next. To add slide transitions:

- Select the slide that you want to transition
- Click the **Animations** tab
- Choose the appropriate animation or click the **Transition** dialog box

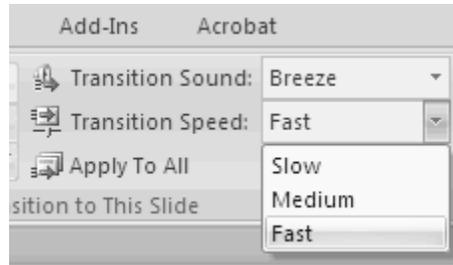


To adjust slide transitions:

- Add sound by clicking the arrow next to **Transition Sound**



- Modify the transition speed by clicking the arrow next to **Transition Speed**



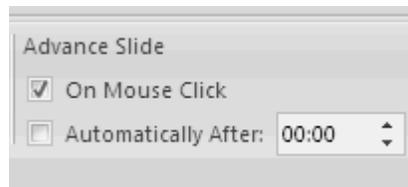
To apply the transition to all slides:

- Click the **Apply to All** button on the **Animations** tab



To select how to **advance a slide**:

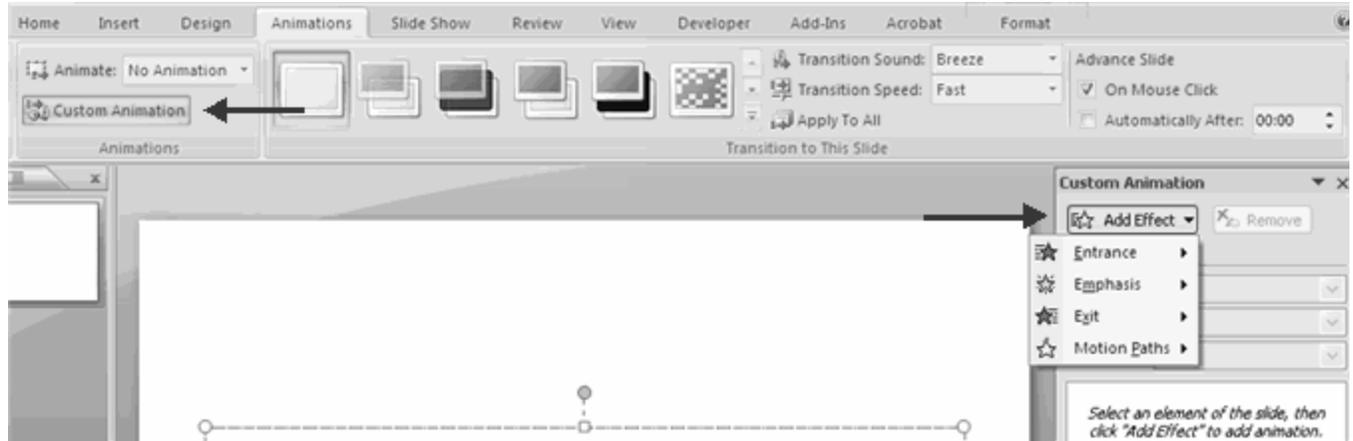
- Choose to **Advance on Mouse Click**, or
- Automatically after a set number of seconds



SLIDE ANIMATION

Slide animation effects are predefined special effects that you can add to objects on a slide. To apply an animation effect:

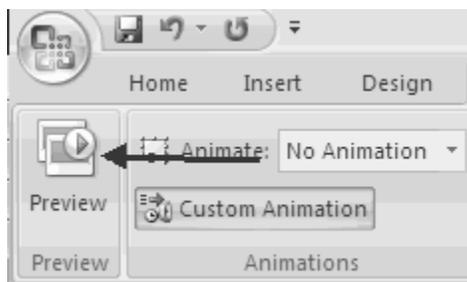
- Select the object
- Click the **Animations** tab on the Ribbon
- Click **Custom Animation**
- Click **Add Effect**
- Choose the appropriate effect



ANIMATION PREVIEW

To preview the animation on a slide:

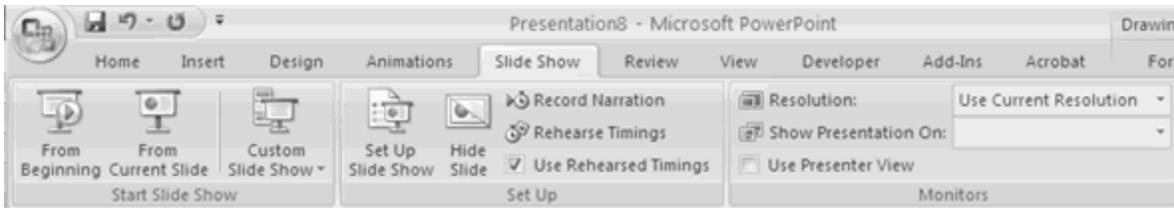
- Click the **Preview** button on the **Animations** tab



SLIDE SHOW OPTIONS

The Slide Show tab of the ribbon contains many options for the slide show. These options include:

- Preview the slide show from the beginning
- Preview the slide show from the current slide
- Set up Slide Show



SET UP SLIDE SHOW

This option allows you to set preferences for how the slide show will be presented. The options include:

- Whether the show will run automatically or will be presented by a speaker
- The looping options
- Narration options
- Monitor resolutions



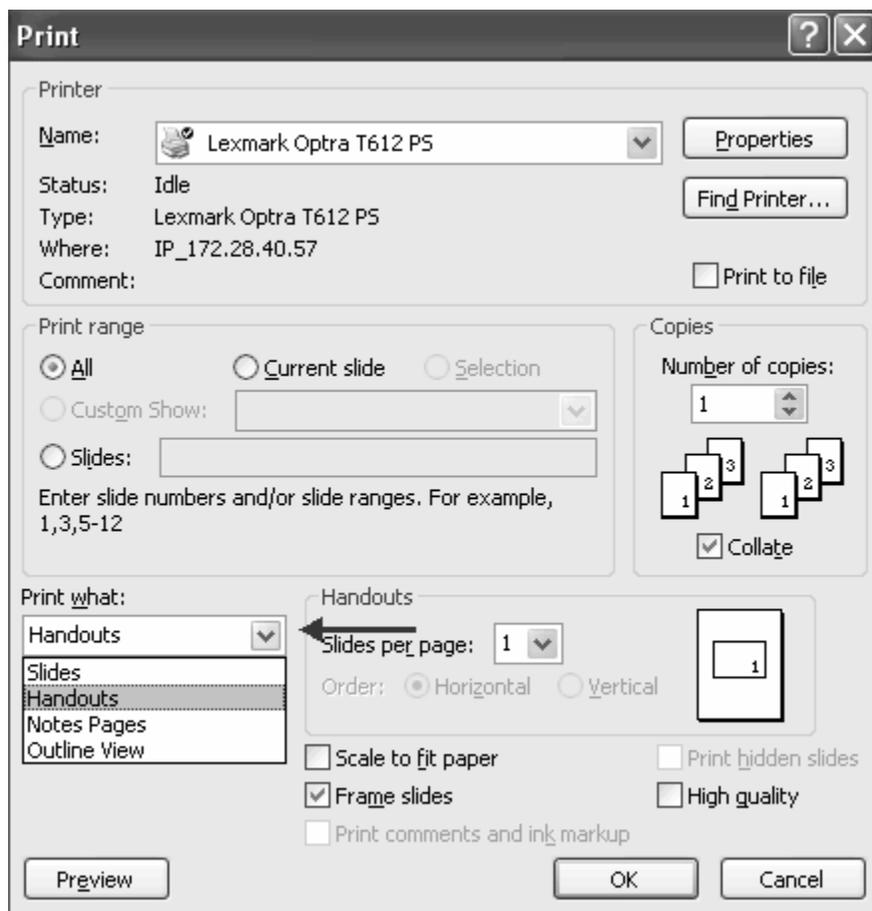
PRINT A PRESENTATION

There are many options for printing a presentation. They are:

- **Slides:** These are slides that you would see if you were showing the presentation, one slide per page
- **Handouts:** 1, 2, 3, 4, 6 or 9 per page, this option allows for more slides per page
- **Notes Page:** This includes the slides and the speaker notes
- **Outline View:** This will print the outline of the presentation

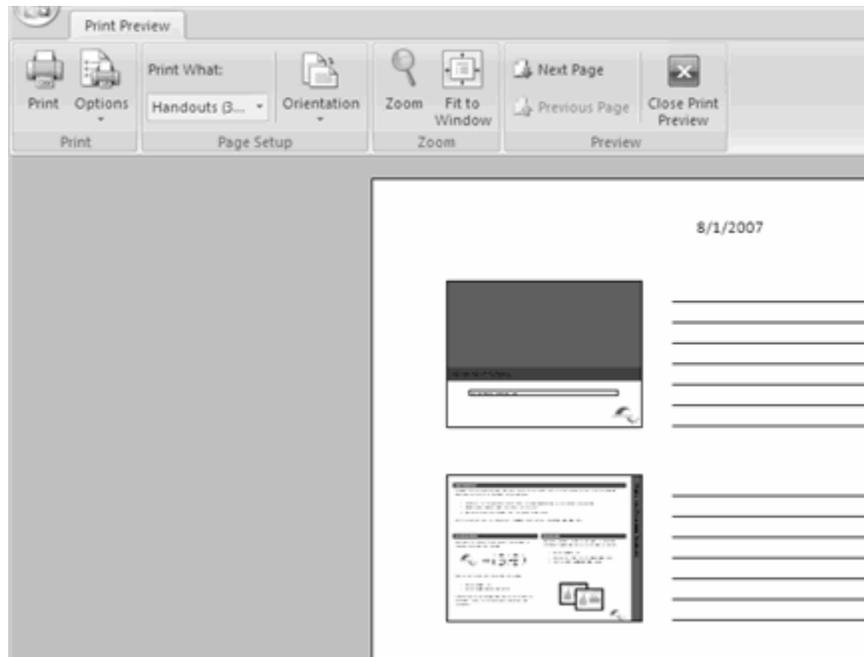
To access the print options:

- Click the **Microsoft Office Button**
- Click **Print**
- In the Print Dialog Box, click the **arrow** next to **Print what**
- Choose the format and click **OK** to print



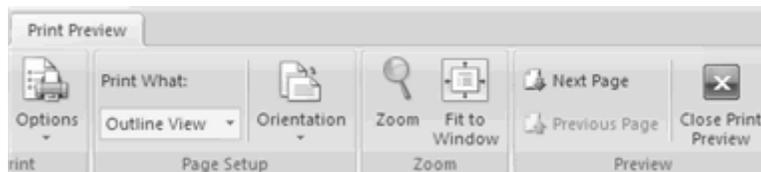
To print preview:

- Click the **Microsoft Office Button**
- Place the cursor over **Print**
- Click **Print Preview**
- Click the arrow next to **Print What** to change print options
- To print from Print Preview, click **Print**



To Exit Print Preview:

- Click the **Close Print Preview** button



CHAPTER NO 16

MICROSOFT EXCEL 2007

Microsoft Excel 2007 is an electronic spreadsheet software package that allows you to organize data in a tabular format, perform mathematical calculations, and analyze data. This software includes functions, formulas, and charts. It is commonly used in business, engineering, mathematics, and statistics.

Microsoft Excel 2007 is the newest version of Microsoft Office's worksheet (spreadsheet) program. Technically a worksheet is a single document inside a workbook but we often use the terms worksheet, spreadsheet and workbook interchangeably. Worksheets contain numerical information presented in tabular row and column format with text that labels the data.

It can also contain graphics and charts. Like Microsoft Word 2007, Excel 2007 takes advantage of a new, results-oriented user interface to make powerful productivity tools easily accessible. If you're worried about capacity, Excel 2007 now accommodates 1 million rows and 16,000 columns.

GETTING START

To start MS Excel click on the Start Menu on the bottom left corner of your desktop and select *Start*→ *All Programs*→ *Microsoft Office* →*Microsoft Office excel 2007*.

SCREEN LAYOUT

The MS Excel 2007 interface brings out all the functionality of the software using tabs rather than drop-down menus.

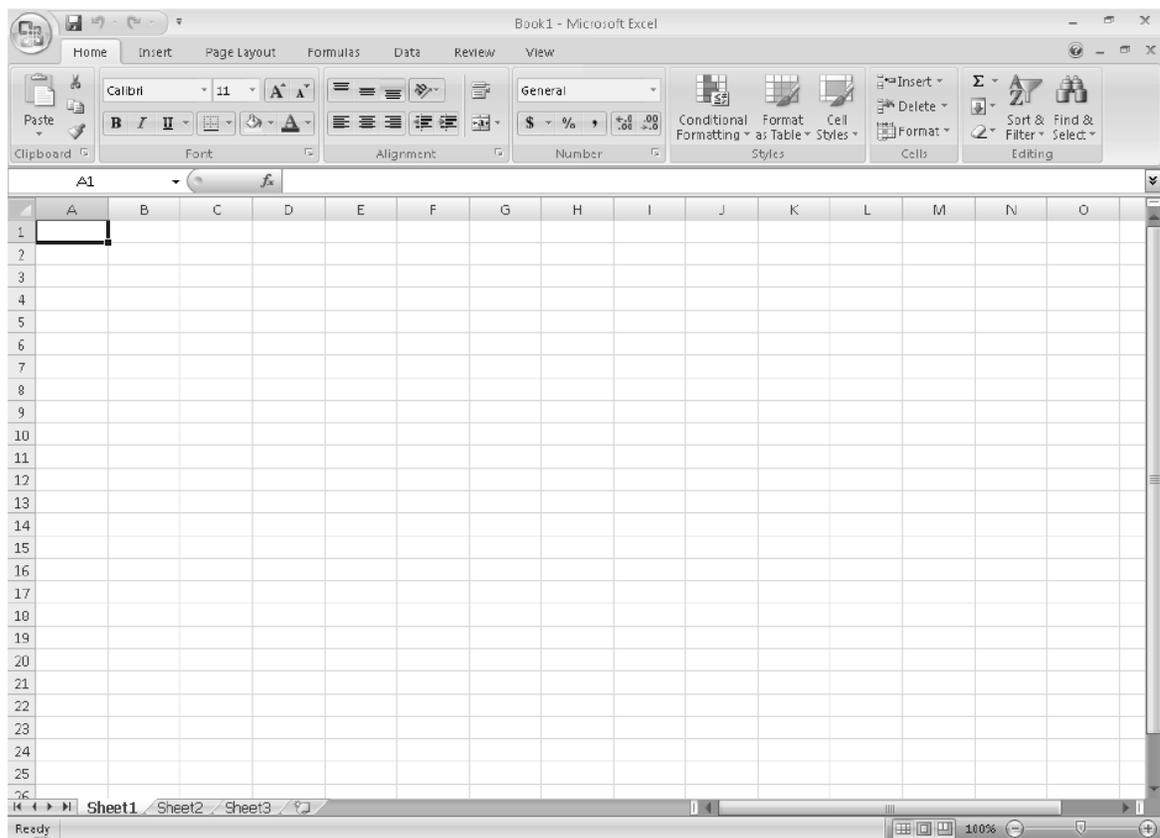
The main work area is called a *spreadsheet* where you can communicate your data using functions, formulas, and charts.

The highlighted cell is called the *active cell* and is the current place where you can enter a value or a formula. We will describe the parts of the interface in the following sections.

Getting started with Excel 2007 will notice that there are many features. There are three features that you should remember as you work within Excel 2007:

1. The Microsoft Office Button,
2. The Quick Access Toolbar,
3. The Ribbon.

The function of these features will be more fully explored below.



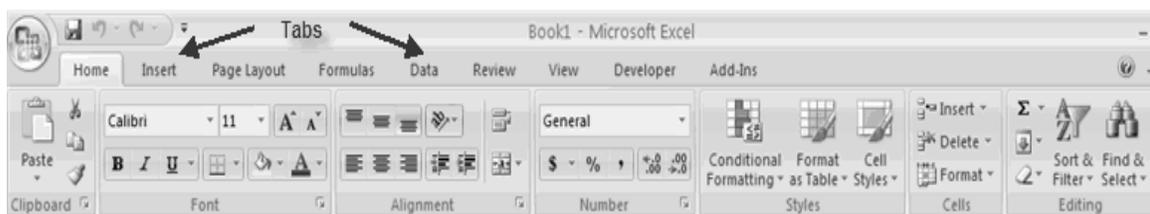
OFFICE BUTTON

The *Office button* (located at the top left of the MS Excel Window) is a drop-down menu of commands that you can use on MS Excel files. It includes creating a new file, opening an existing file, saving, and printing. A menu choice with a right pointing arrow expands to another menu of command choices.

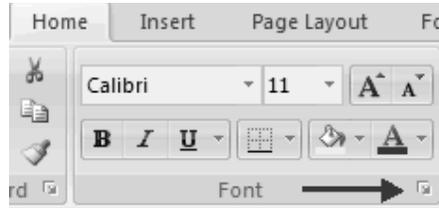


RIBBON

The ribbon is the panel at the top portion of the document. It has seven tabs: Home, Insert, Page Layouts, Formulas, Data, Review, and View. Each tab is divided into groups. The groups are logical collections of features designed to perform function that you will utilize in developing or editing your Excel spreadsheets.



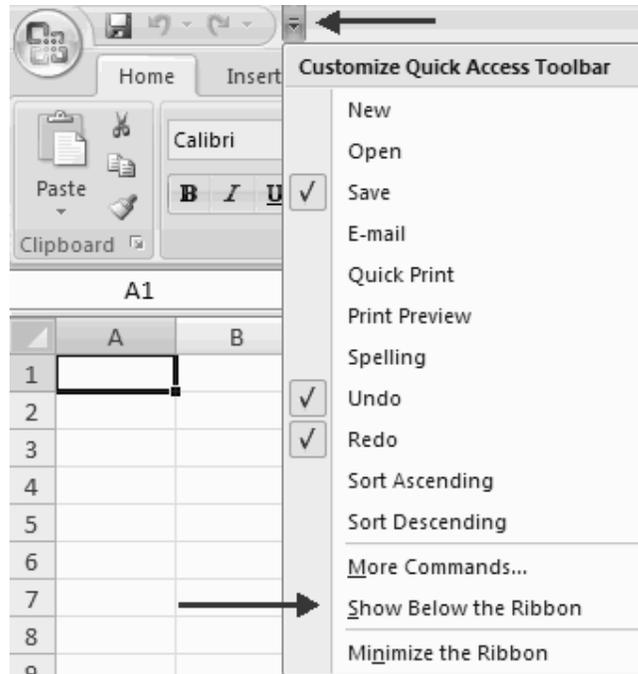
Commonly utilized features are displayed on the Ribbon. To view additional features within each group, click the arrow at the bottom right corner of each group.



HOME:	Clipboard, Fonts, Alignment, Number, Styles, Cells, Editing.
INSERT:	Tables, Illustrations, Links, Text, and Media Clips.
PAGE LAYOUTS:	Themes, Page Setup, Scale to Fit, Sheet Options, Arrange
FORMULAS:	Function Library, Defined Names, Formula Auditing, Calculation
DATA:	Start Slide Show, Set Up, Monitors.
REVIEW	Proofing, Comments, Protect.
VIEW:	Presentation Views, Show/Hide, Zoom, Window, Macros

QUICK ACCESS TOOLBAR

The **Quick Access Toolbar** is a customizable toolbar that contains commands that you may want to use. You can place the quick access toolbar above or below the ribbon. To change the location of the quick access toolbar, click on the arrow at the end of the toolbar and click **Show below the Ribbon**.



MINI TOOLBAR

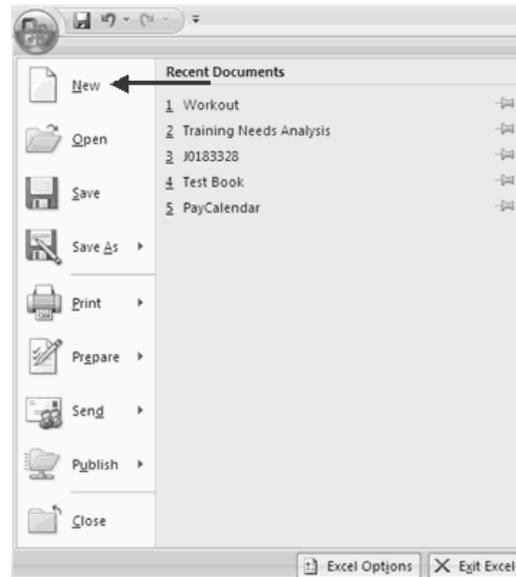
A new feature in Office 2007 is the Mini Toolbar. This is a floating toolbar that is displayed when you select text or right-click text. It displays common formatting tools, such as Bold, Italics, Fonts, Font Size and Font Color.



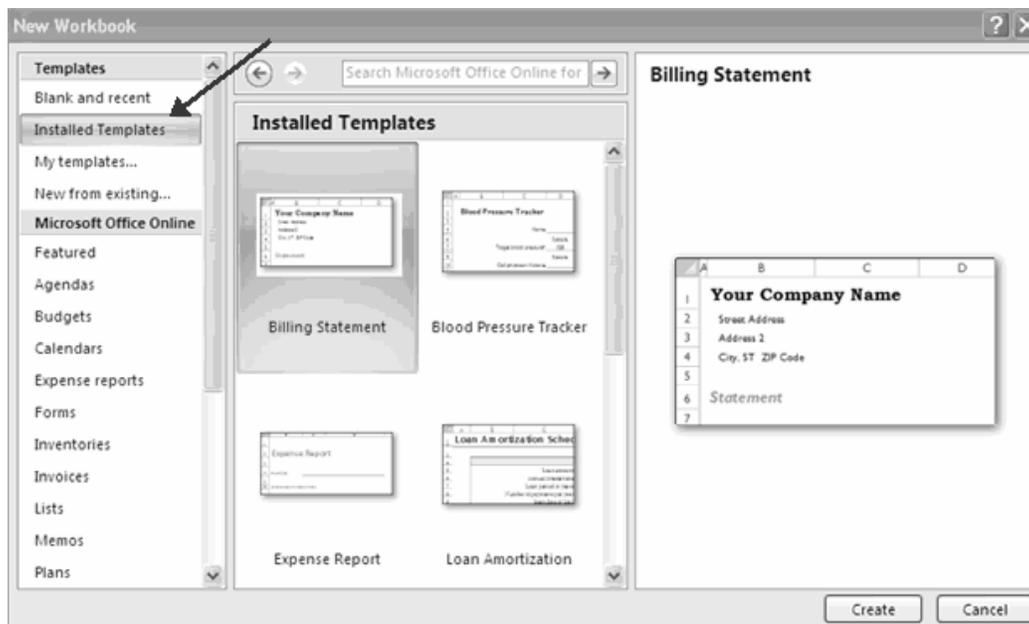
HOW TO CREATE A WORKBOOK

To create a new Workbook:

- Click the **Microsoft Office Toolbar**
- Click **New**
- Choose **Blank Document**



If you want to create a new document from a template, explore the templates and choose one that fits your needs.



SAVE A WORKBOOK

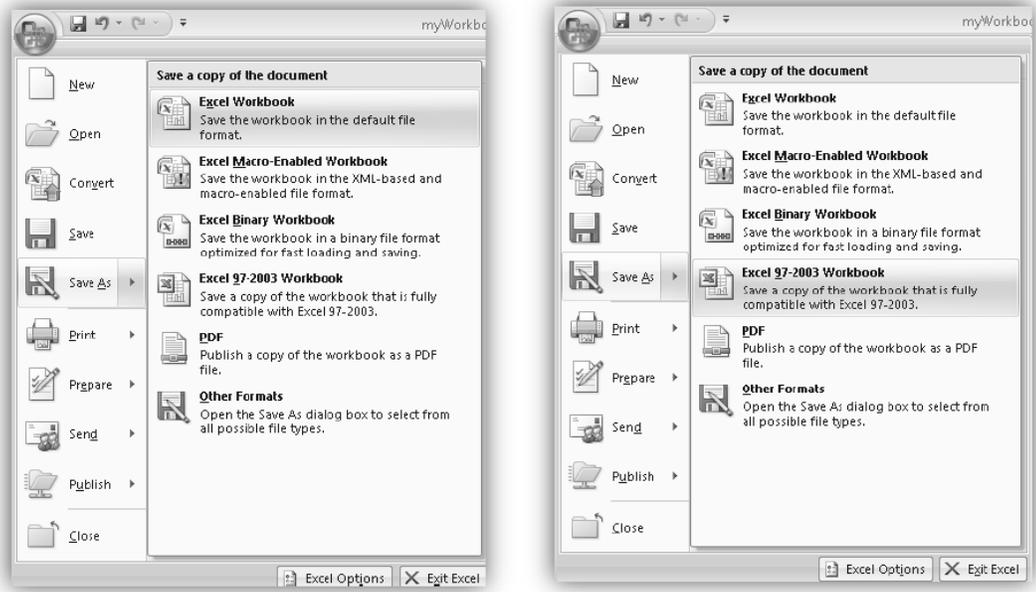
When you save a workbook, you have two choices: **Save** or **Save As**.
To save a document:

- Click the **Microsoft Office Button**
- Click **Save**



You may need to use the **Save As** feature when you need to save a workbook under a different name or to save it for earlier versions of Excel. Remember that older versions of Excel will not be able to open an Excel 2007 worksheet unless you save it as an Excel 97-2003 Format. To use the **Save As** feature:

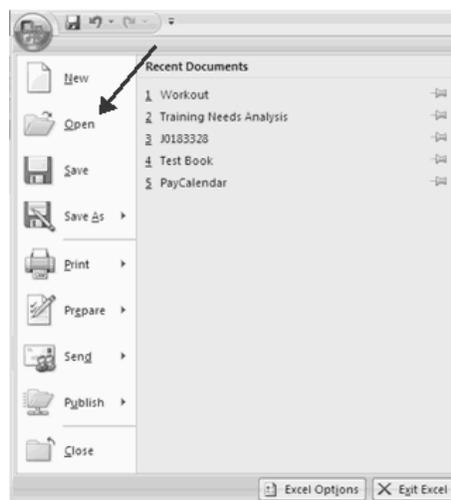
- Click the **Microsoft Office Button**
- Click **Save As**
- Type in the name for the Workbook
- In the **Save as Type** box, choose **Excel 97-2003 Workbook**



OPEN A WORKBOOK

To open an existing workbook:

- Click the **Microsoft Office Button**
- Click **Open**
- Browse to the workbook
- Click the title of the workbook
- Click **Open**

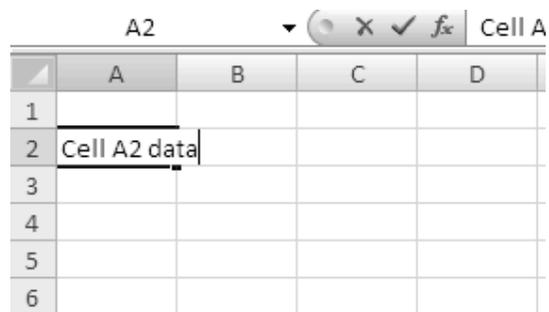


ENTERING DATA

There are different ways to enter data in Excel: in an active cell or in the formula bar.

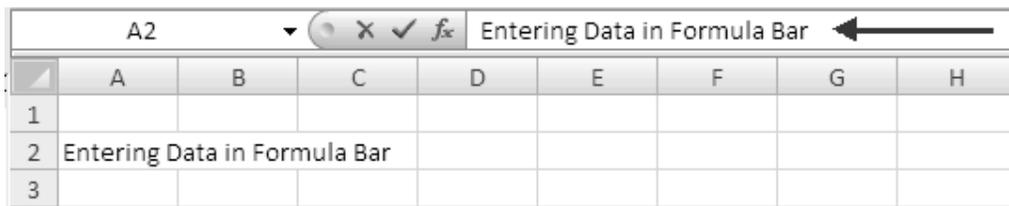
To enter data in an active cell:

- Click in the **cell** where you want the data
- Begin typing



To enter data into the **formula bar**

- Click the cell where you would like the data
- Place the cursor in the **Formula Bar**
- Type in the data



WHAT ARE SPREADSHEETS?

A spreadsheet is a group of cells organized into columns and rows containing data.

Cell References: Rows and Columns

A **Row** is a set of cells in the horizontal direction. Each row is numbered where the top-most row is numbered as 1. You can change the height of a row by moving your mouse over the row line and dragging it to your desired height.

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								

	A	B	C	D
1				
2				
3				
4				
5				
6				

A **Cell** is a single box that is the intersection of a column and row. Each cell is named according to its column label and row number, called a **Cell Reference**.

For example, the highlighted cell shown below is named **cell B3**. The **name box** is located at the top left corner of the worksheet and displays the cell reference of the active cell.

B3		A	B	C
1				
2				
3				
4				
5				

WORKING WITH DATA

You can enter *text*, *numbers*, *Booleans*, *dates*, *times*, and *formulas* into a cell.

TEXT

Text is any combination of numbers, spaces, and non-numeric characters. For example, Excel treats the following entries as text: 10AA109, 127AXY, 12-976, 208 4675. All text is left-aligned in a cell by default.

NUMBER

A number can contain only the following characters: **0 1 2 3 4 5 6 7 8 9 + - () /**. All numbers are right-aligned in a cell by default. Excel ignores leading plus signs (+) and treats a single period as a decimal. You can use the following characters to format the number: **, \$ %.**, e.g. **1,000**, **\$13.25**, and **57%**. All other combinations of numbers and nonnumeric characters are treated as text.

BOOLEAN

The values **TRUE** and **FALSE** are special values called Boolean values. A Boolean expression in a formula will evaluate to one of these two values. Note that surrounding either **TRUE** or **FALSE** with quotes, e.g. "TRUE", does *NOT* indicate a Boolean value, rather a text value.

DATE AND TIME

The way that a date or time is displayed on a worksheet depends on the format applied to the cell. All dates and times are right-aligned in a cell by default. A date may be a *short date*, e.g. **11/27/2008**, or a *long date*, e.g. **Thursday, November 27, 2008**. Excel only recognizes dates starting from January 1, 1900. Also, Excel treats dates as numbers where 1/1/1900 is the same as 1, 1/2/1900 is the same as 2, and so on.

A time is formatted as hours, minutes, seconds, and AM/PM, e.g. **1:12:04 PM**. Times are also numbers, where each time is a number between 0 and 1. For example, midnight is 0 and noon is 0.5, and 11:59:59 PM is 0.999988425925926. If Excel cannot recognize a date or time that you enter, then it is treated as text.

FORMULA

A formula is a *mathematical expression* that *evaluates to a single value*. It can be used to perform a useful calculation in a cell. You can construct a formula using any mix of the following components: *constants*, *mathematical operators*, *cell references* and *ranges*, and *functions*.

CONSTANTS

A constant is a number or text value that does not change.

MATHEMATICAL OPERATORS

A mathematical operator specifies a calculation. Common operators are: + (add), - (subtract), * (multiplication), and / (division).

CELL REFERENCES AND CELL RANGES

A cell reference in a formula evaluates to the value contained with that cell. A range of cells can be specified using the colon: symbol. A range can contain a row, a column, or a block of cells. As shown below, the syntax **A1:C1**, **A1: A5**, and **B2:C5** specify ranges along a row, a column, and a block of cells, respectively.

The image shows three separate Excel spreadsheets illustrating different cell ranges. The first spreadsheet shows a row range from A1 to C1. The second spreadsheet shows a column range from A1 to A5. The third spreadsheet shows a block range from B2 to C5.

	A	B	C	D
1				
2				
3				

	A	B
1		
2		
3		
4		
5		
6		

	A	B	C	D
1				
2				
3				
4				
5				
6				

FUNCTIONS

A **function** is a pre-defined formula in Excel that you can insert into your formula. Each function is specified by its name and input arguments and *evaluates to a single value*.

CREATING FORMULAS

To create a basic formula, use the following procedure:

- 1) Select with your mouse the cell in which you would like to insert your formula, e.g. **A1** in the figures below.
- 2) All formulas must start with an = sign.
- 3) After you type the = sign, type your syntactically correct formula.
- 4) Click **Enter** when you are done.

If you type your formula directly into the active cell then it will be simultaneously displayed in the **Insert Function box**. Alternatively, you may type your formula into the Insert Function box.

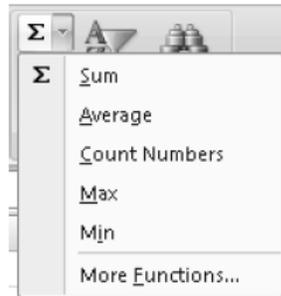
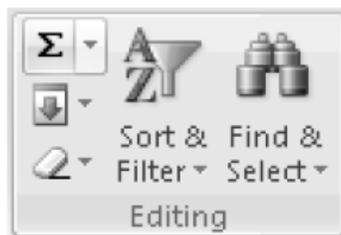
After you press **Enter**, the cell will display the evaluated value of your formula and the Insert Function box will display the formula

SUM					
	A	B	C	D	E
1	=2+2				
2					
3					

A1					
	A	B	C	D	E
1	4				
2					
3					

CALCULATING WITH FUNCTIONS

One or more functions may be specified in a formula to help calculate a desired final value in a cell. The most commonly used functions can be found under the *AutoSum* button, which looks like a summation symbol in mathematics and found on the *Home tab* under the *Editing* *se*.



Consider the following table of student names and homework scores. The block of cells **A1:D5** contain constant values (text and numbers).

B7					
	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	
2	Doe, Jane	100	87	84	
3	Smith, Robert	95	90	79	
4	Jones, Emily	94	92	88	
5	Li, Dave	78	89	93	
6					
7	Total				
8	Average				
9	Min				
10	Max				
11	Median				

To compute the **SUM** over the column of HW#1 scores in cell **B7** perform the following:

1. Click on the cell **B7** to make it the active cell.
2. Click the **AutoSum** button's drop-down menu and choose **Sum**.
3. Highlight cells **B2** through **B5** with your mouse (Excel will outline the cells in the chosen range). The formula shown in cell **B7** will be **=SUM (B2:B5)**, where the function called **SUM** is given the range **B2:B5** is its input argument.
4. The cell **B7** will display evaluated value (final answer) for the formula.

	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	
2	Doe, Jane	100	87	84	
3	Smith, Robert	95	90	79	
4	Jones, Emily	94	92	88	
5	Li, Dave	78	89	93	
6					
7	Total	=SUM(B2:B5)			
8	Average	SUM(number1,[number2],...)			
9	Min				
10	Max				
11	Median				

	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	
2	Doe, Jane	100	87	84	
3	Smith, Robert	95	90	79	
4	Jones, Emily	94	92	88	
5	Li, Dave	78	89	93	
6					
7	Total	367			
8	Average				
9	Min				
10	Max				
11	Median				

The **AutoSum** button contains other commonly used as listed below:

Sum: Add all the numeric values contained in the cells specified in the input argument.
Average: Averages all the numeric values contained in the cells specified in the input argument.
Min: Determines the smallest numeric value among all the cells specified in the input argument.
Max: Determines the largest numeric value among all the cells specified in the input argument.
Count: Counts how many cells contain numeric values in the input argument.

The IF function

The **IF** function is a useful function in that it allows you to place one of two values in a cell based on a decision.

For example, if you would like to place either the text value "YES" or value "NO" in E2 based on the decision whether Jane Doe has the highest HW#1 score, then you can enter the formula:

=IF (B2 = B10, "YES", "NO")

The IF function has up to three comma separated arguments:

IF(<Boolean expression>,	A Boolean expression that evaluates to either TRUE or FALSE . You can use relational operators (<, >, =, <=, >=) and the Boolean functions AND , OR , and NOT to build your Boolean expression.
<Expression when TRUE>,	If the first argument evaluates to TRUE , then this expression is evaluated and the final value will display in the cell. This expression can evaluate to <i>any</i> value.
<Expression when FALSE>)	If the first argument evaluates to FALSE , then this expression is evaluated instead. This expression can also evaluate to <i>any</i> value. This argument is optional.

SUM						E2					
A	B	C	D	E	F	A	B	C	D	E	F
Name	HW#1	HW#2	HW#3	Highest HW#1 Score		Name	HW#1	HW#2	HW#3	Highest HW#1 Score	
Doe, Jane	100	87	84	=IF(B2=B10, "YES", "NO")		Doe, Jane	100	87	84	YES	
Smith, Robert	95	90	79	"YES", "NO")		Smith, Robert	95	90	79		
Jones, Emily	94	92	88	=IF(logical test, [value_if_true], [value_if_false])		Jones, Emily	94	92	88		
Li, Dave	78	89	93			Li, Dave	78	89	93		
Total	367					Total	367				
Average	91.75					Average	91.75				
Min	78					Min	78				
Max	100					Max	100				
Median	94.5					Median	94.5				

CUT, COPY & PASTE

You can copy (or cut) the contents of a cell and then paste the contents to a different cell.

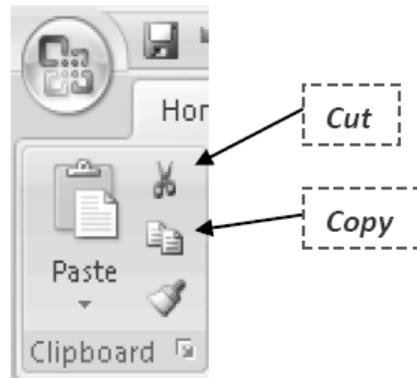
- Select text which you want to copy by using mouse or key board (by shift and arrow keys)
 - Press **CTRL+C** (Depress the CTRL key while pressing the “C”) from the keyboard, for copy and **CTRL+X** for cut.

OR

- You can select a shortcut button on ribbon a copy. Where you want to paste, you have to take cursor by using key board arrow keys Or by mouse click.
- Press **CTRL+V** (Depress the CTRL key while pressing the “V”) from the keyboard, for paste the text. Which you already copy.

OR

- You can select a shortcut button on ribbon as “Paste”.



COPY/PASTE WITH AUTOFILL

To copy the contents of a cell to neighboring cells (along a row, column, or block of cells) use the **AutoFill** feature, which is *the square located at the bottom right corner of the active cell*.

For example:

To copy the number 22 in cell **A1** (see left figure) to the cells in **A2:A4**, first click on the cell to activate it. Move your cursor over the AutoFill square so that your mouse pointer turns into a thin cross. Click down on the square with the left mouse button and drag your mouse to **A4**. Release you're the left mouse button and you will see the result of the copy/paste in **A2:A4**.

	A	B
1	22	
2		
3		
4		
5		

	A	B
1	22	
2		
3		
4		
5		22
6		

	A	B
1	22	
2	22	
3	22	
4	22	
5		
6		

RELATIVE ADDRESSING

When you copy/paste formulas, Excel will preserve the structure of the formula but may change the cell references in the formula according to the direction in which the copy/paste occurs, called **Relative Addressing**.

For example,

If we copy the contents of cell **B7** (**=SUM (B2:B5)**) and paste it across the row to cell **D7**, then cell **D7** will contain the updated formula **=SUM(D2:D5)**, which is the total of all the HW#3 scores (see the left figure). Using the Auto fill feature again across each row, we can copy/paste the formulas at the bottom of the table to compute values for HW#2 and HW#3

	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	Highest HW#1 Score
2	Doe, Jane	100	87	84	YES
3	Smith, Robert	95	90	79	
4	Jones, Emily	94	92	88	
5	Li, Dave	78	89	93	
6					
7	Total	367	358	344	
8	Average	91.75			
9	Min	78			
10	Max	100			
11	Median	94.5			

	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	Highest HW#1 Score
2	Doe, Jane	100	87	84	YES
3	Smith, Robert	95	90	79	
4	Jones, Emily	94	92	88	
5	Li, Dave	78	89	93	
6					
7	Total	367	358	344	
8	Average	91.75	89.5	85	
9	Min	78	87	79	
10	Max	100	92	93	
11	Median	94.5	89.5	85	

ABSOLUTE ADDRESSING

We can copy/paste the formula in cell **E2** to down the column to **E5** to determine whether or not each student has the highest HW#1 score. If copy/paste the formula

```
=IF (B2 = B10, "YES", "NO")
```

in cell **E2** down the column, then the resulting formula in cell **E5** will be

```
=IF (B5 = B13, "YES", "NO")
```

This formula is **INCORRECT** since we would like to compare the contents of cell **B5** with the maximum over all HW#1 scores in cell **B10**.

The change of the cell reference change from **B2** to **B5** due to **Relative Addressing** is desired, but the change from **B10** to **B13** is not.

We can indicate that a cell reference in a formula must not change in a copy/paste by placing the \$ symbol next to the row and column of the cell reference, called **Absolute Addressing**. Thus, the formula in cell **E2** should be re-written as

```
=IF (B2 = $B$10, "YES", "NO")
```

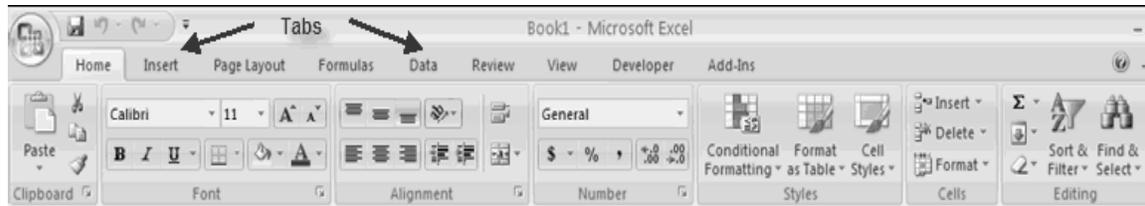
After this formula is copy/paste down the column to cell **E5**, then cell **E5** will contain the formula

```
=IF (B5 = $B$10, "YES", "NO")
```

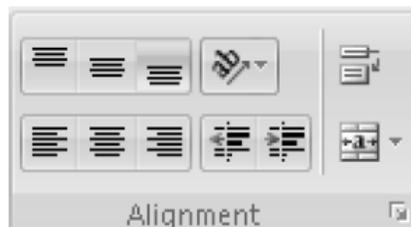
	A	B	C	D	E	F
1	Name	HW#1	HW#2	HW#3	Highest HW#1 Score	
2	Doe, Jane	100	87	84	YES	
3	Smith, Robert	95	90	79	NO	
4	Jones, Emily	94	92	88	NO	
5	Li, Dave	78	89	93	NO	
6						
7	Total	367	358	344		
8	Average	91.75	89.5	86		
9	Min	78	87	79		
10	Max	100	92	93		
11	Median	94.5	89.5	86		

TEXT FORMATTING

Format text values using the commands in the **Font Section** such as the font type, font size, color, bold, italics, etc. Use the All Borders button to change the border attributes of blocks of cells.

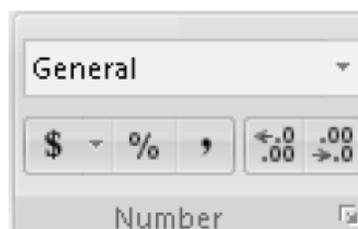


Position values in a cell both horizontally and vertically. If the text you type in a cell is longer than the width of the cell use the **Wrap Text** button to fit the text by adjusting the size and shape of the cell. If you would like to merge text in adjacent cells, then highlight all the cells and then press the **Merge and Center** button.



NUMBER FORMATTING

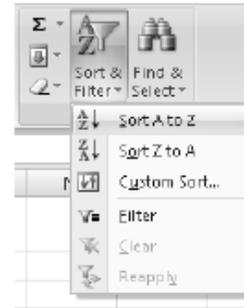
Format number values as you would like them to be displayed using the **Number** section. You can determine the number of digits to be displayed after the decimal place as well.



SORTING

Sort a table of data by first highlighting all the cells in the table (including any headings) and then select **Sort & Filter** from the **Editing** section and choose the order to sort the table. We sort the following table by Name in the following example.

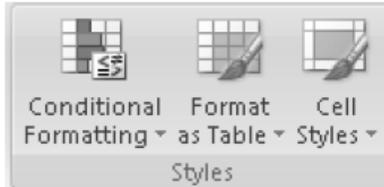
	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	Highest HW#1 Score
2	Doe, Jane	100	87	84	YES
3	Smith, Robert	95	90	79	NO
4	Jones, Emily	94	92	88	NO
5	U, Dave	78	89	93	NO
6					
7	Total	367	358	344	
8	Average	91.75	89.5	86	
9	Min	78	87	79	
10	Max	100	92	93	
11	Median	94.5	89.5	86	



	A	B	C	D	E
1	Name	HW#1	HW#2	HW#3	Highest HW#1 Score
2	Doe, Jane	100	87	84	YES
3	Jones, Emily	94	92	88	NO
4	U, Dave	78	89	93	NO
5	Smith, Robert	95	90	79	NO
6					
7	Total	367	358	344	
8	Average	91.75	89.5	86	
9	Min	78	87	79	
10	Max	100	92	93	
11	Median	94.5	89.5	86	

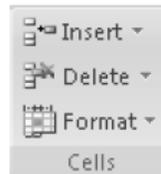
CELL FORMATTING

Excel provides pre-defined table formatting using the **Styles** section. Highlight your table of data and then use the **Format as Table** drop-down menu to choose a table format for the table heading and entries (see the top table, where the heading is colored black the data in blue). Change the look of groups of cells with the Cell Styles drop-down menu (see bottom table, where the cells are colored in light red).



	A	B	C	D	E
					Highest HW#1
1	Name	HW#1	HW#2	HW#3	Score
2	Doe, Jane	100	87	84	YES
3	Smith, Robert	95	90	79	NO
4	Jones, Emily	94	92	88	NO
5	Li, Dave	78	89	93	NO
6					
7	Total	367	358	344	
8	Average	91.75	89.5	86	
9	Min	78	87	79	
10	Max	100	92	93	
11	Median	94.5	89.5	86	

Insert or delete groups of cells or an entire row or column using the **Cells** section.



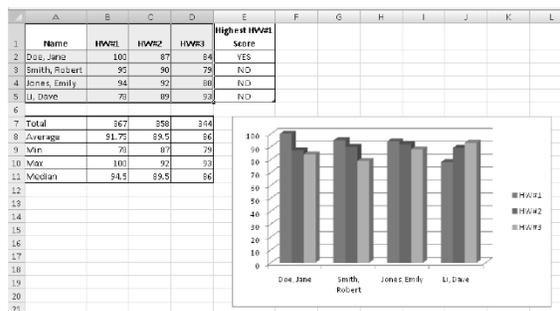
WHAT ARE CHARTS

Charts allow you to present information contained in the worksheet in a graphic format. Excel offers many types of charts including: Column, Line, Pie, Bar, Area, Scatter and more. To view the charts available click the Insert Tab on the Ribbon.

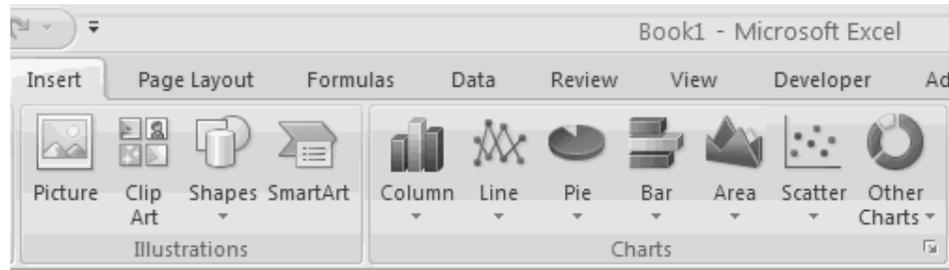
HOW TO CREATE A CHART

To create a chart:

- Select the **cells** that contain the data you want to use in the chart
- Click the **Insert** tab on the Ribbon
- Click the type of **Chart** you want to create



- Click the type of **Chart** you want to create

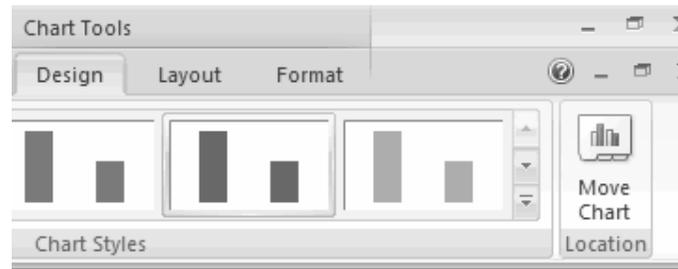


MODIFY A CHART

Once you have created a chart you can do several things to modify the chart.

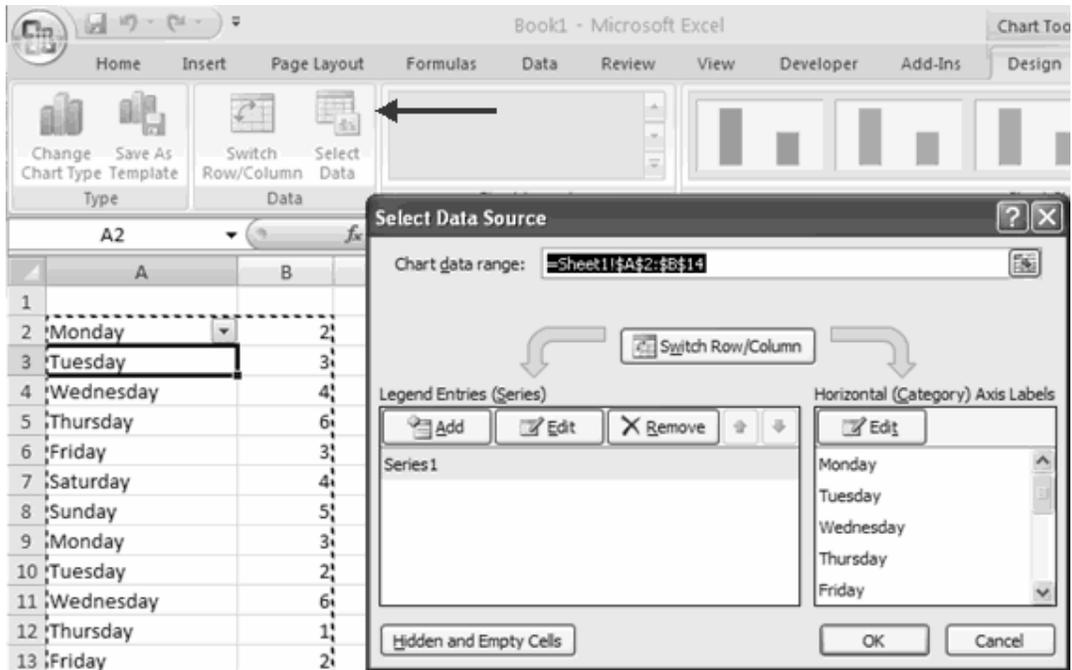
To move the chart:

- Click the **Chart** and **Drag** it another location on the same worksheet, or
- Click the **Move Chart** button on the **Design** tab
- Choose the desired location (either a new sheet or a current sheet in the workbook)



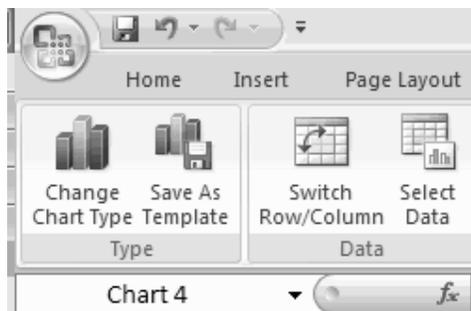
To change the data included in the chart:

- Click the **Chart**
- Click the **Select Data** button on the **Design** tab



To reverse which data are displayed in the rows and columns:

- Click the **Chart**
- Click the **Switch Row/Column** button on the **Design** tab



To modify the labels and titles:

- Click the **Chart**
- On the **Layout** tab, click the **Chart Title** or the **Data Labels** button
- Change the **Title** and click **Enter**

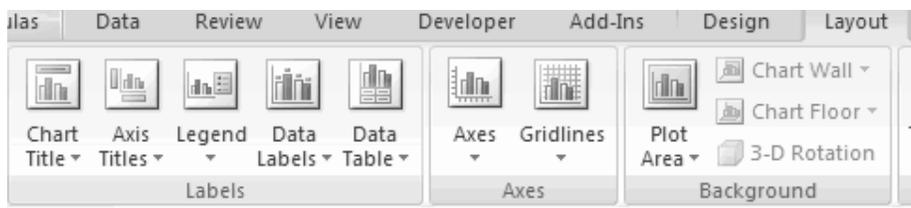
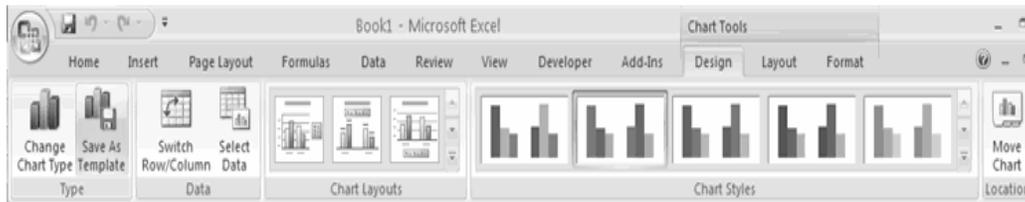


CHART TOOLS

The Chart Tools appear on the Ribbon when you click on the chart. The tools are located on three tabs: Design, Layout, and Format.

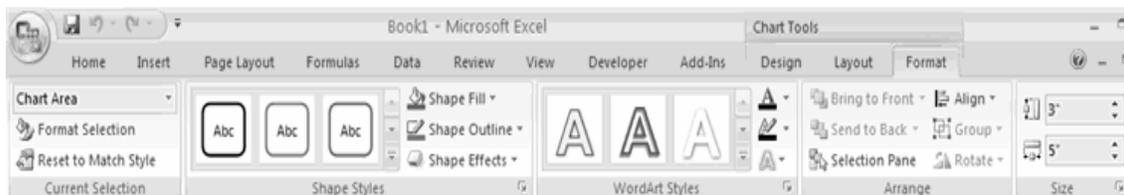
Within the **Design** tab you can control the chart type, layout, styles, and location.



Within the **Layout** tab you can control inserting pictures, shapes and text boxes, labels, axes, background, and analysis.



Within the **Format** tab you can modify shape styles, word styles and size of the chart.



COPY A CHART TO WORD

- Select the **chart**
- Click **Copy** on the **Home** tab
- Go to the **Word** document where you want the chart located
- Click **Paste** on the **Home** tab

