# SYLLABUS

## Class – B.Com-I Year

### Subject – Fundamentals of Computer and PC Software

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|---|---|
| UNIT – I | Introduction to Computer System: Block diagram, components: Mother board, Processor, main memory, cache memory, hard disk. Input devices, External storage devices: floppy disk, CD ROM, DVD, USB drives. Types of software: System software, Application software. System software: Operating system. Utility programs: anti-virus, disk cleaning, defragmentation, compression and decompression of files. Application software: examples of commercial software with brief introduction. Programming Languages: Low-Level Language, Assembly Language, Middle Level Language and High Level Language, Compiler, Interpreter, Assembler, Difference between Compiler & Interpreter. |
| UNIT – II | |
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**UNIT 1**

**Introduction**

A computer is a general purpose device that can be programmed to carry out a set of arithmetic or logical operations automatically.

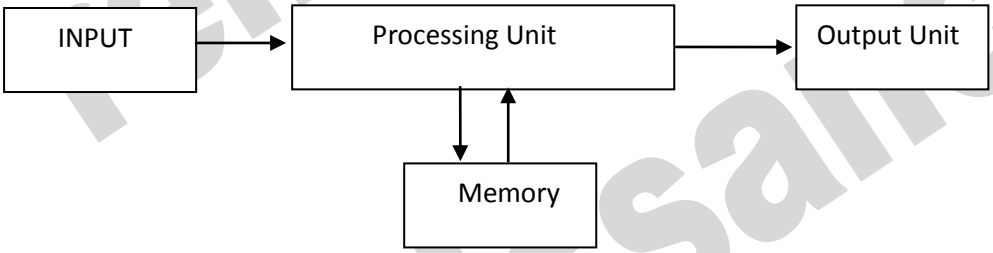
A **computer** is an electronic device that manipulates information, or data. It has the ability to **store**, **retrieve**, and **process** data. You can use a computer to type documents, send email, and browse the Web. You can also use it to handle spreadsheets, accounting, database management, presentations, games, and more.

In World War II, mechanical analog computers were used for specialized military applications. During this time the first electronic digital computers were developed. Computer was developed by **CHARLES BABBAGE.** He is alsoknown as Father of computers**.**

All types of computers consist of two basic parts:

- **Hardware** is any part of your computer that has a **physical structure (Tangible),** such as the computer monitor or keyboard.

- **Software** is any **set of instructions** that tells the hardware what to do. It is what guides the hardware and tells it how to accomplish each task. Some examples of software include web browsers, games, and word processors such as Microsoft Word.




**Organization of a Computer**

Computer can also be defined in terms of functions it can perform. A computer can

i) Accept data,
**ii)** Store data,
**iii)** Process data as desired,
**iv)** Retrieve the stored data as and when required and
**v)** Print the result in desired format.

**Characteristics of computer:-**

- Speed
- Accuracy
- Power of Remembering
- Diligence
- Versatility
- No IQ
- No Feeling
- Storage

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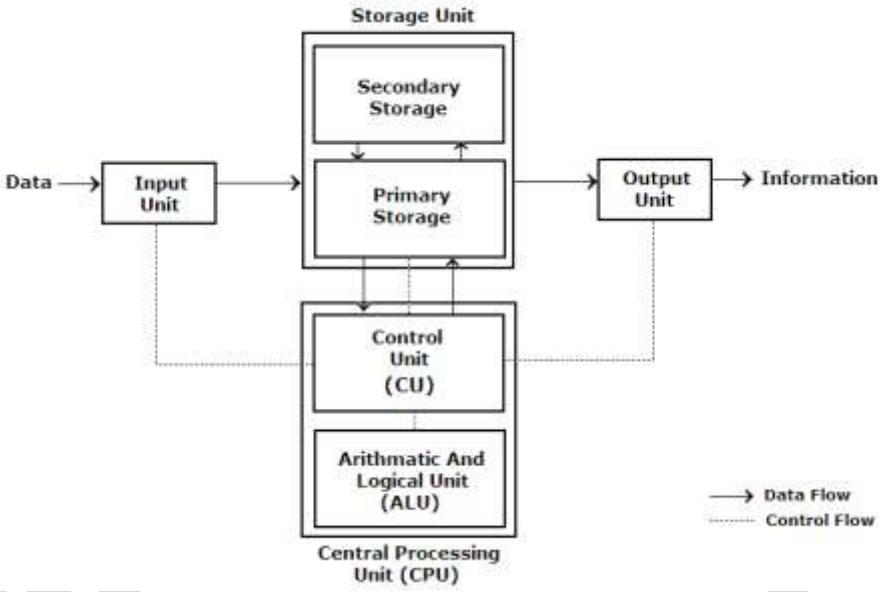
**Block diagram of Computer:-**




1. **Input:** this is the process of entering data and programs into the computer system.
2. **Control Unit (CU):** The process of input, output, Control Unit (CU): The process of input, output, processing and storage is performed under the supervision of a unit called 'Control Unit'. It decides when to start receiving data, when to stop it, where to store data, etc. It takes care of step -by-step processing of all operations inside the computer.
3. **Memory Unit:** Computer is used to store data and instructions.
4. **Arithmetic Logic Unit (ALU):** The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison.
5. **Output:** This is the process of producing results from the data for getting useful information.

The ALU and the CU of a computer system are jointly known as the central processing unit (CPU). You may call CPU as the brain of any computer system.

**Basic application of Computer**

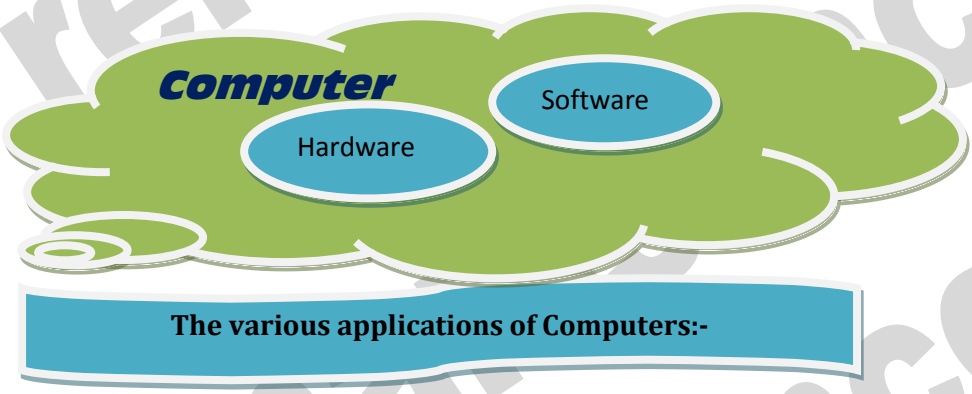
- Word Processing
- Internet
- Digital video or audio composition
- Desktop publishing
- Computers in Medicine
- Mathematical Calculations
- Banks
- Travel
- Telecommunications
- Defense
- E-Learning
- Business

A **motherboard** is the main printed circuit board (PCB) found in general purpose microcomputers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the central processing unit (CPU) and memory, and provides connectors for other peripherals. A motherboard usually contains significant sub-systems such as the central processor, the chipset's input/output and memory controllers, interface connectors, and other components integrated for general purpose use.

Motherboard specifically refers to a PCB with expansion capability and as the name suggests, this board is often referred to as the "mother" of all components attached to it, which often include peripherals, interface cards, and sound cards, video cards, network cards, hard drives, or other custom components.

**Computer Hardware:**
In simple terms we can say, computer parts that have tangible property are comes under computer hardware categories. Computer hardware is the physical parts or components of a computer. This is also sometime called the machinery or the equipment of the computer.

**Computer Software:**
Computer software is instructions that can be stored and run by hardware.Software is any set of machine-readable instructions that directs a computer's processor to perform specific operations.




- Insurance
- Banking
- Business
- Education
- Marketing
- Health Care
- Engineering Design
- Military
- Communication
- Government Applications






## Input devices

An input device is an **electromechanical device** as it utilizes both electronic and mechanical power. It aims in receiving data from external world. The input devices are responsible for converting data into a form that is understood by the computer.An input device is a peripheral device that converts symbols that people understand into bits that computers can process

**Basic working of input devices:-**

- Accept the data.
- Convert it into the machine understandable form.



**Different Types of input devices:-**

- Keyboard
- Mouse
- Joystick
- Light pen
- Track Ball
- Scanner

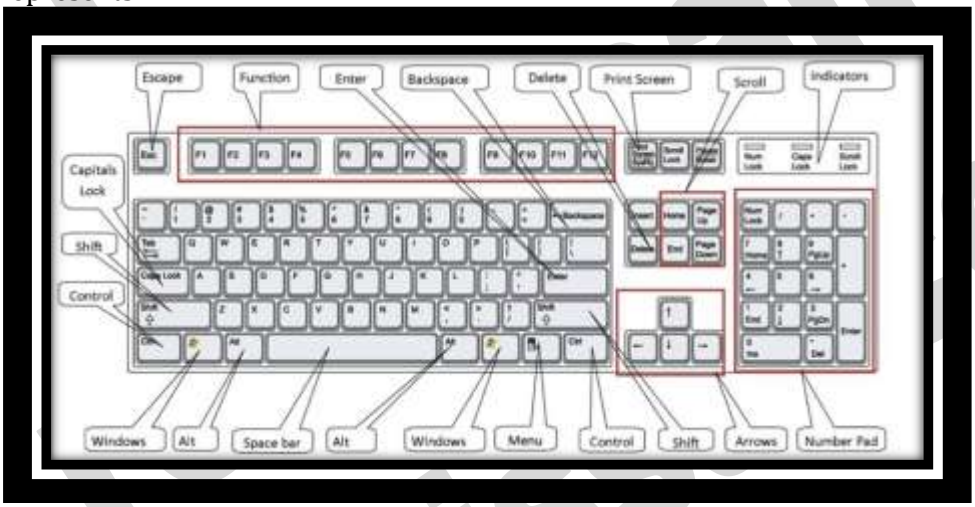


- Graphic Tablet
- Microphone
- Magnetic Ink Card Reader (MICR)
- Optical Character Reader (OCR)
- Bar Code Reader
- Optical Mark Reader

**Keyboard**

Keyboard is one of the most commonly used input devices to input the date into the computer. It is like the traditional typewriter, although there are some additional keys provided for performing some additional functions. Keyboards are of two sizes 84 keys or 101/102 keys, but now 104 keys or 108 keys.

- Keyboard is an input device used to enter data in to computer by pressing one key at one time.
- It has its own processor and circuitry that carries information to the processor.
- When you press a key, it presses a switch, completing the circuit and allowing a tiny amount of current to flow through.
- It tells the processor the position of each key what each keystroke or combination of keystrokes represents.




- Despite the development of alternative input devices, such as mouse, touch screen, light pen, the keyboard remains the most commonly used and most versatile device used for direct (human) input into computers.
- One factor determining the size of a keyboard is the presence of duplicate keys, such as a separate numeric keyboard, for convenience.
- Another factor determining the size of a keyboard is the size and spacing of the keys.

Generally the keyboards contain the following keys, they are:-

- Alphabets

- Arithmetic operators such as +, -, *, /
- Numeric digits 0–9
- Cursor arrow keys
- Navigation keys such as Home, End, PgUp, PgDown, etc.
- Num Lock button, used to enable or disable the numeric pad.
- Enter key

The following are the different layouts of the keyboards, they are as follows

- QWERTY
- QWERTZ
- AZERTY
- DVORAK

**Mouse:**

The mouse is used to point to a particular place on the screen and select to perform one or more action. The pointing device may point to the menu, commands, size windows, starts programs etc. The most conventional kind of mouse has two buttons on top: the left one being used most frequently then right one.A mouse is a pointing device that functions by detecting 2D motion relative to its supporting surface.The mouse's motion typically translates into the motion of a pointer on a display, which allows for fine control of a graphical user interface

**Mouse Actions**

- Left Click
- Double Click
- Right Click
- Drag and Drop

**Types of mouse:-**

- **Mechanical mouse**: Houses a hard rubber ball that rolls as the mouse is moved. Sensors inside the mouse body detect the movement and translate it into information that the computer interprets.
- **Optical mouse**: Uses an LED sensor to detect tabletop movement and then sends off that information to the computer for merry munching.
- **Cordless 3-D mouse**: This kind of mouse can be pointed at the computer screen like a TV remote
- **Wireless Mouse**: Wireless mouse works via radio frequencies commonly referred to as RF. RF wireless mouse requires two components to work properly – a radio transmitter and a radio receiver.
  **RF Transmitter**: A radio frequency (RF) transmitter is usually integrated inside the mouse. The mouse records its movements and buttons that are clicked and then sends this information via radio signals to the receiver.
  **RF Receiver:** The radio frequency (RF) receiver usually connects to the computer's peripheral mouse input. It receives these RF signals, decodes them, and then sends these signals directly to the computer as normal.




Mechanical Mouse



Wireless Mouse

**Track ball:**

This is also a pointing device. Track ball is an input device that is mostly used in notebook or laptop computer, instead of a mouse. This is a ball, which is half inserted and by moving fingers on ball, pointer can be moved. Since the whole device is not moved, a track ball requires less space than a mouse. A track ball comes in various shapes like a ball, a button and a square.

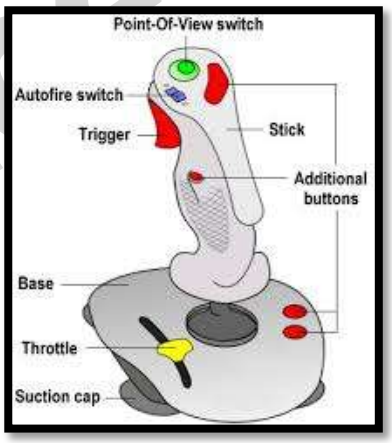


Compared with a mouse, a trackball has no limits on effective travel; at times, a mouse can reach an edge of its working area while the operator still wishes to move the screen pointer farther. With a trackball, the operator just continues rolling, whereas a mouse would have to be lifted and re-positioned.

**Joystick:-**

The joystick is handheld stick. This stick can rotate about one end transmitting its angle to the computer in two or three dimensions. It typically has a button on top that is used to select the option pointed by the cursor.

Joysticks are often used to control video games, and usually have one or more push-buttons whose state can also be read by the computer.




**Elements in a Joystick**

- Stick
- Base
- Trigger
- Extra button
- Autofire switch
- Throttle
- Hat switch
- Suction cup

**Digitizing Tablet:**

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An input device that permits drawing of images and graphics is called a digitizing tablet. They give feeling of drawing images with pencil and paper. The graphics tablet has two major parts that are:-

- A flat surface on which the image is drawn.
- Stylus that helps in drawing.



**Scanners**

An input device capable to read text or illustrations printed on a paper and interpret it in a form that can be used by a computer is known as a scanner. It converts the document image into digital form so that it can be fed into the computer. Capturing information like this reduces the possibility of errors typically experienced during large data entry.



**Digital Camera**

A digital camera can store many more pictures than an ordinary camera. Pictures taken using a digital camera are stored inside its memory and can be transferred to a computer by connecting the camera to it. A digital camera takes pictures by converting the light passing through the lens at the front into a digital image.

There are several categories in which the cameras can be classified:-



- **Video camera**
  - Professional video cameras
  - Camcorders used by amateurs.
  - webcams
- **Digital camera**
  - Live-preview digital cameras
  - Compact digital cameras
  - Bridge cameras



**Magnetic Ink Character Recognition:**




MICR is also an input device is commonly used in banks because of a large number of cheques to be processed. The bank's code number and cheque number are printed on the cheques with a special type of ink that contains particles of magnetic material that are machine readable. This reading process is called Magnetic Ink Character Recognition (MICR).

**M**agnetic **I**nk **C**haracter **R**ecognition is a character recognition system that uses special ink and characters. When a document that contains this ink needs to be read, it passes through a machine, which magnetizes the ink and then translates the magnetic information into characters.

MICR technology is used by banks. Numbers and characters found on the bottom of checks (usually containing the check number, sort number, and account number) are printed using Magnetic Ink. To print Magnetic Ink need, you need a laser printer that accepts MICR toner.
MICR provides a secure, high-speed method of scanning and processing information.

**Optical character Reader:-**



Optical character Reader is an input device that is use to read a printed text. The OCR scans text optically character by character, converts them into a computer readable code and stores the text on the system memory.

**Optical Mark Reader:-**

Optical mark reader is also known as optical mark recognition that is same as the scanner which reads on specific areas of the page. Thus OMR can be defined as the process of scanning paper-based documents and identify data or marks in a location defined previously.
It is specially used for checking the answer sheets of examinations having multiple choice questions.

**Bar Code Reader:-**



An electronic device used to read barcodes printed on various surfaces is called barcode reader. It is also known as barcode scanner. Bar Code Reader scans a bar code image, converts it into an alphanumeric value, which is then fed to the computer to which bar code reader is connected.
Bar coded data is generally used in labeling goods, numbering the books, etc. It may be a hand-held scanner or may be embedded in a stationary scanner.

**Voice Recognition System:-**

Voice recognition systems are alternatively known as voice data entry or audio data entry terminals. This method of input enables a programmer to instruct the computer with spoken words instead of a written program

**Light Pen:-**




Light pen is also an input device used as pointing device, which is similar to a pen. It is used to select a displayed menu item or draw pictures on the monitor screen. It consists of a photocell and an optical system placed in a small tube.
When light pen's tip is moved over the monitor screen and pen button is pressed, its photocell sensing element detects the screen location and sends the corresponding signal to the CPU.

- A light pen is a computer input device used in conjunction with a computer's CRT display.
- It allows the user to point to displayed objects or draw on the screen in a similar way to a touch screen but with greater positional accuracy.

- A light pen detects a change of brightness of nearby screen pixels when scanned by cathode ray tube electron beam and communicates the timing of this event to the computer.
- Because the user is required to hold his arm in front of the screen for long period of time, the light pen fell out of use as a general purpose input device.

**Touch screen:-**

An input device that permits users to operate a PC by simply touching the display screen is called a touch screen. The touch screen is as easy to use as trackballs or touchpad's.

Three major components form a basic touch screen they are as follows:-

- Touch sensor
- Controller
- Software driver

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## Output devices:

An output is an electromechanical device that receives output from a computer in binary coded form and converts it into human understandable form and transmits to the user.An **output device** is any peripheral that receives data from a computer, usually for display, projection, or physical reproduction.

- Monitor / Visual Display Unit
- Printer
- Plotter
- Speaker

### Monitor:

Monitor is the most common and the most popular output device. It forms images from tiny dots, called pixels that are arranged in a rectangular form. The sharpness of the image depends upon the number of the pixels.

**There are two types of viewing screen used for monitors:**

- **Cathode-Ray Tube (CRT):**

The CRT display is made up of small picture elements called pixels. The smaller the pixels, the better the image clarity, or resolution. It takes more than one illuminated pixel to form whole character, such as the letter 'e' in the word help.



- There are some disadvantages of CRT:
- Large in Size
- High power consumption

- **Flat-Panel Display Monitor**

The flat-panel display refers to a class of video devices that have reduced volume, weight and power requirement in comparison to the CRT. You can hang them on walls or wear them on your wrists. Current uses of flat-panel displays include calculators, video games, monitors, laptop computer, graphics display.



The flat-panel display is divided into two categories:

- **Emissive Displays -** The emissive displays are devices that convert electrical energy into light. Example are plasma panel and LED(Light-Emitting Diodes).
- **Non-Emissive Displays -** The Non-emissive displays use optical effects to convert sunlight or light from some other source into graphics patterns. Example is LCD(Liquid-Crystal Device)

**Classification- Based on Signals:**

- Digital Monitor
- Analog Monitor

**Classification- Based on Picture Quality**

- VGA
- SVGA
- XGA

**Printer:-**
A printer is an output device that is used in a computer to print alphanumeric characters on papers. It converts the electronic signals from the computer into human readable form or hardcopy to produce a print out of the result of data processed in the computers.
Printers are broadly classified in to two categories:-

Impact printers:
An impact printer has mechanisms resembling those of a **typewriter.** It forms characters or images by **striking a mechanism** such as a print **hammer or wheel** against an **inked ribbon**, leaving an image on paper.

- Character Printer:-

Impact printers are dying out; however, you may still come in contact with a dot-matrix printer. A dot-matrix printer contains a print head of small pins that strike an inked ribbon, forming characters or images. Print heads are available with 9, 18, or 24 pins; the 24-pin head offers the best print quality.

- Dot-matrix printers permit a choice between output of draft quality; a coarser-looking 72 dots per inch vertically, which may be acceptable for drafts of papers and reports, and near-letter-quality, a crisper-looking 144 dots per inch vertically, which is more suitable for a finished product to be shown to other people.

- Dot-matrix printers print about 40-300 characters per second (cps) and can print some graphics, although the reproduction quality is poor. Color ribbons are available for limited use of color. Dot-matrix printers are noisy, inexpensive, and they can print through multipart forms, creating several copies of a page at the same time,

  - ✓ Dot-Matrix Printer
  - ✓ Daisy-Wheel Printer
  - Line printer
    - ✓ Drum Printer
    - ✓ Chain Printer
- Non-Impact printers
  - ✓ Ink-Jet Printer
  - ✓ Laser Printer

**Plotter:-**
A plotter is a vector graphics printing device that connects to a computer. It draws pictures on paper based on commands from computer. A plotter is a very versatile tool.

Types of plotters:-
- Drum plotter
- Flat-Bed plotter

**Sound Cards:-**

Sound cards are a important part of computer, without sound cards you will have no music, no effects and no voices. Sound card is also referred as a **sound board** or an **audio card**, a **sound card** is an expansion card or integrated circuit that provides a computer with the ability to produce sounds that can be heard by the user either over speakers or headphones.

Sound card connections are as follows:-

- Digital out
- Sound in or line in
- Microphone or Mic
- Sound out or line out
- Fire wire
- MIDI or Joystick

**Speakers:-**

A hardware device that is connected to a computer's sound card that outputs sounds generated by the computer is referred as speaker. Speakers are rated in Frequency response, Total Harmonic Distortion, and Watts.

**Storage:-**

Computer data storage is often known as storage or memory refers to computer components and recording media that retain digital data used for computing for some interval of time. A memory is just like a human brain. It is used to store data and instructions. Computer memory is the storage space in computer where data is to be processed and instructions required for processing are stored.

Memory is primarily of two types:

- Primary Memory/Main Memory
- Secondary Memory

**Primary memory:-**

Primary memory holds only those data and instructions on which computer is currently working. It has limited capacity and data gets lost when power is switched off. It is generally made up of semiconductor device. These memories are not as fast as registers. The data and instructions required to be processed earlier reside in main memory. Primary memory is divided into two categories they are as follows:-

- RAM
- ROM.

**RAM:-**



Full form of RAM random access memory (RAM). A RAM constitutes the internal memory of the CPU for storing data, program and program result. It is read/write memory. Since access time in RAM is independent of the address to the word that is, each storage location inside the memory is as easy to reach as other location & takes the same amount of time

RAM is volatile, i.e., data stored in it is lost when we there is a power failure. Hence, a backup uninterruptible power system (UPS) is often used with computers. RAM is small, both in terms of its physical size and in the amount of data it can hold.

There are two types of RAM they are as follows:-

- Static RAM (SRAM)
- Dynamic RAM (DRAM)

## Static RAM (SRAM)

- The word **static** indicates that the memory retains its contents as long as power remains applied.
- Data is lost when the power gets down due to volatile nature.
- SRAM chips use a matrix of 6-transistors and no capacitors.
- Transistors do not require power to prevent leakage, so SRAM need not have to be refreshed on a regular basis.
- Because of the extra space in the matrix, SRAM uses more chips than DRAM for the same amount of storage space, thus making the manufacturing costs higher.
- Static RAM is used as cache memory needs to be very fast and small.

### Characteristic of the Static RAM

- It has long data lifetime
- There is no need to refresh
- Faster
- Used as cache memory
- Large size
- Expensive
- High power consumption

## Dynamic RAM (DRAM)

- DRAM must be continually **refreshed** in order to maintain the data.
- This is done by placing the memory on a refresh circuit that rewrites the data several hundred times per second.
- DRAM is used for most system memory because it is cheap and small.
- All DRAMs are made up of memory cells.
- These cells are composed of one capacitor and one transistor.

### Characteristic of the Dynamic RAM

- It has short data lifetime
- Need to refresh continuously
- Slower as compared to SRAM
- Used as RAM
- lesser in size
- Less expensive
- Less power consumption



**ROM:-**

ROM is Read Only Memory. ROM are the memories on which it is not possible to write the data when they are online to the computer. They can only be read. It is a permanent in built in the computer at the time of its production. It is also known as firmware. It stores the set of instructions permanently which instructs the computer how to work. The ROM can be used in storing micro programs, system programs, subroutines.

Types of ROM are as follows:-

- PROM
- EPROM
- EEPROM

**MROM (Masked ROM)**

- ✓ The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions.
- ✓ These kinds of ROMs are known as masked ROMs.
- ✓ It is inexpensive ROM.

**PROM (Programmable Read only Memory)**

- ✓ PROM is read-only memory that can be modified only once by a user.
- ✓ The user buys a blank PROM and enters the desired contents using a PROM programmer.
- ✓ Inside the PROM chip there are small fuses which are burnt open during programming.
- ✓ It can be programmed only once .
- ✓ It is not erasable.

**EPROM(Erasable and Programmable Read Only Memory)**

- ✓ The EPROM can be erased by exposing it to ultra-violet light for duration of up to 40 minutes.
- ✓ During programming an electrical charge is trapped in an insulated gate region.
- ✓ The charge is retained for more than ten years because the charge has no leakage path.
- ✓ For erasing this charge, ultra-violet light is passed through a quartz crystal window (lid).
- ✓ This exposure to ultra-violet light dissipates the charge.
- ✓ During normal use the quartz lid is sealed with a sticker.

**EEPROM(Electrically Erasable and Programmable Read Only Memory)**

- ✓ The EEPROM is programmed and erased electrically.
- ✓ It can be erased and reprogrammed about ten thousand times.
- ✓ Both erasing and programming take about 4 to 10 ms (milli second).
- ✓ In EEPROM, any location can be selectively erased and programmed.
- ✓ EEPROMs can be erased one byte at a time, rather than erasing the entire chip.
- ✓ Hence, the process of re-programming is flexible but slow.

**UVEPROM(Ultra Violet Erasable and Programmable Read Only Memory)**

- ✓ The UVEPROM is programmed and erased using ultra Violet rays.
- ✓ It can be erased and reprogrammed about ten thousand times.
- ✓ Both erasing and programming take about 4 to 10 ms (milli second).

**Advantages of ROM**

- Non-volatile in nature
- These cannot be accidentally changed
- Cheaper than RAMs
- Easy to test
- More Reliable than RAMs
- These are static and do not require refreshing
- Its contents are always known and can be verified

**Secondary memory:-**

Secondary memory is also known as external memory or non-volatile. It is slower than primary memory. These are used for storing Data/Information permanently the data one stored will not be erased as the power is switched off. CPU directly does not access these memories, instead they are

accessed via input-output routines. Contents of secondary memories are first transferred to main memory and then CPU can access it.
Types of secondary memory are as follows:-

- Magnetic tapes
- Magnetic disk

**Magnetic tapes:-**
Magnetic tape is the most commonly used device for storing large data. It is sequential access device. Magnetic tape is a strip or ribbon of plastic which is coated with Ferro magnetic oxides. It is generally 80-2400 feet long and ½ inch wide, in size.

**Magnetic Disk:-**
A magnetic disk is a circular plate constructed of metal or plastic coated with magnetized material. Both sides of the disk are used and several disks may be stacked on one spindle with read/write heads available on each surface. Bits are stored in magnetized surface in spots along concentric circles called tracks. Tracks are commonly divided into sections called sectors. Disk that are permanently attached and cannot removed by occasional user are called hard disks. A disk drive with removable disks is called a floppy disk drive.

**Types of magnetic disk:-**

- Hard disk
- Floppy disk
- Compact disk
- Video CD
- DVD

**Floppy Disk**
The floppy disk gets its name from the fact that it is made out of a flexible plastic material. The plastic base is coated with an iron-oxide recording substance that's similar to the material applied to the plastic ribbon of a magnetic tape. Data are recorded as tiny invisible magnetic spots on this coating.
**CD-ROM**
The CD-ROM (Compact Disk Read Only Memory) is a direct extension of audio CD. CD-ROM players are more rugged and have error correction facility. This ensures proper data transfer from CD-ROM to the RAM of the computer. CD-ROM is written using a CD writer. Information is retrieved from a CD-ROM using a low power laser, which ingenerate in an on optical disk drive unit.
**Hard Disk**
The disk described so far is the type of disks which can be removed from the disk drive and carried from place to place. Some disks however, are built into the computer or a special disk drive.. Hard disks can store anywhere from 20 MB to more than 40GB. Hard disks are also from 10 to 100 times faster than floppy disk.

**USB drive** (1) An external hard disk drive or optical disc drive that plugs into the USB port. portable hard drive. (2) A solid state storage module that plugs into the computer's USB port. Using flash memory chips that hold up to one terabyte of data, the solid state USB drive emulates a hard disk.
A USB flash drive -- also known as a USB stick, USB thumb drive or pen drive -- is a plug-and-play portable storage device that uses flash memory and is lightweight enough to attach to a keychain. A USB flash drive can be used in place of a compact disc.

**Cache Memory**
Cache memory is faster than the main memory. The cache memories although are fast yet are very expensive memories and are used in only small size. Thus, small cache memories are intended to provide fast speed of memory retrieval without sacrificing the size of memory. Cache memory stores a copy of the instructions and data to be immediately used of main memory. The memory reads or writes operation is first checked

with cache memory and if the desired location data is available in cache memory then used by the CPU directly.

**Other Memories:-**

- Flash memory
- Virtual memory
- Cache Memory

**Software**

Software is a set of program which performs desired task. Software runs on hardware. Software is a sequence of instructions written to solve a particular problem.
There are two types of software's:

- System Software
- Application Software

**System Software:-**

System Software performs the basic functions necessary to start and operate a computer. It refers to all programs that make computer work. It controls and monitors the various resources of a computer such as processor, input-output devices and communication links.Example : - Operating System and Compiler

System software is divided into three categories:-

- System management software
- System support software
- System development software

**Application Software:-**

Application software refers to the programs which help the computer to work effectively for specific applications. Example Ms- Office , Tally , Adobe etc.
Application software is of two types:-

- General purpose program
- Application specific program

Other software's are as follows:-

**Utility software**

utility software are those software that is used for system utilization .
like antivirus , window media player etc.

**Virus :-**

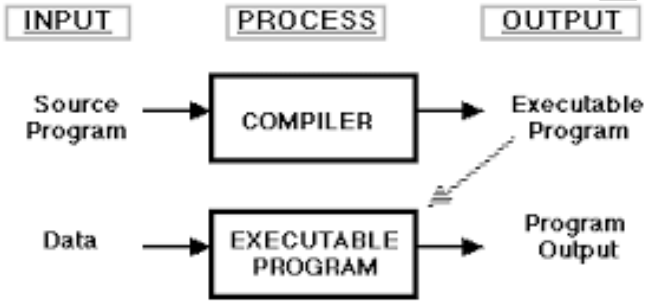
A computer virus is a program or piece of code that is loaded onto your computer without you knowledge and runs against your wishes. All computer virus are man made.
A few prominent virus are Michelangelo, dishwasher, C-brain , macmag , nenusalem , columbus etc.

**Antivirus : -** a utility software that searches a hard disk for viruses and removes any that are found. Most antivirus programs include an auto update feature that enables the program to download profiles of nes virus so that it can check for the new viruses as soon as they are discovered.
Some popular antivirus are NPAV, Quick heal ,Avast and Mac fee etc.

**Compiler -** Compiler is a system program which translates a high-level language program into machine language program is called a compiler. Compiler also checks error of the program to be executed.

**Features of the compiler:**
Compiler is more powerful than assembler.

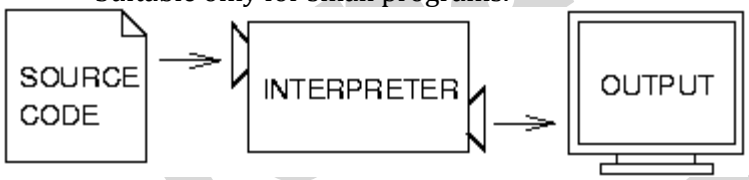
**Limitation of the compiler:**
- Take longer time to produce result.
- It occupies more memory space.
- Low speed and low efficiency of memory utilization.




**Interpreter -** It is also a translator which translates a high-level language program into object code, statement wise. It doesn't translate the entire program at a time. It takes up one statement of a high-level language program at a time, translates it and then executes it and then takes up the next statement and repeats the whole process till end.

**Features of the Interpreter:**
- Interpreter is cheaper than compiler.
- It occupies less memory space.

**Limitations of the Interpreter:**
- Slower than compiler.
- Suitable only for small programs.




The difference between an interpreter and a compiler is given below:

| Interpreter | Compiler |
|---|---|
| Translates program one statement at a time. | Scans the entire program and translates it as a whole into machine code. |

| | |
|---|---|
| It takes less amount of time to analyze the source code but the overall execution time is slower. | It takes large amount of time to analyze the source code but the overall execution time is comparatively faster. |
| No intermediate object code is generated, hence are memory efficient. | Generates intermediate object code which further requires linking, hence requires more memory. |
| Continues translating the program until the first error is met, in which case it stops. Hence debugging is easy. | It generates the error message only after scanning the whole program. Hence debugging is comparatively hard. |
| Programming language like Python, Ruby use interpreters. | Programming language like C, C++ use compilers. |




Figure: Compiler

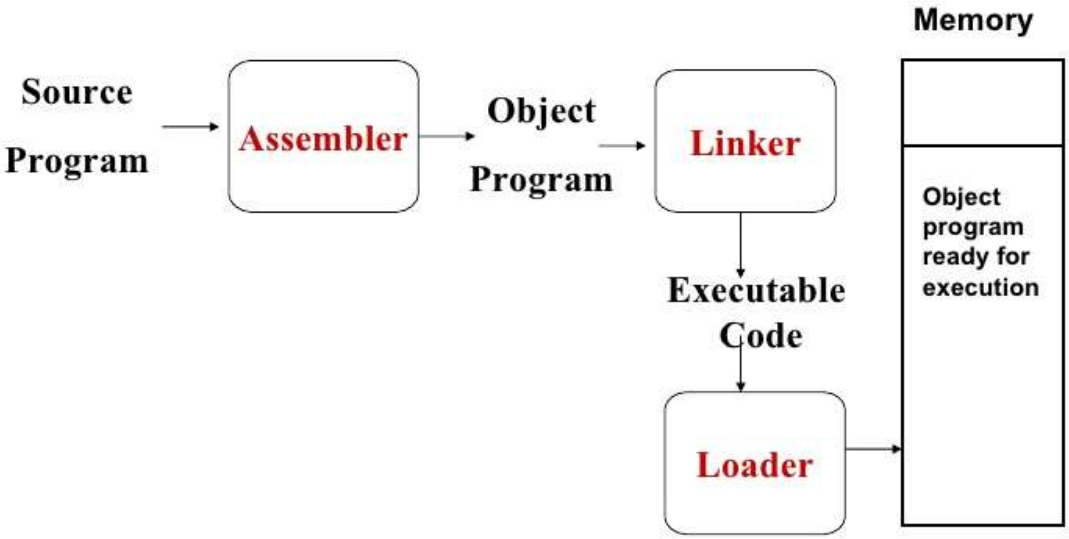



Figure: Interpreter

**Linker:** In high level languages, some built in header files or libraries are stored. These libraries are predefined and these contain basic functions which are essential for executing the program. These functions are linked to the libraries by a program called Linker.
If linker does not find a library of a function then it informs to compiler and then compiler generates an error. The compiler automatically invokes the linker as the last step in compiling a program.
Not built in libraries, it also links the user defined functions to the user defined libraries. Usually a longer program is divided into smaller subprograms called modules. And these modules must be combined to execute the program. The process of combining the modules is done by the linker.

**Loader**: Loader is a program that loads machine codes of a program into the system memory. In Computing, a loader is the part of an Operating System that is responsible for loading programs. It is one of the essential stages in the process of starting a program. Because it places programs into memory and prepares them for execution. Loading a program involves reading the contents of executable file into memory. Once loading is complete, the operating system starts the

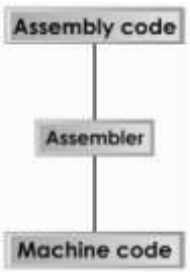
program by passing control to the loaded program code. All operating systems that support program loading have loaders. In many operating systems the loader is permanently resident in memory.




**Languages of Computer:-**

In order to communicate with the computer user also needs to have a language that should be understood by the computer. For this purpose, different languages are developed for performing different types of work on the computer. Basically, There are three types of computer languages they are as follows:-

- Low level language
- Assembly level language
- High level language




**Low level language:-**

Low level language is also known as Machine level language. The low level language is directly understood by the computer. in other words, the binary language is machine language(0s and 1s). any instruction given in the machine language has two parts:-

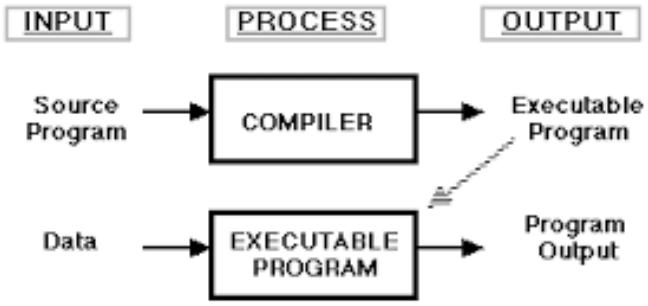
- OPCODE
- OPERAND

**Assembly level language:-**

The major drawback of machine language lead to the introduction of a new language called assembly level language. A program written in symbolic language is called an assembly code or a symbolic program. Assembler translates the assembly code into machine code, it also "assembles" the machine code into the main memory of the computer and makes it ready for execution.

**High Level Language:-**

To overcome the difficulties of low level language such as machine dependency, difficult to understand etc. high level languages are classified into two types- general and specific purpose high level language.




**Data compression**

**Data compression** is encoding of information using fewer bits than the original representation. The process of reducing the size of a data file is referred to as data compression

**Lossy:** Lossy compression reduces bits by removing unnecessary or less important information.

**Lossless:** Lossless compression reduces bits by identifying and eliminating statistical redundancy. No information is lost in lossless compression.

Uncompressing (or decompressing) is the act of expanding a compression file back into its original form. It is the reverse process of compression.

Compression is useful because it reduces resources required to store and transmit data. Data compression is subject to a space–time complexity trade-off. For instance, a compression scheme for video may require expensive hardware for the video to be decompressed fast enough to be viewed as it is being decompressed, and the option to decompress the video in full before watching it may be inconvenient or require additional storage.

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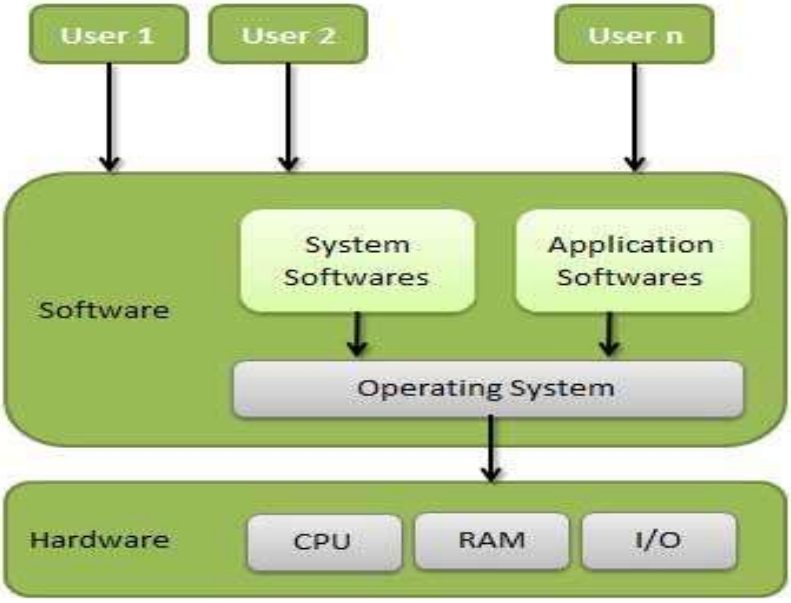
**UNIT 2**

**Operating System**

An operating system is a program that acts as an interface between the user and the computer hardware and controls the execution of all kinds of programs.

In technical terms, it is software which manages hardware. An operating System controls the allocation of resources and services such as memory, processors, devices and information.




**Functions of operating system**

Following are some of important functions of an operating System.

- Memory Management
- Processor Management
- Device Management
- File Management
- Security
- Control over system performance
- Job accounting
- Error detecting aids
- Coordination between other software and users

**Memory Management**

Memory management refers to management of Primary Memory or Main Memory. Main memory is a large array of words or bytes where each word or byte has its own address.

Main memory provides a fast storage that can be access directly by the CPU. So for a program to be executed, it must in the main memory. Operating System does the following activities for memory management.

- Keeps tracks of primary memory i.e. what part of it are in use by whom, what part are not in use.
- In multiprogramming, OS decides which process will get memory when and how much.
- Allocates the memory when the process requests it to do so.
- De-allocates the memory when the process no longer needs it or has been terminated.

**Process Management**
In multiprogramming environment, OS decides which process gets the processor when and how much time. This function is called process scheduling. Operating System does the following activities for processor management.

- Keeps tracks of processor and status of process. Program responsible for this task is known as traffic controller.
- Allocates the processor (CPU) to a process.
- De-allocates processor when processor is no longer required.

**Device Management**
OS manages device communication via their respective drivers. Operating System does the following activities for device management.

- Keeps tracks of all devices. Program responsible for this task is known as the I/O controller.
- Decides which process gets the device when and for how much time.
- Allocates the device in the efficient way.
- De-allocates devices.

**File Management**
A file system is normally organized into directories for easy navigation and usage. These directories may contain files and other directions. Operating System does the following activities for file management.

- Keeps track of information, location, uses, status etc. The collective facilities are often known as file system.
- Decides who gets the resources.
- Allocates the resources.
- De-allocates the resources.

**Resource Allocation**
The resources such as CPU, memory, I/O channels are needed by all user jobs, and their allocation is handled automatically by the operating system. Some problems to be handled by the operating system are:

- mutual exclusion
- process synchronization,
- deadlock avoidance
- security and protection

**Other Important Activities**
Following are some of the important activities that Operating System does.

- **Security** -- By means of password and similar other techniques, preventing unauthorized access to programs and data.
- **Control over system performance** -- Recording delays between request for a service and response from the system.
- **Job accounting** -- Keeping track of time and resources used by various jobs and users.
- **Error detecting aids** -- Production of dumps, traces, error messages and other debugging and error detecting aids.
- **Coordination between other software's and users** -- Coordination and assignment of compilers, interpreters, assemblers and other software to the various users of the computer systems.

**CUI**: character user interface or command-line user interface, CUI is a prompt used to interact with computer programs. It works by allowing the user (client) to issue commands as one or more lines of text (referred to as command lines) to a program. One of the CUI's uses is that it provides an easy way to implement programming scripts.

The command-line user interface was the primary method of communicating with a computer from the first machines, all the way through the 1980s. Although it may still be accessed in most of today operating systems, it is utilized far less due to the ease of use and familiarity of the graphical user interface (GUI). The CUI, however, is still preferred by many advanced end users as its features provide them with more comprehensive control over an operating system's functions.

Good examples of command lines include MS-DOS, Windows command line, Terminal, and the Linux command line.

**GUI**

GUI is what most modern computers make use of. This is an interface that makes use of graphics, images and other visual clues such as icons. This interface made it possible for a mouse to be used with a computer and interaction really became very easy as the user could interact with just a click of the mouse rather than having to type every time to give commands to the computer.

Modern operating systems use a graphical user interface, or GUI (pronounced gooey). A GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text.

**Icons**

•Smallpicturesthatrepresentcommands,files,orwindows.



**Difference between CUI and GUI**

• CUI and GUI are user interface used in connection with computers

• CUI is the precursor of GUI and stands for character user interface where user has to type on keyboard to proceed. On the other hand GUI stands for Graphical User Interface which makes it possible to use a mouse instead of keyboard

• GUI is much easier to navigate than CUI

• There is only text in case of CUI whereas there are graphics and other visual clues in case of GUI

• Most modern computers use GUI and not CUI

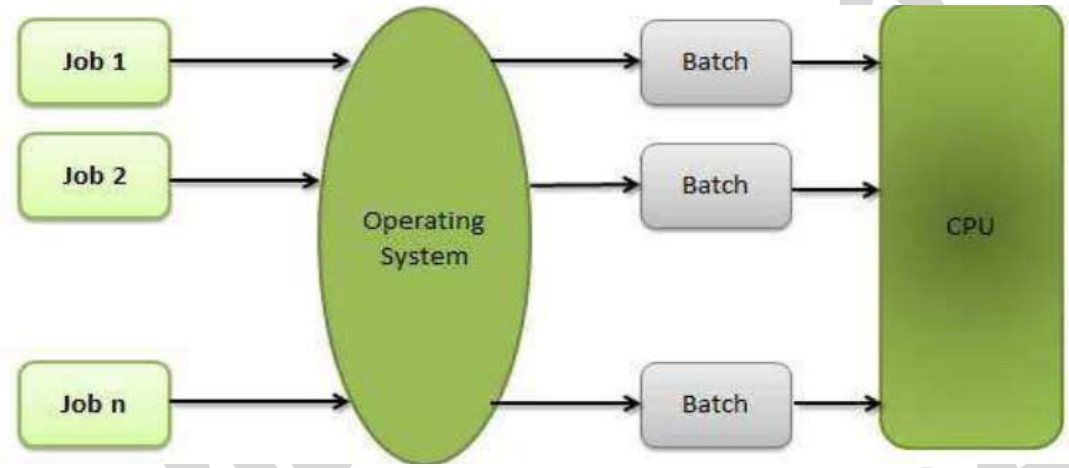
• DOS is an example of CUI whereas Windows is an example of GUI.

**TYPES OF OPERATING SYSTEM**

**The categories are:**

- **Real-time operating system** (RTOS) - Real-time operating systems are used to control machinery, scientific instruments and industrial systems. An RTOS typically has very little user-interface capability, and no end-user utilities, since the system will be a "sealed box" when delivered for use. A very important part of an RTOS is managing the resources of the computer so that a particular operation executes in precisely the same amount of time, every time it occurs. In a complex machine, having a part move more quickly just because system resources are available may be just as catastrophic as having it not move at all because the system is busy.
- **Single-user, single task** - As the name implies, this operating system is designed to manage the computer so that one user can effectively do one thing at a time. The Palm OS for Palm handheld computers is a good example of a modern single-user, single-task operating system.
- **Single-user, multi-tasking** - This is the type of operating system most people use on their desktop and laptop computers today. Microsoft's Windows and Apple's MacOS platforms are both examples of operating systems that will let a single user have several programs in operation at the same time. For example, it's entirely possible for a Windows user to be writing a note in a word processor while downloading a file from the Internet while printing the text of an e-mail message.
- **Multi-user** - A multi-user operating system allows many different users to take advantage of the computer's resources simultaneously. The operating system must make sure that the requirements of the various users are balanced, and that each of the programs they are using has sufficient and separate resources so that a problem with one user doesn't affect the entire community of users. Unix, VMS and mainframe operating systems, such as *MVS*, are examples of multi-user operating systems.
- **Batch Processing**- Batch processing is a technique in which an Operating System collects the programs and data together in a batch before processing starts. An operating system does the following activities related to batch processing: • The OS defines a job which has predefined sequence of commands, programs and data as a single unit. • The OS keeps a number a jobs in memory and executes them without any manual information. • Jobs are processed in the order of submission, i.e., first come first served fashion. • When a job completes its execution, its memory is released and the output for the job gets copied into an output spool for later printing or processing. Advantages • Batch processing takes much of the work of the operator to the

computer. • Increased performance as a new job gets started as soon as the previous job is finished, without any manual intervention. Disadvantages • Difficult to debug programs. • A job could enter an infinite loop. • Due to lack of protection scheme, one batch job can affect other pending jobs.




## Time-sharing Operating Systems

Time-sharing is a technique which enables many people, located at various terminals, touse a particular computer system at the same time. Time-sharing or multitasking is alogical extension of multiprogramming. Processor's time which is shared among multipleusers simultaneously is termed as time-sharing.

The main difference between Multiprogrammed Batch Systems and Time-Sharing Systemsis that in case of Multiprogrammed batch systems, the objective is to maximize processoruse, whereas in Time-Sharing Systems, the objective is to minimize response time.

Multiple jobs are executed by the CPU by switching between them, but the switches occurso frequently. Thus, the user can receive an immediate response. For example, in atransaction processing, the processor executes each user program in a short burst orquantum of computation. That is, if **n** users are present, then each user can get a timequantum. When the user submits the command, the response time is in few seconds atmost.

The operating system uses CPU scheduling and multiprogramming to provide each userwith a small portion of a time. Computer systems that were designed primarily as batchsystems have been modified to time-sharing systems.

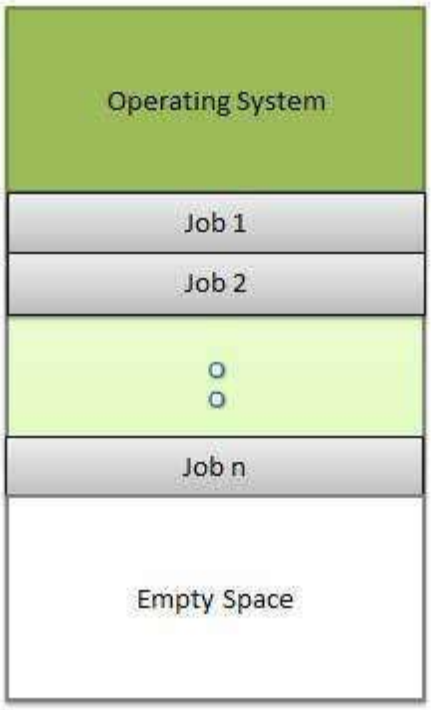
**Advantages of Timesharing operating systems are as follows:**

- Provides the advantage of quick response
- Avoids duplication of software
- Reduces CPU idle time

## Multiprogramming

Sharing the processor, when two or more programs reside in memory at the same time, is referred as **multiprogramming**. Multiprogramming assumes a single shared processor. Multiprogramming increases CPU utilization by organizing jobs so that the CPU always has one to execute.

The following figure shows the memory layout for a multiprogramming system.




An OS does the following activities related to multiprogramming.

- The operating system keeps several jobs in memory at a time.
- This set of jobs is a subset of the jobs kept in the job pool.
- The operating system picks and begins to execute one of the jobs in the memory.

Multiprogramming operating systems monitor the state of all active programs and system resources using memory management programs to ensures that the CPU is never idle, unless there are no jobs to process.

**Advantage**

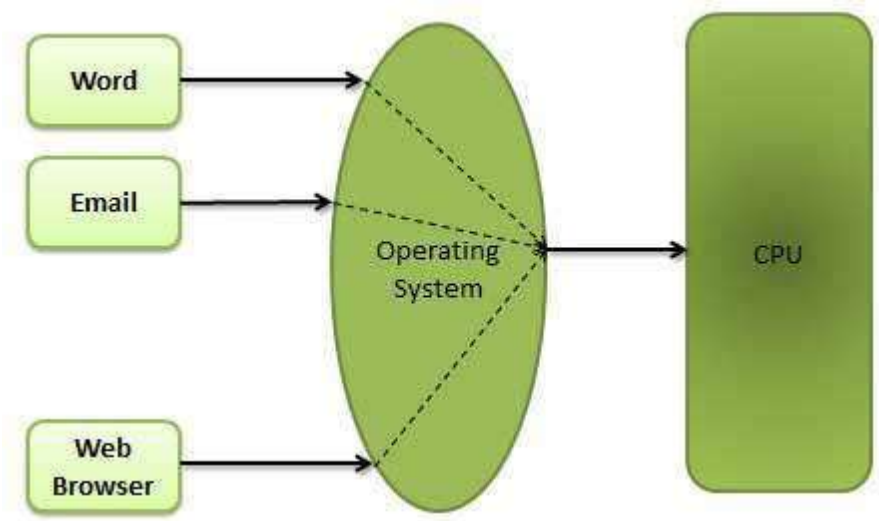
- High and efficient CPU utilization.
- User feels that many programs are allotted CPU almost simultaneously.

**Disadvantages**

- CPU scheduling is required.
- To accommodate many jobs in memory, memory management is required.

**Multitasking**

Multitasking is when multiple jobs are executed by the CPU simultaneously by switching between them. Switches occur so frequently that the users may interact with each program while it is running. An OS does the following activities related to multitasking:




- The user gives instructions to the operating system or to a program directly, andreceives an immediate response.
- The OS handles multitasking in the way that it can handle multiple operations /executes multiple programs at a time.
- Multitasking Operating Systems are also known as Time-sharing systems.
- These Operating Systems were developed to provide interactive use of a computersystem at a reasonable cost.
- A time-shared operating system uses the concept of CPU scheduling andmultiprogramming to provide each user with a small portion of a time-shared CPU.
- Each user has at least one separate program in memory.
- A program that is loaded into memory and is executing is commonly referred to asa **process**.
- When a process executes, it typically executes for only a very short time before iteither finishes or needs to perform I/O.
- Since interactive I/O typically runs at slower speeds, it may take a long time tocomplete. During this time, a CPU can be utilized by another process.
- The operating system allows the users to share the computer simultaneously. Since each action or command in a time-shared system tends to be short, only a littleCPU time is needed for each user.
- As the system switches CPU rapidly from one user/program to the next, each user is given the impression that he/she has his/her own CPU, whereas actually one CPUis being shared among many users.

## Real-Time Operating System

A real-time system is defined as a data processing system in which the time interval required to process and respond to inputs is so small that it controls the environment. The time taken by the system torespond to an input and display of required updated information is termed as the **response time**. So in this method, the response time is very less as compared to online processing.

Real-time systems are used when there are rigid time requirements on the operation of a processor or the flow of data and real-time systems can be used as a control device in a dedicated application. A real-time operating system must have well-defined, fixed timeconstraints, otherwise the system will fail. For

example, Scientific experiments, medicalimaging systems, industrial control systems, weapon systems, robots, air traffic controlsystems, etc.
There are two types of real-time operating systems.

**Hard real-time systems**

Hard real-time systems guarantee that critical tasks complete on time. In hard real-time systems, secondary storage is limited or missing and the data is stored in ROM. In these systems, virtual memory is almost never found.

**Soft real-time systems**

Soft real-time systems are less restrictive. A critical real-time task gets priority over other tasks and retains the priority until it completes. Soft real-time systems have limited utility than hard real-time systems. For example, multimedia, virtual reality, Advanced Scientific Projects like undersea exploration and planetary rovers, etc.

**Distributed processing** is a phrase used to refer to a variety of computer systems that use more than one computer (or processor) to run an application. This includes parallel **processing** in which a single computer uses more than one CPU to execute programs

Distributed computing is a technique of distributing the information over number of devices. Devices may be computers or data terminals. Devices are interconnected with communication facilities.

**Microsoft Windows**

Microsoft created the Windows operating system in the mid-1980s. Over the years, there have been many different versions of Windows, but the most recent ones are Windows 10 (released in 2015), Windows 8 (2012), Windows 7 (2009), and Windows Vista (2007). Windows comes pre-loaded on most new PCs, which helps to make it the most popular operating system in the world.

**Mac OS X**

Mac OS is a line of operating systems created by Apple. It comes preloaded on all new Macintosh computers, or Macs. All of the recent versions are known as OS X (pronounced O-S Ten), and the specific versions include El Capitan (released in 2015), Yosemite (2014), Mavericks (2013), Mountain Lion (2012), and Lion (2011).

**Linux**

Linux is a family of open-source operating systems, which means they can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it. The advantages of Linux are that it is free, and there are many different distributions—or versions—you can choose from.

Different distributions of Linux

- Ubuntu,
- Linux Mint
- Fedora

**Operating systems for mobile devices**

The operating systems we've been talking about so far were designed to run on desktop and laptop computers. Mobile devices such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include

- Apple iOS
- Google Android

**Disk Defragmenter** is a utility in Microsoft Windows designed to increase access speed by rearranging files stored on a disk to occupy contiguous storage locations, a technique called defragmentation.

**Disk Cleaning** is a computer maintenance utility included in Microsoft Windows designed to free up disk space on a computer's hard drive. The utility first searches and analyzes the hard drive for files that are no longer of any use, and then removes the unnecessary files. There are a number of different file categories that Disk Cleanup targets when performing the initial disk analysis:

- Compression of old files
- Temporary Internet files
- Temporary Windows files
- Downloaded program files
- Recycle Bin
- Removal of unused applications or optional Windows components
- Offline web pages (cached)

**MS Windows**

Windows XP is a personal computer operating system produced by Microsoft as part of the Windows NT family of operating systems. The operating system was released to manufacturing on August 24, 2001, and generally released for retail sale on October 25, 2001.

Windows XP is a graphical user interface (GUI). It has pictures (graphical) that you use (user) to communicate (interface) with the computer. This type of system is popular because it's logical, fun, and easy to use.
This operating system has multi-tasking capabilities, meaning it can run several applications at the same time. Multi-tasking allows you to view this lesson on the Internet at the same time you practice using other applications with Windows XP.
**History of Windows**:

| Versions | Year |
|---|---|
| Windows | 10 Nov.1983 |
| Windows 1.0 | Nov.1985 |
| Windows 2.0 | 09 Dec.1987 |
| Windows 3.0 | 22 May.1990 |
| Windows 95 | August 1995 |
| Windows 98 | June 1998 |
| Windows 2000 | Feb.2000 |
| Windows XP | 25 Oct. 2001 |
| Windows Vista | 2007 |
| Windows 7 | 22 July 2009 |
| Windows 8 | 26 Oct. 2012 |

**The New and updated features in the new program are:**

- Windows XP is faster, smarter, safer
- Windows XP is easier to learn and use
- Windows XP offers better help for every task
- Playing music, video and CDs
- Offers wizard
- User interface
- Infrastructure
- Networking and internet functionality

**Windows XP editions**

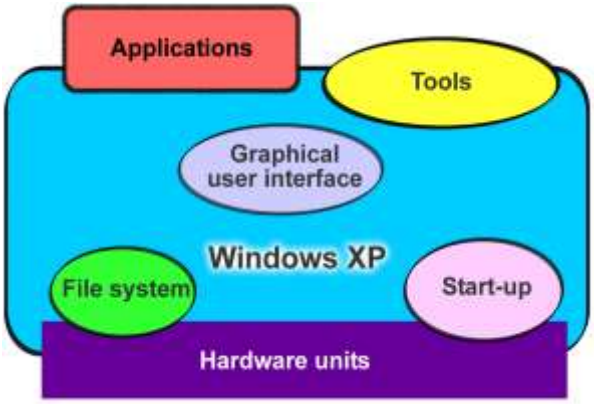
- Home and Professional
- Starter Edition
- Media Center Edition
- Tablet PC Edition
- Subscription and pre-paid editions
- 64-bit editions
- Editions for embedded systems

**Windows XP is an operating system**

Windows XP is a collection of programs, which enables the entire pc to work. Among Windows' most important tasks are:

- Assist in starting the pc.
- Control and handling of all hardware, including RAM, I/O, cards and controllers.
- Read-in of a graphics user interface with windows, menu bars etc.
- Forms a platform for the user programs (*applications*) like Word, Internet Explorer, and Photoshop etc.
- Handling of user data in *files*.

Beyond the pure operating system tasks Windows XP includes a large collection of smaller and larger tools. Among others Windows XP comes with Internet Explorer and the multimedia player Windows Media Player, which are independent user programs.




Windows XP is both an operating system and a program package.

**Desktop**

Desktops in a Windows is utility that allows users to manage applications on up to four virtual desktops, all accessible using the tray icon interface. 4. When referring to an operating system or GUI, the Desktop is a system of organization of icons on a screen.The Microsoft Windows Desktop was first introduced with Microsoft Windows 95 and has been included with every version of Windows since then.




**The desktop contains:**

- **Start button**: This is one of the most important tools you will use while working with Windows XP. The Start button allows you to open menus and start applications.
- **Taskbar**: This is primarily used to switch between open windows and applications. Learn more about using the taskbar in a later lesson.
- **Icons (or graphical pictures)**: This represents applications, files, and other parts of the operating system. By default, Windows XP provides you with one desktop icon, the Recycle Bin.
- **Windows Notification Area**
- **Time and Date**: The date and time is also shown on the Desktop, in the notification area on the taskbar. If the date and time is incorrect, you can change the date and time right from the Desktop.

**Exploring Windows Explorer**

Windows Explorer is a file management tool that lets you create, rename, and delete folders. It also allows you to copy, print, move, delete, rename, and manage files.

To open Windows Explorer:

1. Open **My Documents**.
2. Click the **Folders** button on the **Navigation** toolbar.
3. A **list of folders** opens in the **left pane**.

To explore Windows Explorer:

1. With **Windows Explorer open**, scroll until you see the **Control Panel icon** in the left pane.
2. Click the **Control Panel icon**. The contents (of the Control Panel folder) display in the **right pane**.
3. Practice viewing other folders in the list.
4. To **close Windows Explorer**, click the **small black X** in the upper right of the list OR click the **Folder** button.

**The Taskbar**

The **taskbar** is the small blue bar you see at the bottom of your desktop. It contains the **Start menu** and the **Quick Launch bar**, which contains **icons** for Internet Explorer, Windows Media Player, and Show Desktop. Click an icon to open a program. Click Show Desktop to quickly view your desktop without closing any programs or windows.




The box on the right is called the **Notification Area**. Microsoft also uses the Notification Area to remind you when **software updates** are available for download.



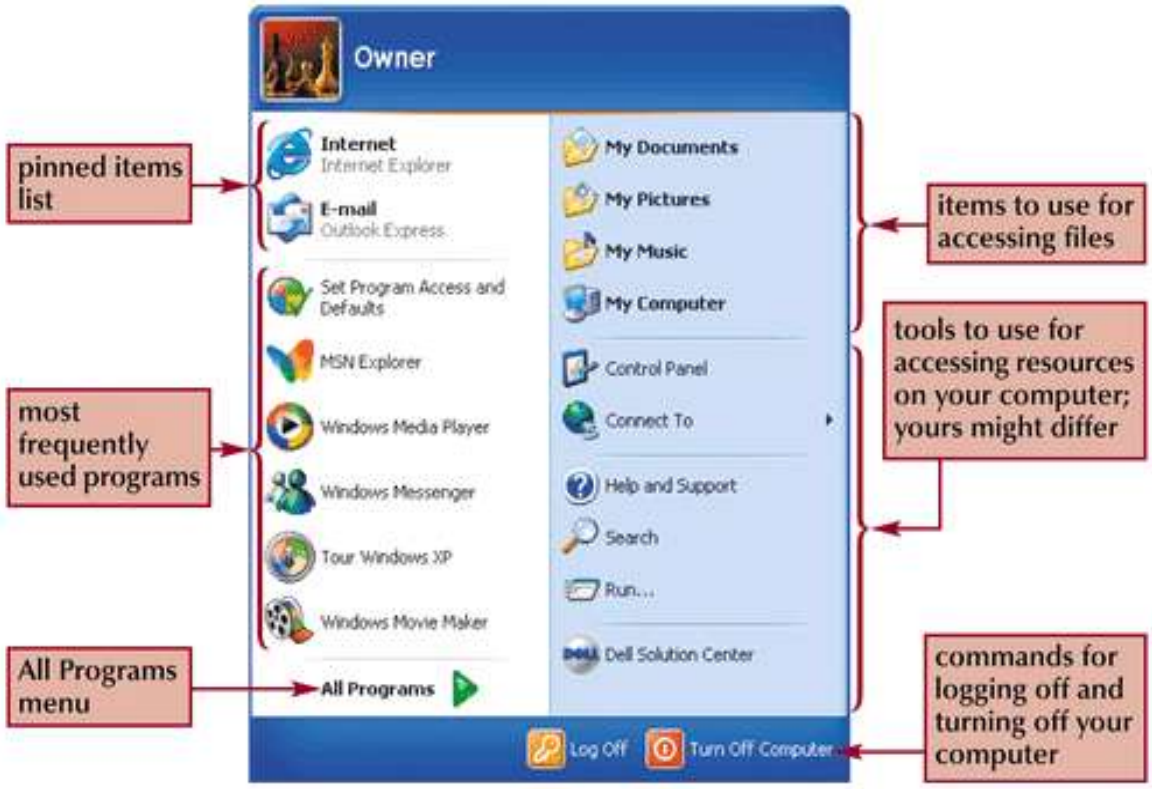

When you open or minimize a window or program, a **rectangular button** appears on the taskbar that shows the name of the application.

**The Start menu**

When you click the **Start** button, the **Start menu** appears. The **Start menu** is your path to the applications on your computer. It contains two columns. The left side of the **Start menu** lists programs, while the right side allows access to common Windows folders (My Documents, for example). It also provides access to **Help and Support**, **Search**, and **Run**. If you select **All Programs**, a pop-up menu appears. Pop-up menus like this are called **cascading menus**. If a cascading menu is available, a **small black triangle** appears next to the name of the application or function.

**To explore the Start menu:**

1. Click the **Start** button.
2. Move the mouse pointer to each option, and view the various cascading menus.
3. Click (or roll your mouse pointer over) **All Programs**.
4. Move the mouse pointer to the right, and view other **cascading menus**.
5. To exit the menus, click outside the menu area or press **Esc** on your keyboard.




**The Recycle Bin**

The Recycle Bin is nothing more than a space on the hard disk reserved to store information that is deleted so that in the event of deleting a file or folder by mistake it is possible to retrieve it. By default the Recycle Bin restores files or folders to the place from where they were deleted. If, for example, a file is deleted from **D:\my documents**, when it is restored it will go to that folder.
The Recycle Bin will maintain the deleted documents until it is emptied.

To open the Recycle Bin place the cursor on *Desktop* and double-click on the **Recycle Bin** icon.

**Restoring Files or Folders**

To restore all of the elements from the Recycle Bin click on the green arrow on the left side that says restore all items.

**If we only want to restore some of the elements:**

1) Select the elements to be restored by clicking on them. If the elements are not in subsequent order, use the Ctrl key to select them or the Shift key if they are one below the other.
2) Once selected, a dialog box will appear on the green arrow on the left that will say Restore this item or Restore the selected items.
The selected files will return to where they were located before deletion.

**Deleting Files or Folders from the Recycle Bin**

Before deleting any element from the Recycle Bin you need to realize that once it is deleted it cannot be retrieved or restored.

- If you want to delete any file or folder from the Recycle Bin follow these steps:

1) Select the Elements to be deleted.

2) Click on ; this will delete the selected elements. You can also do this by pressing the Delete button.

The selected files will disappear and cannot be restored.

**My Computer**

Itis another tool you can use to manage files and folders. With this tool, you can **create, rename and move folders** and **copy, print, move, delete and rename files**. It also allows you to gain **access** to other system tools.

To open My Computer**:**

1. Double-click the **My Computer icon** on the desktop.
2. **My Computer** opens.

**My Network Places overview**

My Network Places displays shortcuts to shared computers, printers, and other resources on the network. The shortcuts are created automatically in My Network Places whenever you open a shared network resource, such as a printer or shared folder.

**Open My Network Places**

- To open My Network Places, click Start, and then click My Computer. Under Other Places, click My Network Places.
- The View workgroup computers task is displayed in My Network Places when your computer is in a workgroup and not in a domain. Double-click this icon to narrow your search to only those computers, printers, and resources that share a workgroup with your computer.
- If your computer is connected to a workgroup that has less than 32 computers, Windows will automatically create shortcuts in My Network Places to the shared resources in your workgroup.
- To add a shortcut in My Network Places to a folder on a Web server, the Web server must support network places..

**My Documents**

The My Documents folder is your own personal folder in which you can store your documents, graphics, and other personal files. You can change the target if you want My Documents to point to a different folder location.

- Change the Default Location of the My Documents Folder
- To change the default location of the My Documents folder, follow these steps:
- Click Start, and then point to My Documents.
- Right-click My Documents and then click Properties. Click the Target tab.

**User Accounts**

To get at the settings for the User Accounts, click Start and then Control Panel. From the Control Panel, double click User Accounts.

- We can create a new user account.

- We can make the account as password protected.
- Through admin we can even change the password.

**Windows XP Accessories Applications:**

- Calculator,
- Notepad,
- WordPad,
- Paint

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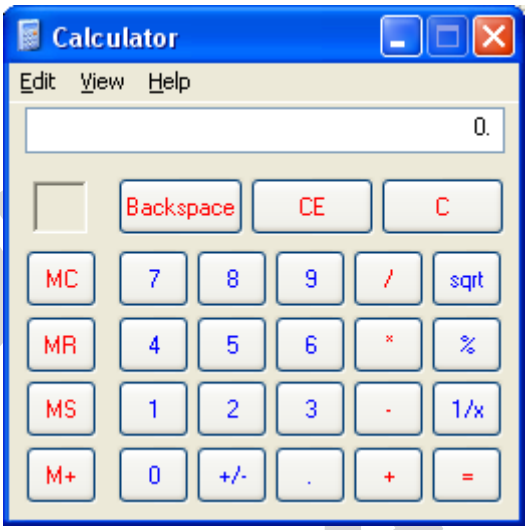
**1. Using Windows XP Calculator**

Like a calculator you keep in a desk drawer, the Windows Calculator is small but saves you time by performing all the calculations common to a standard calculator.



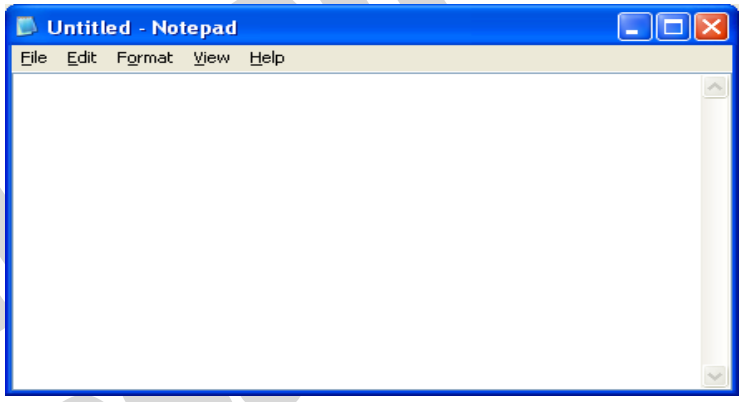

The Standard Windows Calculator works so much like a pocket calculator that you need little help getting started.

To display the Calculator, open the Start menu and choose Programs, Accessories, Calculator. The Calculator opens in the same view (Standard or Scientific) in which it was displayed the last time it was used.

To close the Calculator, click the Close button in the title bar. If you use the Calculator frequently, however, don't close it; click the Minimize button to minimize the Calculator to a button on the taskbar.

The Calculator has only three menus: Edit, View, and Help. The Edit menu contains two simple commands for copying and pasting; the View menu switches between the Standard and Scientific views; and the Help menu is the same as in all Windows accessories.

**2. Using Windows XP Notepad**




Notepad is a miniature text after the calculations are performed. To enter numbers from the editor. Just as you use a notepad on your desk, you can use Notepad to take notes onscreen while working in other Windows applications.

Because Notepad stores files in text format, almost all word processing applications can retrieve Notepad's files. However, if you want the capability of formatting your documents, you'll need a true word processor.

**Starting Notepad**

To start Notepad, open the Start menu and choose Programs, Accessories, Notepad. Notepad starts up and displays a blank document in the Notepad window .

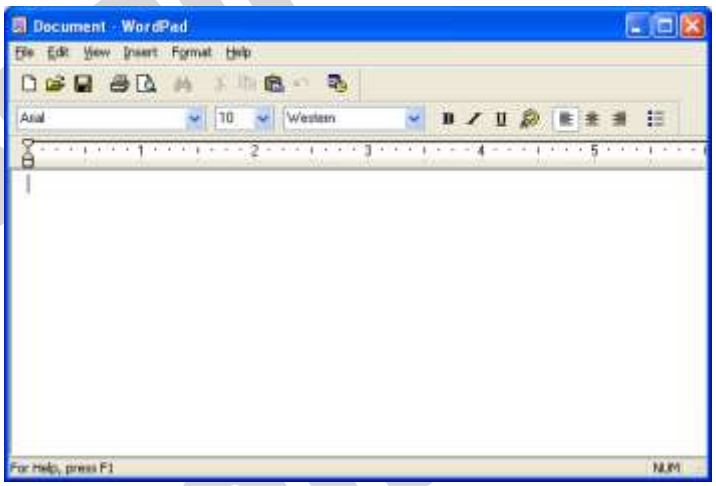
**Working with Documents in Notepad**

You can move the insertion point by using either the mouse or the keyboard. You select and edit text in Notepad the same way you select and edit text in WordPad.

Limited formatting is available from the File, Page Setup command. You can change margins and add a header or footer, but you cannot format characters or paragraphs in any way. You also can use the Tab, Spacebar, and Backspace keys to align text. Tab stops are preset at every eight characters.

With the commands on Notepad's Edit menu, you can cut, copy, and move text from one place in a file to another. Text that you cut or copy is stored in the Clipboard. When you paste text, the contents of the Clipboard are copied from the Clipboard to the document at the location of the insertion point.

### 3. Using Windows XP WordPad



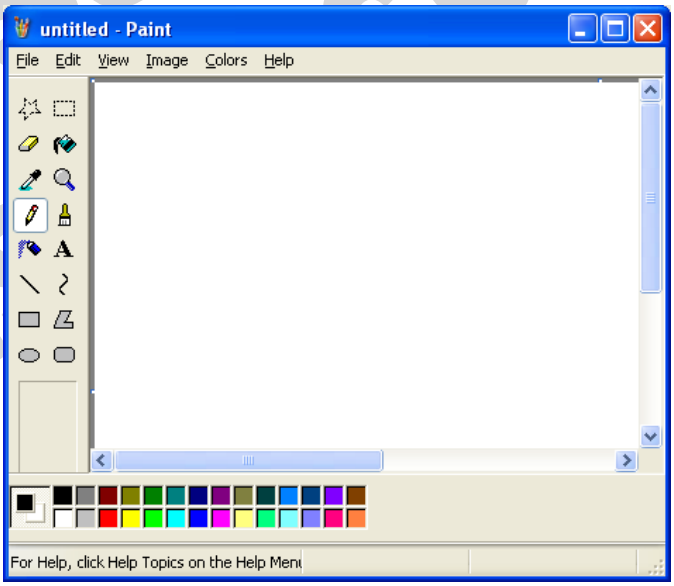

Word Pad is the word processor that comes with Windows XP that can perform most basic word processing tasks. Although it is not nearly as powerful and versatile as a full-featured word processing application (such as Microsoft Word XP), it is much more powerful than Notepad, the text editor that comes with Windows XP.

**Creating a New Document in WordPad**

WordPad is located in the Accessories submenu of the Start menu. To start WordPad, open the Start menu and choose Programs, Accessories, WordPad. The WordPad window appears. When you first open WordPad, you are presented with a blank document.

### 4.Using Windows XP Paint

Paint is n easy-to-learn graphics application that you can use to create and modify graphics images.




Steps for starting Windows Paint

To start Paint, click Start, Programs, Accessories, Paint. Paint starts up and opens a new, empty Paint file

### 5.Using Windows XP Entertainment

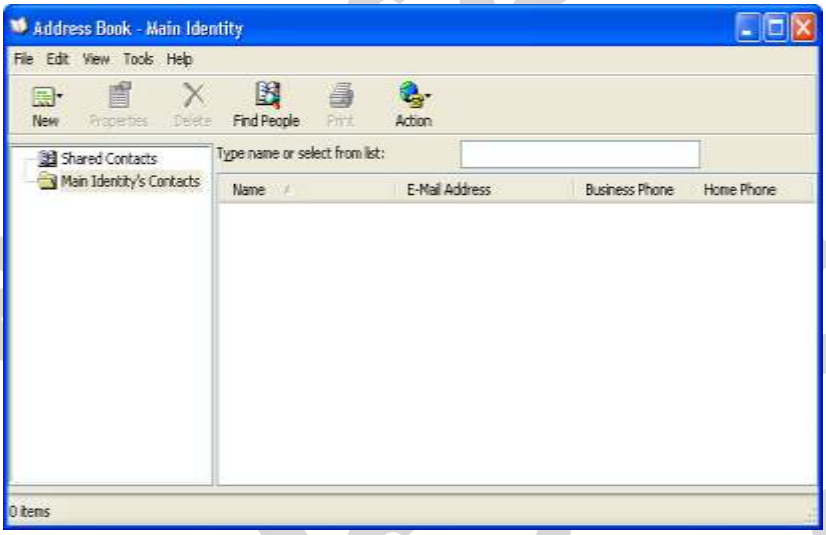
Windows XP includes entertainment programs for playing CDs, viewing multimedia files, and recording and playing back sounds.

It is capable of performing many tasks like:

1. Playing Games
2. Changing the Volume
3. Playing a Sound with Sound Recorder

4. Playing an Audio CD
5. Working with Media Player Controls
6. Changing the Visualizations
7. Copying CD Tracks
8. Using the Media Library
9. Creating a Playlist
10. Tuning into the Radio
11. Changing the Skin for Windows Media Player
12. Playing a Video Clip
13. Importing a Movie with Windows Movie Maker

### 6. Using Windows XP Address Book




The Address Book provides a convenient place to store contact information for easy retrieval from programs such as Outlook, Outlook Express, Internet Explorer, NetMeeting, and Microsoft Phone System. You can search for people and businesses, create groups of contacts for mailing lists, and send and receive electronic business cards.

- Start Click All Programs, Accessories, Address Book
  Address Book Window will appear.

**Functions of address book as follows:**

- Create a new entry
- Delete the existing entry
- Edit the existing entry and etc

**Changing Mouse Pointer**

1. Open Mouse Properties by clicking the Start button The Start button, and then clicking Control Panel. In the search box, type mouse, and then click Mouse.
2. Click the Pointers tab, and then do one of the following:
   - To give all of your pointers a new look, click the Scheme drop-down list, and then click a new mouse pointer scheme.

- To change an individual pointer, under Customize, click the pointer you want to change in the list, click Browse, click the pointer you want to use, and then click Open.

3. Click OK.

**To change your desktop background**

1. Open Display in Control Panel.
   To open Display, click **Start**, click **Control Panel**, click **Appearance and Themes**, and then click **Display**.
2. On the **Desktop** tab, do one or more of the following:
   - Click a picture in the **Background** list. In **Position**, click **Center**, **Tile**, or **Stretch**.
   - Click **Browse** to search for a background picture in other folders or on other drives. You can use files with the following extensions: .bmp, .gif, .jpg, .dib, .png, .htm. In **Position**, click **Center**, **Tile**, or **Stretch**.
   - Select a color from **Desktop color**. The color fills the space not used by a picture.

**Note**

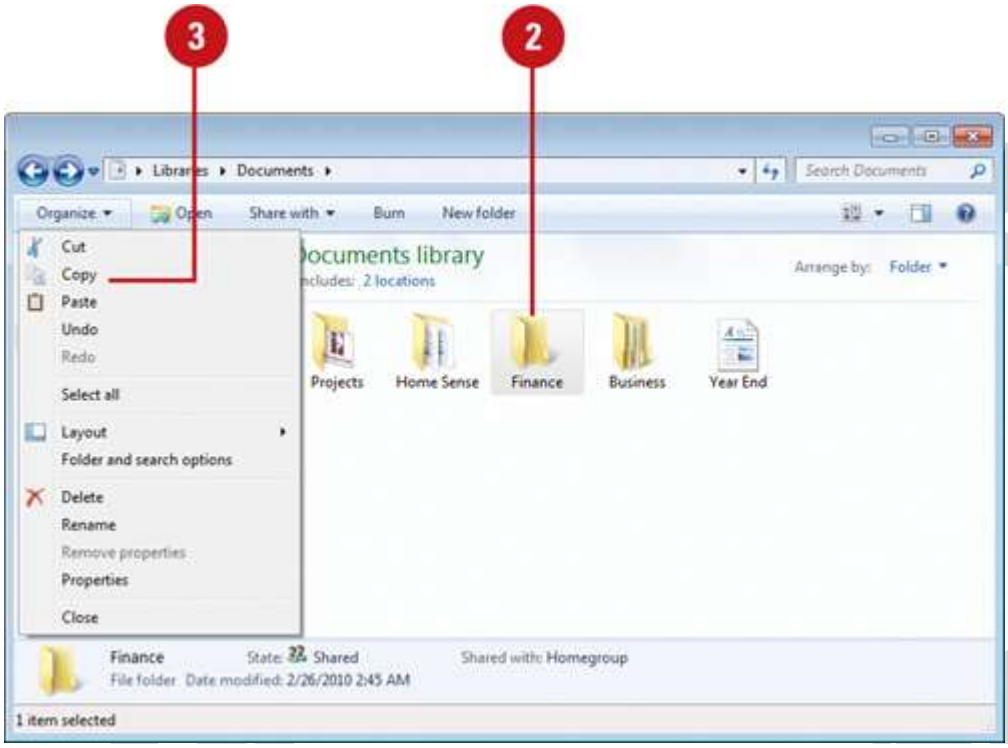
- To open Display, click **Start**, click **Control Panel**, click **Appearance and Themes**, and then click **Display**.
- You can use a personal picture as a background. All of your personal pictures located in **My Pictures** are listed by name in the **Background** list.
- You can save a picture from a Web site as a background. Right-click the picture and then click **Set as Background**. The picture is listed in the **Background** box as Internet Explorer Background.
- If you choose an .htm document as your background picture, the **Position** options are unavailable. The .htm document is automatically stretched to fill your background.

## Copying and Moving Files and Folders

Sometimes you will need to move a file from one folder to another, or copy a file from one folder to another, leaving the file in the first location and placing a copy of it in the second. You can move or copy a file or folder using a variety of methods. If the file or folder and the location where you want to move it are visible in a window or on the desktop, you can simply drag the item from one location to the other. Moving a file or folder on the same disk relocates it whereas dragging it from one disk to another copies it so that it appears in both locations. When the destination folder or drive is not visible, you can use the Cut (to move), Copy, and Paste commands on the Edit menu to move or copy the items.

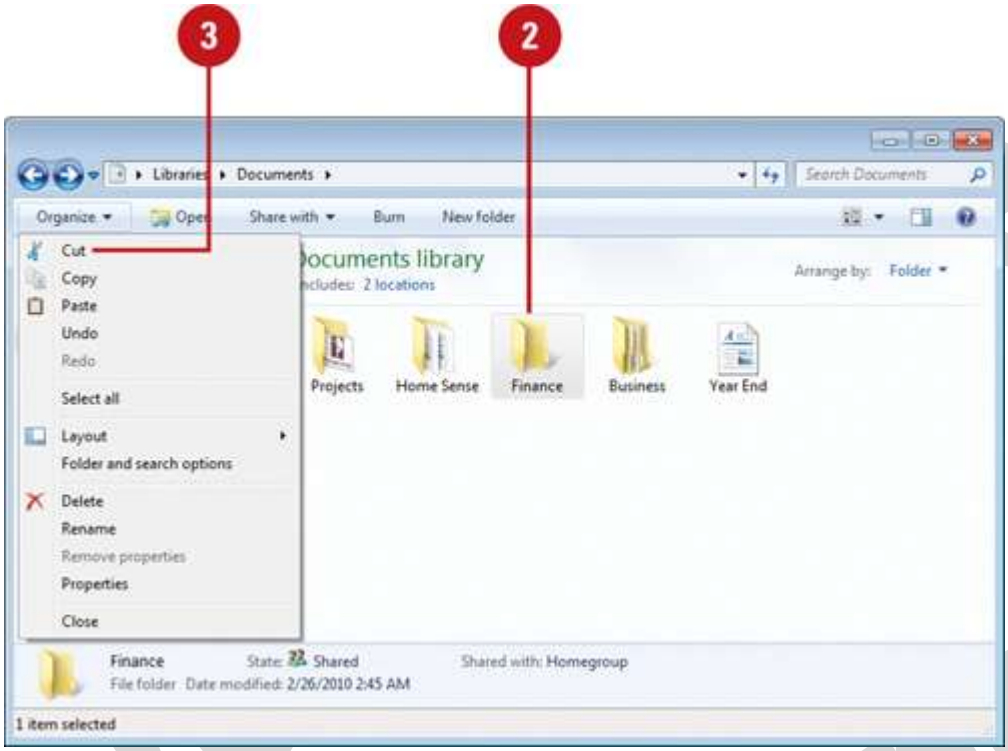
## Copy a File or Folder

1. Open the drive or folder containing the file or folder you want to copy.
2. Select the files or folders you want to copy.




## Move a File or Folder

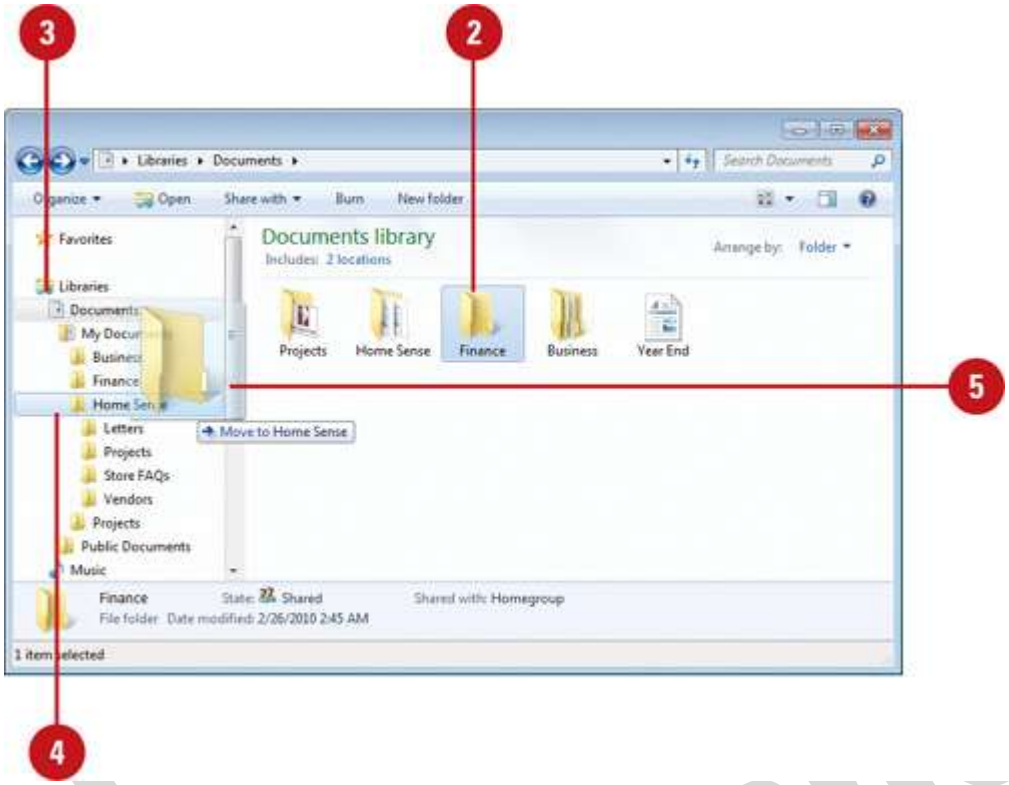
1. Open the drive or folder containing the file or folder you want to move.
2. Select the files or folders you want to move.




3. Click the **Organize** button on the toolbar, and then click **Cut**.
4. Display the destination folder where you want to move the files or folder.
5. Click the **Organize** button on the toolbar, and then click **Paste**.

## Copy or Move a File or Folder Using Drag and Drop

1. Open the drive or folder containing the file or folder you want to copy or move.
2. Select the files or folders you want to copy or move.




3. In the Navigation pane, point to a folder list to display the expand and collapse arrows.
4. Click the arrows to display the destination folder, and then click the destination folder.
5. Right-click the selected files or folders, drag to the destination folder, and then click **Copy Here** or **Move Here**.

**OLE (Object Linking and Embedding)**

Stands for "Object Linking and Embedding." OLE is a framework developed by Microsoft (way back in Windows 3.1) that allows you to take objects from a document in one application and place them in another. For example, OLE may allow you to move an image from a photo-editing program into a word processing document.

The OLE technology was initially created to allow the linking of objects between "compound documents," or documents that support multiple types of data. Microsoft has since developed OLE into a wider standard, known as the Component Object Model (COM). COM is supported by Mac, Unix, and Windows systems, but is primarily used with Microsoft Windows. The COM framework is the foundation of ActiveX, which allows developers to create interactive content for the Web

OLE (Object Linking and Embedding) is Microsoft's framework for a compound document technology. Briefly, a compound document is something like a display desktop that can contain visual and information objects of all kinds: text, calendars, animations, sound, motion video, 3-D, continually updated news, controls, and so forth. Each desktop object is an independent program entity that can

interact with a user and also communicate with other objects on the desktop. Part of Microsoft's ActiveX technologies, OLE takes advantage and is part of a larger, more general concept, the Component Object Model (COM) and its distributed version, DCOM. An OLE object is necessarily also a component (or COM object).OLE contains about 660 new function calls or individual program interfaces in addition to those already in Win32.

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