Computer Fundamentals

What is Computer?

Computer is an advanced electronic device that takes raw data as input from the user and Processes these data under the control of set of instructions (called program) and gives the result (output) and saves output for the future use. It can process both numerical and Non-numerical (arithmetic and logical) calculations.

A computer has four functions:

Input (Data):

Input is the raw information entered into a computer from the input devices. It is the collection of letters, numbers, images etc.

Process:

Process is the operation of data as per given instruction. It is totally internal process of The computer system.

Output:

Output is the processed data given by computer after data processing. Output is also Called as Result. We can save these results in the storage devices for the future use.

Computer System

All of the components of a computer system can be summarized with the simple Equations.

COMPUTER SYSTEM = HARDWARE + SOFTWARE+ USER

Hardware = Internal Devices + Peripheral Devices

All physical parts of the computer (or everything that we can touch) are known as Hardware.

Software = Programs

Software gives "intelligence" to the computer.

USER = Person, who operates computer.

Major parts of The Computer

Input Devices

Mouse

Keyboard

Scanner

Camera

WebCam

Joysticks

Track Ball 

Barcode 

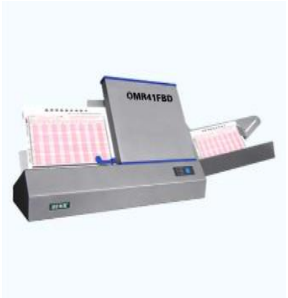
Touch Pad PDA 

Light Pen- 

Microphone 

Graphics tablet 

Magnetic ink character reader(MICR) 

Optical mark recognition (OMR) 

“MIDI devices” for read test and song

CENTRAL PROCESSING UNIT (CPU)

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The main unit inside the computer is the CPU. This unit is responsible for all events inside the computer. It controls all internal and external devices, performs arithmetic and logic operations. The CPU (Central Processing Unit) is the device that interprets and executes instructions.

Output Devices

1. Monitor

2. Printer **(Dot Matrix)**

3. Projector

Inkjet

4. Plotter

Laser

5. Speaker

Printer: **Impact printer**: forms characters and graphics on a piece of paper by striking a mechanism against an ink ribbon that physically contacts the paper.
Non-impact: printer forms characters and graphics on a piece of paper without actually striking the paper.

Storage Devices

1. Primary memory (main memory)

(A.) **RAM** (Random Access Memory/Read-Write Memory)

Type of Ram

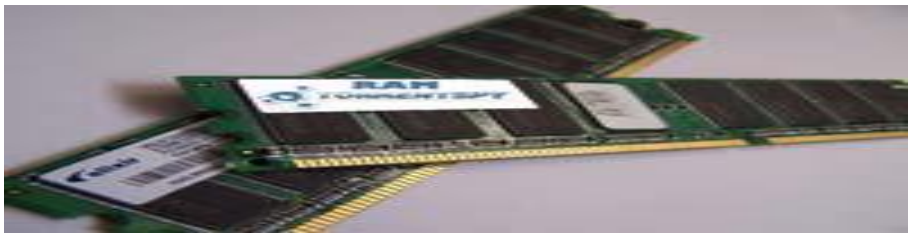
(1) DRAM: Dynamic Ram – use for cache memory

(2) SRAM: Static Ram: Use for main work

Other Type (EDO: Expended data output) for information storage

(SDRAM: Synchronous DRAM) work for clock rate 1600-2400mhz

(DDR-SDRAM: Double Data Rate – SDRAM) for clock both side use



(B) **ROM**: Read only memory: Non volatile memory for store data permanent

Type of ROM: (PROM Programmable Read Only Memory):

(EPROM: Erasable PROM) for 15 minutes Storage

(Flash Memory: for flash a Rom memory)

2. Secondary memory (storage devices)

A. Hard Disk (Local Disk)

B. Optical Disks: CD-R,**650-700mb** CD-RW, DVD-R,**4.7gb** DVD-RW

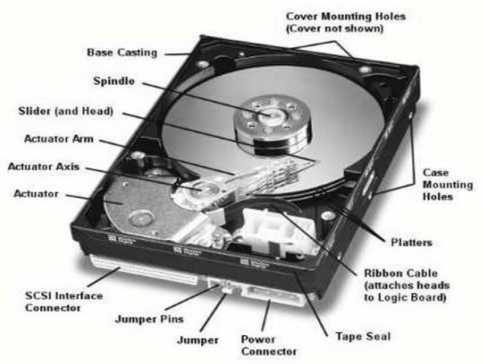
C. Pen Drive

D. Zip Drive

E. Floppy Disks

F. Memory Cards, G. External

A. Hard Disk



B. Optical Disk

C. Pen Drive

D. Zip Disk (Super Disk)

E. Floppy Disk

F. Memory Cards

G. External Hard Disk

Peripheral Devices

1. The Modem/ Internet Adapter

2. Switches/Hub

3. Router

TV Tuner Card

Storage Data storage capacity

1 KB	1024 B
1 MB	1024 KB
1 GB	1024 MB
1 TB	1024 GB
1 PB	1024 TB
1 EB	1024 PB
1 ZB	1024 EB
1 YB	1024 ZB

B = byte
KB = Kilobyte
MB = Megabyte
GB = Gigabyte
TB = Terabyte
PB = Petabyte
EB = Exabyte
ZB = Zettabyte
YB = Yottabyte

Internal Components

1. The Mother Board

2. Expansion Slots

3. CMOS Battery

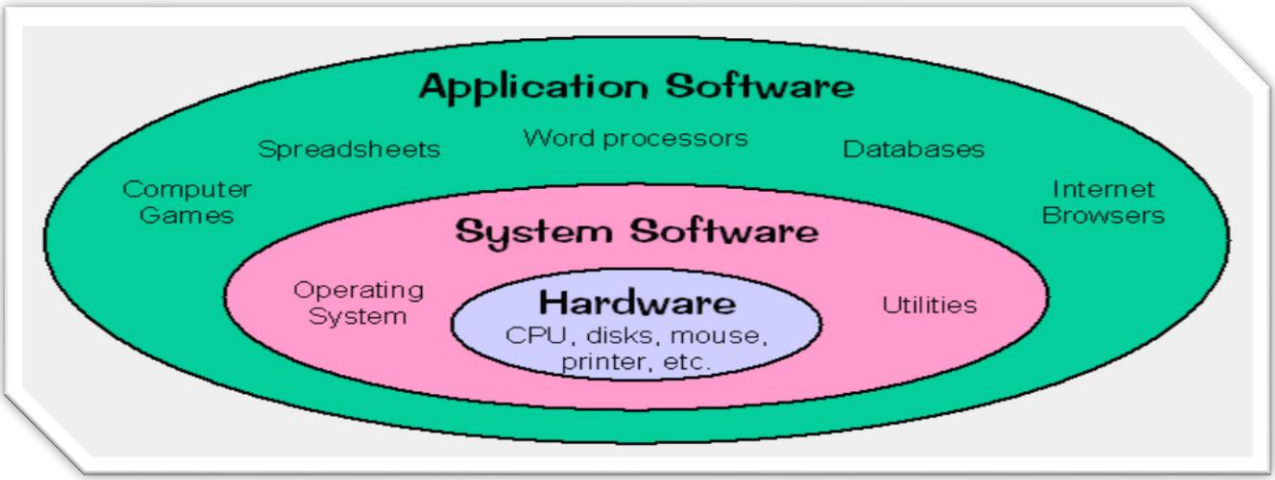
4. Cooling Fan

5. Network Card

6. Graphics Card

7. Power Supply Unit (SMPS)

8. Memory Slots



Software

Software simply are the computer programs, the instructions given to the computer in the form of a program is called software. Is the set of program. Which are used for different purposes. All the programs used in computer to perform specific task is called software.

Type of Software

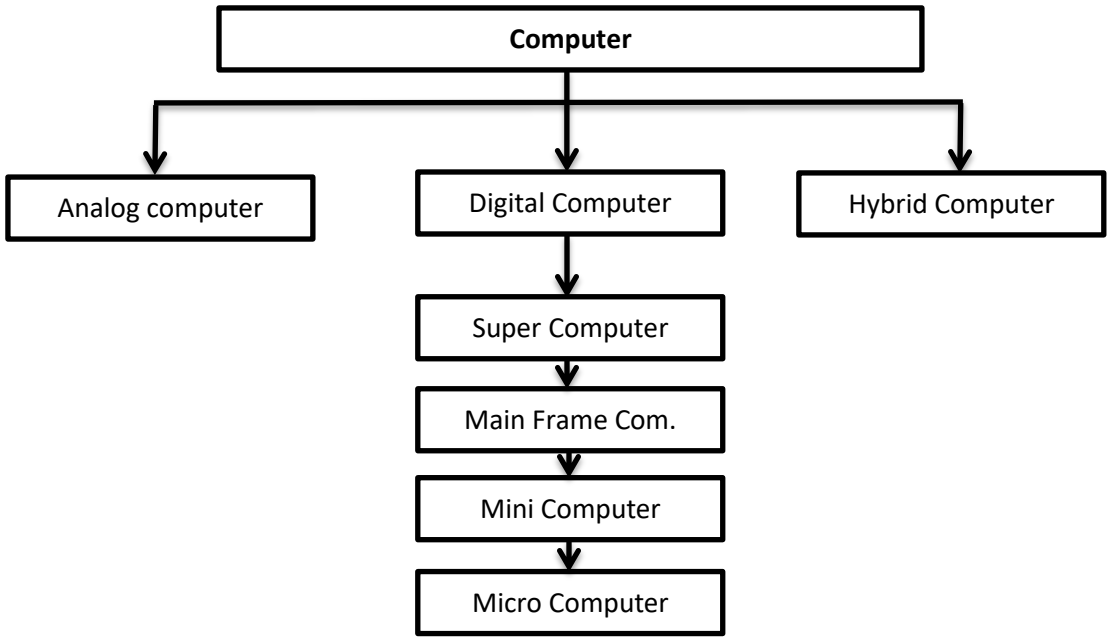
System software :- operating system – all windows version like windows 95 ,NT, 1998, 2000, ME, XP, vista, 7, 8, 8.1, 10:, unix, Linux Overview, ios, mac, android, Ubuntu

Linux base:- Overview multitasking operating system

Utility Software:- windows explore (file/folder management), windows media player, anti-virus Utilities, Disk defragmentation, disk clean, backup, Winzip, WinRAR Etc.

Application Software: - Tally Overview , word Overview , excel Overview , power point Overview, access Overview , photo shop Overview, notepad Overview

Type Of Computer



Analog computer: is a form of **computer** that uses the continuously changeable aspects of physical phenomena such as electrical, mechanical, or hydraulic quantities to model the problem being solved. In contrast, digital **computers** represent varying quantities symbolically, as their numerical values change

Digital computer: any of a class of devices capable of solving problems by processing information in discrete form.it is very fast work and It operates on data, including magnitudes, letters, and symbols, that are expressed in binary code—i.e., using only the two digits 0 and 1

Type Of Digital Computer:

Super Computer: The most powerful computers in terms of performance and data processing are the Supercomputers. These are specialized and task specific computers used by large organizations. These computers are used for research and exploration purposes, like NASA uses supercomputers for launching space, controlling them and for space exploration purpose. The supercomputers are very expensive and very large in size.

Seymour Cray designed the first Supercomputer **"CDC 6600"** in 1964. CDC 6600 is known as the first ever Supercomputer.

Other Super Computer:-

- IBM's Sequoia - America
- Fujitsu's K Computer - Japanese
- Param Super Computer - India

Mainframe computer: Mainframes are not as powerful as supercomputers, but certainly they are quite expensive, and many large firms & government organizations uses Mainframes to run their business operations. The Mainframe computers can be in large air-conditioned rooms because of its size. Super-computers are the fastest computers with large data storage capacity, Mainframes can also process & store large amount of data. Banks educational institutions & insurance companies use mainframe computers to store data about their customers, students & insurance policy holders.

Popular Mainframe computers

- Fujitsu's ICL VME
- Hitachi's Z800

Mini computers: are used by small businesses & firms. Minicomputers are also called as "Midrange Computers". These are small machines and can be on a disk with not as processing and data storage capabilities as super-computers & Mainframes. These computers are not designed for a single user. Individual departments of a large company or organizations use

Mini-computers for specific purposes. For example, a production department can use Mini-computers for monitoring certain production process.

Popular Mini computers

- K-202
- Texas Instrument TI-990
- SDS-92
- IBM Midrange computers

Microcomputer: Desktop computers, laptops, (personal digital assistant (PDA), tablets & smartphones are all types of microcomputers. The micro-computers are widely used & the fastest growing computers. These computers are the cheapest among the other three types of computers. The Micro-computers are specially designed for general usage like entertainment, education and work purposes. Well known manufacturers of Micro-computer are Dell, Apple, Samsung, and Sony & Toshiba.

Desktop computers, Gaming consoles, Sound & Navigation system of a car, Netbooks, Notebooks, PDA's, Tablet PC's, Smartphones, Calculators are all type of Microcomputers.

Hybrid computer: is a computing system that combines both digital and analog components. Traditionally, the analog components of the computer handle complex mathematical computations. The digital components take care of logical and numerical operations in addition to serving as the controller for the system.