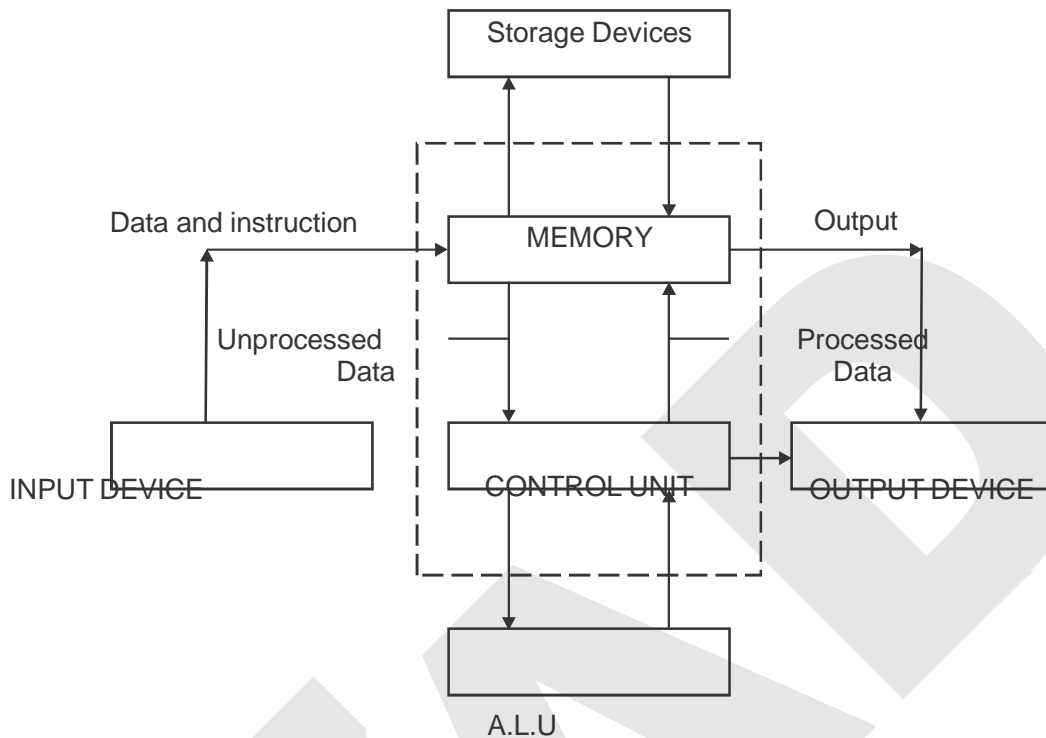


## Block Diagram of Computer



- **INPUT DEVICES:** - In a computerized system, before any processing takes place, the data and instructions must be fed. This is achieved through the **Input Devices**, which provide a communication medium between the user and the machine.

The most common of Input devices keyboard, which resembles a typewriter. The help of a keyboard, the user types data and instruction. The other commonly Input devices are mouse, magnetic ink character reader, magnetic tape, magnetic disk, optical mark reader and optical character reader.

### **Input devices are divided into two categories**

1) Text Input Devices

2) Cursor Control Devices

- In text input devices the mainly used keyboard.
- Cursor control devices are mouse, joystick, scanner etc. In brief, the following functions are

performed by the input unit:-

- It accepts (reads) data from user.
- It converts the instructions and data into computer acceptable form.
- It passes the converted instructions and data to the computer for processing.

- **Output Devices** :- When Processing is complete in the CPU, the information produced is stored in the Memory in a computer understandable format. This information has to be transcribed into a form that can be read by the user, which is achieved by **Output Devices**. The most commonly used Output Devices are VDU (Visual Display Unit), Printer, Plotter etc.

**There are two types of outputs produced by these devices:**

- (1) Hard Copy
- (2) Soft Copy

**Hard Copy:** - An output produced on a printer or a plotter.

**Soft Copy:-** An output on the VDU or stored on magnetic media (Disks and Tapes).

In brief, the functions of the Output units are:-

- To accept the results processed by CPU which is in coded form?
  - To convert coded results to human acceptable form.
  - To produce the results to users.
- **Storage Devices** :- As we aware, that whenever data or instruction is fed to the computer, it is stored within it. Computers store data, instruction and the output of a process in a storage device.

**Storage devices are categorized as:**

- Primary Storage Devices
- Secondary Storage Devices

**Primary Storage Devices:-** Primary storage device often referred to as the main memory is the work area within the computer, where the data and instructions are stored. These devices are made up of Capacitors, Transistors and Silicon Chips. This makes access of data and instructions from these devices very efficient. The different kind of primary storage devices available are listed below:

- RAM (Random Access Memory)
- ROM (Read Only Memory)

**Secondary Storage Devices:-** The secondary storage device is a storage medium used for storing data, instruction and output for archival purposes, so that whenever any data or instruction is required in the future. Different kind of secondary storage devices available are Floppy Disk, Hard Disk, Optical Disk etc.

**Software** :- The non-tangible components of the computer system are referred as **Software**.

**Human ware** :- The personnel involved in using and maintaining the computer system form the Human ware. They are the trained computer professionals and can be a:

- **Hardware Engineer:** Who takes care of the various components of the computer.
- **Software Engineer:** Who manages and handles the software loaded onto the computer.
- **Programmer:** Who designs various types of the software required to work on the computer.
- **User:** Who is the actual user of the computer.

**Q.4 Describe the classification of Computer?**

**Or**

**Write a short note on the following.**

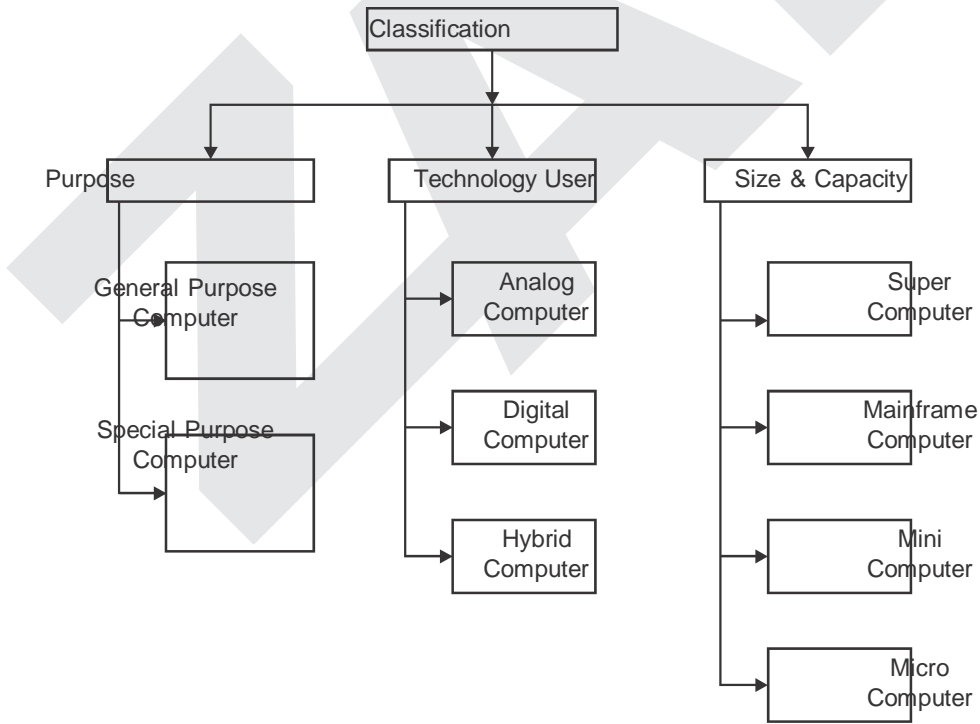
- i) Analog, digital, Hybrid Computers**
- ii) Super, Mainframe, Micro, Mini Computers**
- iii) General, Special Purpose Computers**

**Ans. Classification of Computers**

The classification of computers is based on the following three categories: - (1)

According to Purpose

- (2) According to technology used
- (3) According to size and capacity.



- (1) **According to Purpose** :- According to the utilization of compute for different uses, computers are of following two types:-
- (i) **General Purpose Computers** :- Computers that follow instructions for general requirement such as sales analysis, financial accounting, invoicing, inventory, management information etc are called general purpose computers. Almost all computers used in offices for commercial, educational and other applications are general purpose computers.
  - (ii) **Special purpose computers** :- Computers designed from scratch to perform special tasks like scientific applications and research, weather forecasting, medical diagnostic etc are called special purpose computers.
- (2) **According to technology used** :- according to the technology used, computes are of following three types :-
- (i) **Analog computers** :- Analog computers are special purpose computers that represent and store data in continuously verifying physical quantities such as current, voltage or frequency. These computers are programmed for measuring physical quantities like temperature, speed etc and to perform computations on these measurements. Analog computers are mainly used for scientific and engineering applications. Some of the examples of analog computers are given below:-
    - a) **Thermometer** :- It is a simple analog computer used to measure temperature.
    - b) **Speedometer** :- Car's speedometer is another example of analog computer. Where the position of the needle on dial represents the speed of the car.

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

#### Difference between Analog and Digital Computers

Analog Computers	Digital Computers
Analog Computer accepts, processes and generates continuous data (Air, Water, Distance)	The Digital Computer accepts, processes and produce discrete data (Air, Prices, Incomes etc)
Computation of Physical quantity	Computation of Numerical Digits
Accuracy of Computation is quite limited	Accuracy of Computation is more

Slow Systems	Fast Systems
Used in limited number of applications	Used in Unlimited number of applications
Outputs is Continuous	Output is obtained after complete computation is carried out.
Measure & Answer (How much)	Counts & Answer (How much)

**Hybrid Computers :-** Hybrid computers combine the technology of both analog and digital computers. These computers store and process analog signals which have been converted into discrete numbers using analog-to-digital converters. They can also convert the digital numbers into analog signals or physical properties using digital to analog converters. Hybrid computers are faster than analog computers but much slower than digital computers. It finds applications in special areas.

**For example :-** In a hospital, analog devices measure the heart functions, temperature and other vital signs of the patients. These measurements are converted into numbers and supplied to a digital computer. This is used to monitor the patient's vital signs and it gives an immediate signal if any abnormal reading is detected.

**According to size and capacity :-**

According to size and memory/storage capacity, computers are of following four types :-

**Super Computers :-** Super computers are the biggest and fastest computer, which is mainly designed for complex scientific applications. It has many CPUs (central processing units- main part of computer) which operate in parallel to make it as a fastest computer. These computers are very expensive and more powerful than mainframe computers. It is typically used for the following applications:-

- Weather forecasting
- Petroleum Exploration and production
- Energy Mgt
- Defense
- Nuclear Energy Research
- Weapons research and development
- Earthquake prediction (seismology)

PARAM and ANURAG are Super Computers produced by India. CRAY3, CRAY-XMP 14, NEC 500, are the another example of super computers.

**Mainframe Computer :-** Mainframe computers are very large and fast computers but smaller and slower than the super computers. These are used in a centralized location where many terminals (Input/Output devices) are connected with one CPU and thus, allow different users to share the single CPU. They have a very high memory (several hundred megabytes) and can support thousands of users. These computers are faster and more powerful than minicomputers. They are mainly used for following applications:-

- Railway and Airline Reservations
- Banking Applications
- Commercial Applications of large industries/companies

Some examples of Mainframe Computers are- MEDHA Series, DEC, IBM 3090, IBM 4381, IBM 4300 and IBM ES-9000.

**Mini Computer -** Minicomputers are medium scale, smaller and generally slower than mainframe computers. Like Mainframes, they have many terminals which are connected with one CPU and can support many users. The cost of minicomputer is very less as compared to mainframe. These computers are faster and more powerful

than microcomputers. These computers are suitable for medium class organizations, banks, data processing centers etc.

Some of the examples of minicomputers are PDP-1, IBM AS/400, and DEC MICRO VAX, IBM AS/400 is actually a midi computer (computer with performance between a mainframe and minicomputer) is becoming very popular among minicomputers.

**Micro Computers :-** It is a low cost small digital computer. This type of compute contains a microprocessor as its CPU, a memory Unit, Input and Output device. These are also called personal computer system. Maximum speed of micro computers is up to 1 million bytes per second. These types of computers can be used to play games, teach children math, make a painting, create net musical sounds etc.

They are very inexpensive families or home business can afford to buy a small system to use at home.

Micro-Computers can be classified into the following two categories:-

- Desktop Micro Computes
- Portable Micro Computers

**Desktop Micro Computers :-** Common type of Micro Computes, which can easily be accommodated on the top of a desk, is called desktop computers. The usage of such computers is quite common in offices, markets, homes etc.

**Portable Micro Computers :-** These Computes are small in size and look like a briefcase or a notebook. They are very light in weight and easy to carry from one place to another. They use batteries or electronic current.

Examples of these computers are :-

- Laptop Computers
- Notebook Computers