

## TYPES OF COMPUTER

In general, computers are of three types:-

### 1. Analog computer:-

It operates by measuring rather than counting. Here continuous quantities are used. Analog means establishing similarities between two quantities. Similarities are established in the form of current or voltage signal. Operation is done by measurement. The accuracy is directly related to the precision of its measurements. In analog computer the degree of accuracy depends upon the instrument and operation. Variable are electrical signal produced which is analogous to variable of physical quantities. Ex. Cartoon of man is analogous to his photograph. There is gradual type of change rather than in the form of steps.

A physical system is first converted into equation which is then converted into analog electrical signals. The arithmetic operations are performed electronically using small signal amplifier block. The answers are decoded into the mathematical form or in the form of graph. It set up mathematical analog of the problems in equation.

Ex-1 Speed of a car is measured by the speedometer

Ex-2 Electronic analog computer –controlling a flight simulator for training pilots

Ex.3 In the mechanical watch, the variables (i.e. time) is replaced by the rotation of the wheel in the watch.

### 2. Digital computer:-

The digital computer works directly on the variable of the problem. Mathematical expressions and results of mathematical calculation are represented by binary numbers (0&1). Rate of doing calculation is very high. They are faster than analog computer. Only addition was basically done by these computers. Operations like multiplication, division and exponentiation etc are first converted into addition and then calculated. It operates on inputs that are ON-OFF or incrementally stepped quantities represented by numeric digits. They are more accurate than analog computer.

Ex. In digital watch, the time is shown by actual counting of the minute and seconds.

#### a. Special purpose computer:

They are designed to handle specific problems. It is designed to process only to completely controlled automated manufacturing processes. They are used as simulators. A simulator is computer controlled device for training people under simulated or artificially created conditions.

Designed to solve a restricted class of problems or built to do a single job only like

Military operation: - to solve navigational problem, tracking of airplane & missiles

Process control operation: - in oil refinery, chemical manufacturing, steel processing

#### b. General purpose computer:-

They are very versatile. It is used to solve a variety of problems either scientific or commercial.

Pay roll, Banking, Sales analysis, Engineering design, Manufacturing & Scheduling etc

### 3. Hybrid computer

This uses both analog & digital computers. They have speed of analog computer and the accuracy of digital computers. Some portion of calculation is done in analog manner and rest of the calculation are done in digital portion of same computer  
Ex- modems.

Ex. ECG → An analog device measure patient heart beat, blood pressure and temperature these measures will be converted into digital form.

~~Others type of computers are~~

#### Classification of computer on the basis of memory size storage capacity

Computers used to be classification in the following categories on the basis of the size of their memory

1. **Super Computer (8Mb-15 GB)**
2. **Main frame computer (2Mb-128Mb)**
3. **Mini computer (4Mb-12Mb)**
4. **Micro computer (up to 4 Mb)**
5. **Embedded computer**

**1. Super computer-** Super computer are the fastest and largest computers available today having large memory and high processing speeds. This computer is five million time faster than the first computer i.e. ENIAC. In parallel processor of a super computer many computations can be performed simultaneously. It has the ability to recover automatically from failure (fault tolerance).

Complex scientific application like weather forecasting, problems concerning ballistic missiles, reactor design, climate modeling, large linear programming, and seismic data processing etc. that require large amount of data to be manipulated within a very short time are possible on this type of computer. First super computer ILLIAC-IV, PARAM, PACE.

**2. Main frame computer-** A main frame is a large, general purpose computer with a large memory and excellent processing capabilities. Since all its peripherals are mounted in large cabinet type of frames, these computers are called main frame computer. They are ideal for transaction processing, financial applications, airline reservations, and other applications. They are used by big companies, banks, government departments as their main computer. Main frame computers are kept in an air conditioned environment in a special computer room. They can be linked into a network with small departmental computers, micro computer or with each other, such a computer system can be used by 128 users simultaneously in time sharing mode.  
IBM's 308X-508 Series, Cyber 170, ICL-39, CDC 6600.

**3. Minicomputer** – Mini computer are at least five times faster than micro computers having CPU speed of approximately 500 instructions per second. Such systems are

## Computer Fundamental

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small yet powerful multi-user systems with excellent memory capabilities and processing speed.

Minicomputers have many uses in business and can be used for such applications such as payroll, invoicing and stock control. These computers are also used for real time systems like reservation or banking. Ex –ICL's series 39 level 20, 50, and 60.

**4. Micro computer** –Micro computer is the smallest type of computer available. It is called micro for two reasons one because it is miniature in size (micro means million times less than a unit quantity) and another because it uses microprocessor. Microcomputers are used as home computers for family or as personal computers by business executives or small business whose volume of data and processing speed requirements are small. Sinclair ZX-80, ZX-81 and ZX Spectrum are some of the popular examples of micro computers.

**5. Embedded Computer:-** It is embedded within the circuitry of appliances such as television, wrist watches and washing machines. These computers are preprogrammed for a specific task.