

Generation of Computer

According to the component and technology used in computer system they are divided into different generations as follows:

Generation	Year	Component used
1 st	1946-1955	Vacuum tube
2 nd	1956-1965	Transistors
3 rd	1966-1975	Integrated Circuits (IC Chip) with SSI and MSI technology
4 th	1976-1989	Microprocessor with LSI and VLSI technology
5 th	1989 to till now	Micro processor with ULSI technology

SSI(Small Scale Integration):- Integration of only about ten or twenty electronic component on a single Chip.

MSI(Medium Scale Integration):- A circuit with about 100 transistors fabricated on a single chip.

LSI(Large Scale Integration):- Integration of over 30,000 electronic components on a single chip.

VLSI(Very Large Scale Integration):- An electronic circuit with about 1 lakh transistors fabricated on a single chip.

ULSI(Ultra Large Scale Integration):- Integration of about 10 million electronic component on a single chip.

First Generation of Computer:- It is considered that the first generation of computer is related with the era of vacuum tube, when vacuum tube was the main component o the computer. Example of some first generation computers are ENIAC, UNIVAC, EDVAC, EDSAC etc.

The memory of these computers used electromagnetic relays and all data and instructions were fed into system from punched cards. The instructions were written inn machine and assemble language.

Characteristics of First Generation of Computers:-

- They were fastest calculating devices of their time.
- They were too bulky in size, requiring large rooms for installation.
- They used thousands of vacuum tube that emitted large amount of heat.
- Power consumption of these computers were very high.
- This machine had limited storage capacity.
- Needed more maintenance.

2. **Minicomputer:-** The term minicomputer is originated in 1960. Initially minicomputers were 8 bit and 12 bit machines but by 1970 almost all minicomputers were 16 bit machines. 16 bit minicomputer was more powerful machine which could be used in variety of applications and could support business applications along with scientific applications. The minicomputer was used as a multiuser system which can be used by various users at the same time. It allows 50 users to work at a time.

Gradually architectural requirement of minicomputer grew and a 32 bit minicomputer developed which called super mini computer.

Ex:- PDP -8, PDP-II, VAX -7500, HCL Daysis etc.

3. **Mainframe Computer:-** Mainframe computers are generally 32 bit machines or on the higher side. These are suited to big organizations to manage high volume applications. Mainframes are also used as central host computers in distributed system. It allows 200 users to work at a time.

The mainframes are used to support large Data Base Management System.

Ex:- DEC-1090, Cyber 170, IBM-360/370, etc.

4. **Super Computer:-** The upper end of the state of the art mainframes are the super computer. These are amongst the fastest machines in terms of processing speed and uses multiprocessing techniques, where a number of processors are used to solve a problem.

Super computer are mainly being used for weather forecasting, image processing, bio-medical applications, remote sensing etc.

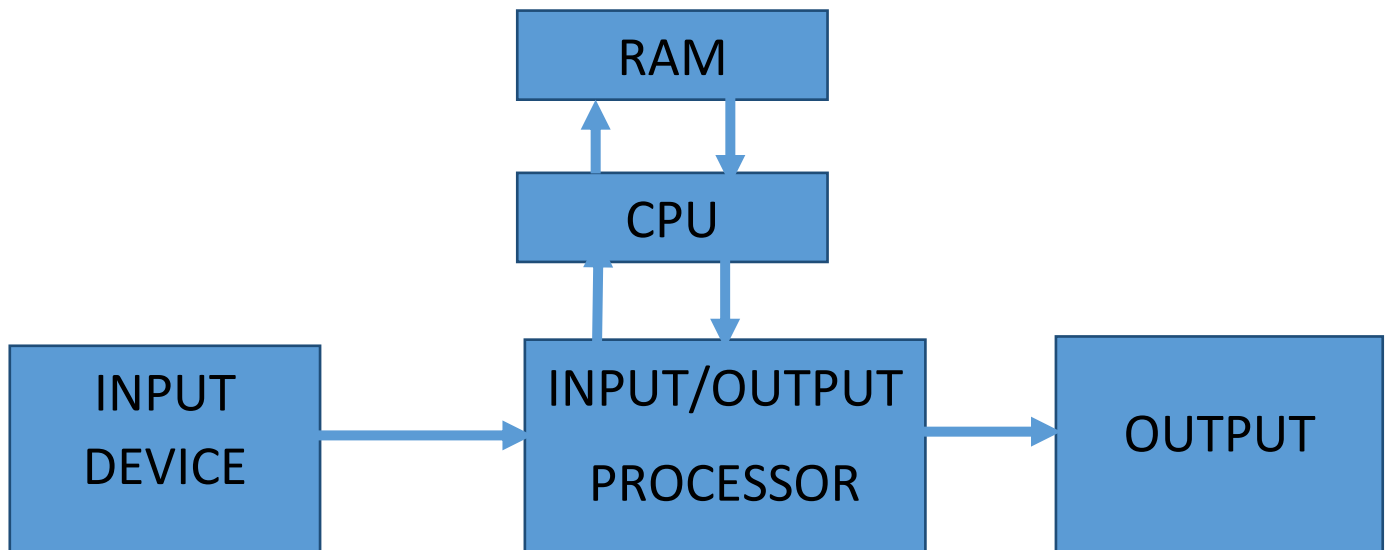
The word length of super computer is ranging from 64 bit to 128 bits

Ex:- PARAM 10000, ROBOT, CRAY, CRAY-2, NEX SY-2

	Super Computer	Main frame computer	Mini computer	Micro computer
CPU Speed	Very Fast	Fast	Moderate	Slow
Speed Measured in	Pico second	Nano second	Micro second	Milli second
CPU Base	Very large Multiprocessor	Large Multiprocessor	Multi processor	Single Processor
Storage	Very large	Large	Moderate	Small
Cost	Very costly	Costly	Medium	Cheap
No. of Users	Many(500)	Many(200)	Many(50)	Single
Processing	MUMT	MUMT	MUMT	SUMT

Hardware :- Hardware is physical component of a computer system. This is the actual machine that includes the mechanical, electrical and electronic equipment. Ex. Keyboard, Monitor, Scanner, Printer, Hard disk, Floppy disk etc.

The hardware of the computer is usually divided into three major categories (1) The Central Processing Unit which contains arithmetic and logic unit for manipulating data (2) A number of registers for storing data and (3) Control circuits for fetching and executing instructions.



BLOCK DIAGRAM OF DIGITAL COMPUTER

Software:- The software of the computer constitutes of the programs and instructions to be executed.

A program is a set of instructions that are arranged in a sequence that guides the computer to solve a problem. The process of writing a program is called programming.

A computer software can be broadly classified into two categories.

1. System software/program
2. Application software and program

1. System software:- System programs are designed to make the computer easier to use. An example of system software is operating system, which consists of many other programs for controlling input/output devices, memory, processor etc. C language is broadly used to develop system software. System

software performs one or more of the following functions.

- 1.Support to develop application software
- 2.Support in execution of application software
- 3.Monitors various hardware resources, such as CPU, memory etc.
- 4.Communicates and controls operations of peripheral devices such as printer, disk etc.

2.Application Software:- Application software is written to enable the computer to solve a specific data processing task. There are two categories of application software.

1. Pre written software package
- 2.User application program.

Ex of some application software are:- Word processing software, Spreadsheet software, Database software, Graphics software, Entertainment software etc.