Generation of Computers

First Generation Computers– (1946-1959)

The first-generation computers were used vacuum tubes as the electronic components. They occupied a very large space and performed computations in milliseconds. Machine languages are used.

Examples **–** EDSAC, EDVAC, UNIVAC, IBM-701, IBM-650.

Second Generation Computers – (1959-1965)

The second-generation computers replaced Vacuum Tubes with Transistors. They used assembly languages and batch processing operating system. Magnetic cores and magnetic tapes were used as storage.

Examples – IBM-1620, IBM -7094, CDC-1604, CDC-3600.

Third Generation Computers – (1965-1971)

The third-generation computers replaced transistors with integrated circuits (ICs). They performed computation in Nanoseconds. It used high-level languages like FORTRAN, COBOL, PASCAL, ALGO-68, BASIC was used. In this generation, remote processing, time-sharing, multi-programming operating system were used.

Examples - IBM-360 series, Honeywell-6000 series, PDP, IBM-370/168.

Fourth Generation Computers – (1971-1980)

The fourth-generation computers are used Very Large Scale Integrated (VLSI) circuits. Semi-conductor devices are used as primary memory. Magnetic disks are used as secondary storage. Problem-oriented fourth generation languages (4GL) are used. Multi-processing and multiprogramming operating systems are used.

Example – Apple series – I & II, IBM 4341, DEC 10, STAR 1000, PUP 11.

Fifth Generation Computers – (1980 - Present)

The fifth-generation computers use ultra large scale integrated (ULSI) chips that contain millions of components on a single chip. They are in the developmental stage which is based on the artificial intelligence. These computers can also respond to natural language input. Biochips will be used as memory devices and KIPS (Knowledge-based Information Processing System) architecture will be used.

Examples – Robots, Supercomputers.

Types of Computers

1. **Based on Operation**

- **Analog Computer** - An Analog computer stores data continuously in the form of physical quantities and perform calculations with the help of measures. It produces output in the formof a graph. They are used in the calculation of physical variables such as voltage, pressure, temperature, speed, etc.
- **Digital Computer -** A Digital computer is the most commonly used type of computer and is working with data represented in digital form, usually binary 0s and 1s. It can

perform faster and give more accurate results. They are extensively used for solving complex problems in the field of engineering & technology, design, research and data processing.

- **Hybrid Computer –** A Hybrid computer is a combined feature of Analog and Digital computers. In large industries and businesses, a hybrid computer can be used for logical operations as well as efficient processing of differential equations.

2. Based on Configuration

- **Micro Computer** – Microcomputers are small, inexpensive computer for personal use. They are popularly used at homes for playing games and surfing the Internet.
- **Mini Computer** - Minicomputers possess most of the features and capabilities of a large computer but are smaller in physical size. They are used as small or mid-range operating business and scientific applications.
- **Mainframe Computer** – Mainframe computers are expensive and large size computers and they are capable of supporting hundreds of users simultaneously. They are used for specific large- scale applications.
- **Super Computer** - Supercomputers are powerful, expensive and the fastest computers. They have architectural and operational principles from parallel and grid processing for performing billions and trillions of calculations per second. They are used for applications that require large amounts of mathematical computations like weather forecasting, fluid dynamics, graphic design etc.

  India launched 'Mihir' supercomputer recently to improve India's weather forecasting.

Particulars	Name of the Computer
First Super Computer in the world	Cray CDC 6600
Fastest Super Computer in the world	Summit by the USA
First Super Computer of India	PARAM 8000
Fastest Super Computer in India	Pratyush

3. Based on Utility

- **General Purpose Computer** - A general purpose computer can perform an extensive variety of operations. It can store and execute different programs in its internal storage. All mainframes, servers, laptop and desktop computers, smartphones and tablets are general-purpose devices.
- **Special Purpose Computer** - Special purpose computers are designed to solve specific problems. The instructions are pre-programmed permanently in the computer. It completely controlled by automated manufacturing processes. Example – Aircraft control system, Electronic voting machines etc.

4. Based on Mode of Use

- **Palmtop Computer** – Palmtop computers are small which can fit in the palm of a hand. The electronic pen is used to give an input. They have small disk storage and can be connected to a wireless network.
- **Laptop Computer** – Laptop computers are portable with less weight. It can be transported easily and used in temporary space such as Airplane, Meetings etc. They are designed for low power consumption and have an attached keyboard and a touchpad.
- **Personal Computer (PC)** - A personal computer is a cost-effective computer that is designed for a single end-user. PC is dependent on microprocessor technology, which allows PC makers to set the entire central processing unit (CPU) on a single chip.

- **Workstation** - Workstation (WS) is faster than Personal Computer. It is designed for a user or group of users with better multitasking capability, additional Random-Access Memory, Higher-speed graphics adapters and drive capacity.
- **Client and Server** – The server is a device that manages the sharing of network resources to the users. An Application server, File server, Virtual server, Mail server are some types of server. A client is the receiving end of the service which made by the server. It requests the server and gains access with the server.

Fundamentals of Computer

A computer system has four basic components.

Parts of a computer system

- **Hardware** - It represents the physical and tangible components of the computer (keyboard, mouse, monitor etc.)
- **Software** – It is a set of electronic instructions called programs that make the computer perform tasks.
- **Data** – It is a set of facts, which the computer stores and reads in the form of numbers.
- **Users** - Users are the people who make use of a computer to obtain certain results/ outcomes.

Mother Board – It is the main printed circuit board of a computer that carries the central processing unit (CPU) chip, Read Only Memory (ROM), Random Access Memory (RAM) and the basic input output system (BIOS) chip.