Chapter 4
Classification of Computers

Based on purpose:

- Specific purpose
- General purpose

Based on task:

- Analog Computer
- Digital Computer
- Hybrid Computer

Based on Task (1)

Analog Computers:

- The computer that work with the natural phenomena and physical quantities like electrical potential, fluid pressure or mechanical motion.
- Specially used in scientific work, medical and industrial field.
- Examples: Thermometer, Speedometer, etc..

Features of Analog Computer:

- It is specific to the task so we cannot use it for multiple applications.
- It works on continuous data and gives continuous output.
- It works in real time and has no storage capacity.
- It gives output in form of graph, signals, table, etc.

Based on Task (2)

Digital Computers:

- A computer that works with digital value 0 and 1, where 0 is OFF and 1 is ON.
- Specially used in scientific work, medical and industrial field.
- Examples: Thermometer, Speedometer, etc..

Features of Digital Computer:

- It works on the discontinuous or discrete data.
- It is applicable for a general purpose, so this is very versatile for an application.
- It is based on 0 and 1.
- It is faster and higher accuracy and reliable than the analog system.
- It has storage section also.

Based on Configuration (1)

Supercomputer:

- Supercomputers are the largest, fastest and most expensive types of computers.
- They can support more than a hundred users at a time.
- These machines are capable of handling the massive amount of calculations that are beyond the human capabilities, i.e., the human is unable to solve such extensive calculations.
- They have large memory capacity and very high processing speed.
- They were used initially in applications related to national security, nuclear weapon design, and cryptography. But nowadays they are also employed by the aerospace, automotive and petroleum industries.
- These machines have multiple processors for performing complex scientific calculations.
- They use their significant processing power to solve any difficult problems such as predicting the weather, weapon research and designing aircrafts.
- Examples: CRAY-XMP-14, CRAY-I and CYBER 170/730.

Based on Configuration (2)

Mainframe Computer:

- After processing massive amount of data, mainframes continue to perform the task accurately. No malicious attacks.
- Mainframes can prevent huge loss by detecting problems in early stages.
- Mainframes have higher capacity of processing levels to handle huge amount of data at reliable speeds.
- These computers have high storage capacity because they process large volume of data and they have the capability of storing the data.
- Mainframe system allows centralized computing of operations.
- Handles and manages large number of users.
- Mainframe systems can run multiple operating systems at a time and thus we can say it is not a single computer.
- Examples: IBM 4300 series, ICL 39 series and IBM 1401.

Difference between mainframe and supercomputers

Besides raw speed, one big difference between a supercomputer and a mainframe is that a mainframe serves many people at once or runs several programs concurrently, whereas a supercomputer funnels its power into executing a few programs at high speeds. Mainframes are mostly used for large data storage and manipulation tasks, not for computationally-intensive tasks.

Mainframe Computers	Supercomputers
It is a large computer which is used as a large server and for intensive business applications.	It is an extremely fast compute capable of performing hundreds of millions of instructions per second.
Its components are: multiple input/output devices, magnetic disk, tape storage and many banks of internal storage.	A supercomputer usually includes more than one CPU.
Ex: IBM ES/9000	Ex: cray Supercomputer
It can typically run a variant of linux as an operating system.	It can run many types of operating system.
It can do millions of instructions per second.	It can do floating point operations per second.
It is used for bulk data processing like consumer statistics, ERP and financial transaction processing.	It is used for nuclear weapon development, weather forecasting, host processes for a local computer.

Based on Configuration (3)

Mini Computer:

- A minicomputer is a computer which has all the features of a large size computer, but its size is smaller than those. A minicomputer is also called as a mid-range computer.
- Its size is smaller than a mainframe or supercomputer.
- It is less expensive than mainframe or supercomputer.
- It is less powerful than mainframe or supercomputer and more powerful than microcomputers and workstations.
- It can do several tasks at once.
- It can be used by many people at one time.
- It is used by small enterprises.
- They hold a charge for a long time.
- They are also used for scientific computations.
- Used for database management.
- Examples: VAX 7500, Digital PDP-II and HP 300, IBM's AS/400e, Honeywell200, TI-990.

Based on Configuration (4)

Micro Computer:

- A Microcomputer is generally the purpose of processing system functionally etc. It is the smaller to any other large system.
- Micro Computer is the self contains units and usually design for use by one person at a time.
- Have a limit input and output device.
- Small size and low cost.
- Have a low storage capacity.
- Limited range of software can be used.
- One user at a time.
- Easy to use.
- Low computing power.
- Commonly used for personal application.

Types of Micro Computer (1)

Desktop Computer:

- Desktop Computer is a personal computer. This computer is heavyweight it is used a one location and one person work at a time.
- The main part of desktop computer is LCD Screen, CPU, Keyboard, Mouse, and UPS. The combination of all parts is called Desktop Computer.

Laptop Computer:

- Laptop is a small size of the computer system. Laptop is a more powerful computing device and laptop is a multi-tasking computer.
- We can carry very easily because this is lightweight. We can do many types of work with the help of laptop.

Types of Micro Computer (2)

Smart Phone:

- Smartphone is a cell phone that functions like a computer. A new generation Smartphone build is very advanced and high technology. The New generation Smartphone is Multi-purpose and Multi-tasking phone.
- We can do send Email, Listing Music, take pictures, and use Face book and other social media platform.

Notebook:

- Notebook computer just like a Personal Computer. This Notebook is lightweight easy to carry travel to one place to another place we can easily fit to your briefcase.

Types of Micro Computer (3)

Tablet:

- Tablet Computer just like a Mobile Device but bigger than Smartphone and smaller then Notebook Computer.
- Just like Totally Smartphone feature like Touch screen display, power full Battery Backup and we can calling and receiving call and click pictures and anything.

Palmtop:

- Palmtop computer is an ultra-portable computer that literally fits in your palm. It uses a pen to enter information.
- It uses small cards to store programs and data.
- It has to be plugged into a main computer for other uses.
- It is generally used for simple applications such as personal organizations and note taking.

Based on Task (3)

Hybrid Computers:

- Hybrid computer is a computer that employs both digital and analog quantities.
- Combination of both analog and digital computer system.
- It works with continuous and discrete value.
- Transfer data from analog to digital and digital to analog and vice-versa.
- Used in ICU, Jet Planes and other data analysis terminals.

Features of Hybrid Computer:

- Expensive system.
- Designed for special purpose so it is not versatile.
- It works on discrete and continuous data.
- It has limited storage.
- It is complex than another computer system.

Based on Brand (1)

IBM PC:

- It stands for International Business Machine Personal Computer and developed by IBM Company.
- It is commonly known as the IBM PC.
- IBM Company is the first company that manufactured computer.
- It was founded by a team of engineers and designers.
- It has given the new technology based on Charles Babbage principal.
- Examples: Original IBM PC, XT and AT.

Based on Brand (2)

IBM Compatible:

- The term compatible means 'Able to exist together and successfully'.
- IBM compatible computer system is assembled form of different components developed by different companies.
- It is based on IBM principle that can use standard hardware and software designed for the IBM PC and its own additional features.
- Examples: IBM PC compatible computers are those generally similar to the original IBM PC, XT, and AT.

Based on Brand (3)

Apple/Macintosh Computer:

- Computers developed by Apple Industry are apple computers.
- This used a standard microprocessor chips.
- The chip enabled them to put together a complete computer, a keyboard for input, and processors in memory and screen all in small box.
- This company was established in 1976s.
- Apple II is known as personal computer.
- IBM PC and its compatible version have largest scope in PC market.
- Most of the users of the world have IBM PC than these computers but Apple has its own users, mostly people interested in graphic works, documentation and publishing sectors.

Based on Model

XT Computer:

- Stands for Extra Technology Computer.
- It cannot support GUI based operating system.
- Its processing speed is 4.77 MHz and Intel 8080, 8086, 8088 series of microprocessors is used.

AT Computer:

- Stands for Advance Technology Computer.
- It supports GUI based operating systems.
- Its speed is 2 GHz and word length 64 bits.
- Its processors are Intel series of 80286, 80386, Pentium II etc.

PS/2 Computer:

- It is a laptop computer which is rechargeable and battery-based system.
- It is operated with OS/2 operating system.