Chapter 2: Classification Of Digital Computers

Computer Systems are classified as Microcomputers, Minicomputers, Mainframes and Supercomputers.

1. Micro Computer

- Are the smallest computer systems on the basis of size
- Are called micro computer because microprocessor is used as its CPU which are very small
- Are also called PC(Personal Computers) or home computers
- Smallest are laptop, notebook and palmtop computers.
- Examples: IBM Pentium PC, Apple/Macintosh etc

Characteristics:

- Smallest in term of size
- Speed and cost is also less as compared with other super, mainframe and mini computers.
- Since a single user system is used, storage devices and memory are smaller size.

Microcomputers are of two types: Personal Computers and Workstations

1.1 Personal Computers (PCs)

It can be defined as a small, relatively inexpensive computer designed for an individual user. In price, personal computers range anywhere from a few hundred pounds to over five thousand pounds. All are based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip. PCs are used for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. At home, the most popular use for personal computers is for playing games and recently for surfing the Internet.

Personal computers first appeared in the late 1970s. One of the first and most popular personal computers was the Apple II, introduced in 1977 by Apple Computer. During the late 1970s and early 1980s, new models and competing operating systems seemed to appear daily.

1.2 Workstation

It is a type of computer used for engineering applications, desktop publishing, software development, and other types of applications that require a moderate amount of computing power and relatively high quality graphics capabilities. Workstations generally come with a large, high-resolution graphics screen, at large amount of RAM, built-in network support, and a graphical user interface. The most common operating systems for workstations are UNIX and Windows NT. Like personal computers, most workstations are single-user computers. However, workstations are typically linked together to form a local-area network, although they can also be used as stand-alone systems. The most powerful workstations are called supermicros.

N.B.: In networking, workstation refers to any computer connected to a local-area network. It could be a workstation or a personal computer.

1.3 Portable Computers

Computers are becoming smaller yet more powerful. Portable computer are gaining rapid popularity and can be easily carried around. There are three categories of portable computers viz. **Laptops or Notebook PCs, Subnotebooks and Personal Digital Assisstants.**

Laptop

SubNotebook

PDA

2. Minicomputers

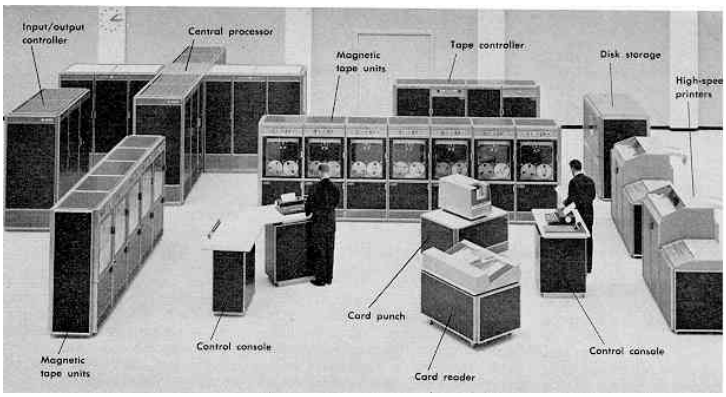
- Are medium sized computers on the basis of size
- A centrally located server or CPU is connected with more than 50 terminals.
- Examples: Prime 9755, Vax 36 etc.

Characteristics:

- Medium size
- More than 50 terminals and large capacity storage devices than micro computers.
- Used for general purpose.
- Used in medium sized organizations and corporation for their database administration.

3. Mainframe Computer

- Are the largest types of computers
- Are used in large organizations like insurance companies, banks where people need frequent access to the same data, which is usually organized into one or more huge databases.



- Examples: IBM 1401, ICL 2950/10 , IBM S/390 etc

Characteristics:

- Very large in size.
- Central processor , central administration
- More than 100 terminals, large capacity storage devices used
- Fastest and more expensive system.
- Used by large agencies and government for large scale data processing.

4. Super Computer

- Are the most sophisticated and powerful computers.
- They are large in size
- These systems are built to process he amount of data and the fastest supercomputer can perform more than 1 trillion calculations per second.
- Some super computers are Cray T90, Super Cray, Cyber 205 and Super SXI.
- These can house thousand of processor
- These speed and power make supercomputers ideal for handling large and highly complex problems that require extreme calculating power.
- Used in weather forecasting, nuclear fusion, study of DNA structures.
- Can cost tens of millions of dollars and consume enough electricity to power dozen of homes.
- They are often housed in protective rooms with special cooling systems, power protection and other security features.
- Because of their size and cost, super computers are relatively rare, used only by large corporations, universities and government agencies that can afford them.
- Super computing resources are often shared to give researchers access to these precious machines.

5. Network Computers

- Is a less power full version of personal computers, with minimal processing power, memory and storage
- Network computers are designed to be connected to a network, a corporate intranet or to the Internet.
- The Network computers relies on the network for software and data storage and many even use the network's server to perform some processing tasks.
- If you want to use only the Internet, for example, or if your job involves data entry, then you may not need the processing power, memory and storage capacity of a fully equipped PC.

A fast simultaneous look to the different categories of computer is as follows.

Type of computer	Word length (bit)	Speed (insth/sec)	Internal memory(KB)
Super computer	64 and above	Above 1,00,00,000	8,000 to 64,000
Mainframe	32 to 64	10,00,000 to 1,00,00,000	2,000 to 16,000
Minicomputer	16 to 32	5,00,000 to 10,00,000	250 to 2,000
Micro computer	8 to 16	80,000 to 1,00,000	32 to 640

