

Types of Memory

There are two types of Memory: PRIMARY MEMORY & SECONDARY MEMORY.

- As mentioned earlier, the memory in the CPU is the Primary memory or Primary Storage.
- Secondary Memory or Auxillary Memory or External Memory is not located inside the CPU. It can store data permanently. It is nonvolatile. They act as both Input & Output devices. The commonly used secondary storage devices are Floppy Disks, Magnetic disk, CD-ROM etc.

A Secondary Storage device can store the data permanently. It is not a volatile device. It can store raw information, processed information and also instructions in the form of programmes. Without these the life with computers would not have been all that easy.

They come in different forms:

- ① Disks : These come in two forms, Magnetic media and Optical media. Concentric circles called as tracks, which are divided, into sectors are the physical format of a disk. The information is stored in the form of bytes in clusters in the sectors. Each sector and cluster has an address, which is entered by the system automatically in the File Allocation Table (FAT) in the preliminary tracks of the disk. With this the device becomes a Random Access Device. i.e. accession to information is very fast. If the FAT, by any reason is damaged the data cannot be accessed.
 - (a) Floppy Disks: A thin pliable plastic material film like disk coated with magnetic substance (magnetic oxide) and protected by a square shaped antistatic material cover. These are available now in:

Physical size: 5 ¼" comes in two capacities DSHD and DSDD. Double Side High Density floppy can store upto 1.2 MB and in a Double Side Double Density floppy upto 360 KB.

3 ½ " (mini diskette) this can store upto 1.44 MB.

- (b) Hard Disks: These are now available in Giga Bytes, Tera Bytes etc. It is a small hermetically sealed dust-proof container having aluminum disks coated with magnetic substance placed one above the other on a central spindle and has several read write heads each per track in the Fixed-head type and one head per surface in the Moving head type.

This device functions at a very high speed and is useful in fast data and instruction transmission to the Memory Unit as well as to store back from the Memory Unit. The data stored could be retrieved amended and stored back, it could even be erased. This is a very popular storage media because of its speed and storage capacity.

- (c) Compact Disk Read Only Memory (CDROM): This device, of late has become very popular. This is an Optical Storage medium of 12 c.m. diameter, with capacity upto 650 MB. This is basically a read only memory, that means you can't erase or over-write on it. Mostly used to store installation software/programmes, encyclopedia, dictionary, historic data, music, movies etc. which are not supposed to be over-written. The data is encrypted on the disk through a laser beam.

- (i) **Magnetic Tapes**: The tape is made of a polythene material and coated with magnetic substance. It is a sequential access device since there is no random access concept present. To reach a piece of information the read write head has to pass through the entire tape before its position. Normally used in historic data storage.

- a) Spool tapes: One-inch magnetic tape on a big spool. Very unwieldy and slow, hence these are not very popular these days.

b) Cartridge tapes: It is of capacity of over 100 MB. It is a compact cassette typed device. It is much faster than the Spool tapes, convenient, as they are portable.

(ii) **ROM Chips**: these are also Integrated Circuits. These are contrary to RAMs. These devices can store a limited amount of instructions permanently. The Process of writing instructions, onto these, is called burning in of instructions. The manufacturer depending on the computer or the user's requirement does this. These give the preliminary instructions to the CPU directly when the computer power is switched on viz. BIOS for basic input output system.

- a. Read Only Memory (ROM)
- b. Programmable Read Only Memory (PROM)
- c. Erasable Programmable Read Only Memory (EPROM)

What is cache memory?

Cache memory is random access memory (RAM) that a computer microprocessor can access more quickly than it can access regular RAM. As the microprocessor processes data. It looks first in the cache memory and if it finds the data there (from a previous reading of data), it does not have to do the more time-consuming reading of data from larger memory.