

B) Secondary Storage (Backing Storage)

Secondary storage is designed to store very large amounts of data for extended periods of time. Secondary storage can have memory capacity of gigabyte or more; only small portions of the data are placed in primary storage at any one time.

Secondary storage **has the following Characteristics:**

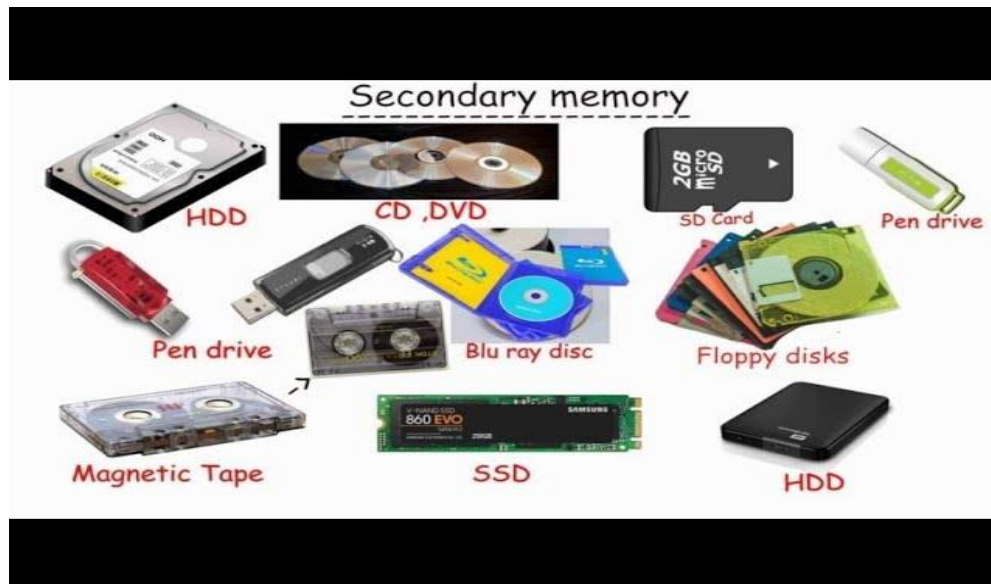
- 1- it is nonvolatile
- 2- it takes much more time to retrieve data from secondary storage than it does from RAM
- 3- it is much more cost effective than primary storage
- 4- it can take place on a variety of media each with its own technology, as is discussed below:

a) Magnetic tape

b) Magnetic disc

c) Magnetic diskette (floppy disc)

d) Optical discs



A- Features of the Magnetic tapes

- 1- it is 1/4 inch wide and 300, 1200, 2400, or 3600 feet long
- 2- it has a plastic base, coated with magnetic material on one side.
- 3- data is stored in tracks; there are 7 or 9 tracks (depending on the tape unit) which run the length of the tape. The data is recorded so that one character is recorded across the 7 or 9 tracks.
- 4- the density of recording can vary between 2
- 5- it is a serial access device.
- 6- the tape is reusable i.e. it can be overwritten.
- 7- the same tape can be used for input and output. The tape can be write-protected.

B-Features of magnetic disks (hard disks)

1. disks are randomly accessed
2. disks are of size and shape similar to a long-playing record
3. The surfaces of each disk are of magnetic material.
4. Each disk surface is divided into a number of concentric tracks (typically 200).
5. Disks are placed on a pack and each pack may have 6 or 11 disks and is used as a single unit.

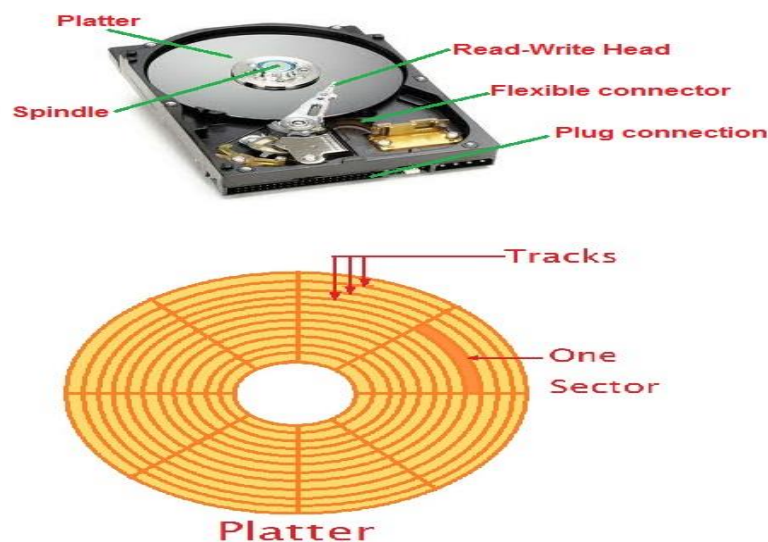
6. The latest models of disk packs can store many hundreds of megabytes of data (i.e. hundreds of millions of characters).

Hard Disk Performance: Several basic parameters determine the performance of a given hard disk drive. A seek operation is the movement of the read/write head to the desired track.

1- Seek Time: A seeks time is the movement of the read\write head to the desired track. The seek time is the average time for this operation to be performed. Typically, hard disk drives have an average seek time of several milliseconds, depending on the particular drive.

2- Latency Time: The latency period is the time takes for the desired sector to spin under the head once the head is positioned over the desired track. Latency time depend on the constant rotational speed of the disk.

The sums of average seek time and the average latency time is the access time for the disk drive.



C-Features of floppy disks

1- apliable disk permanently sealed with a rigid, protective plastic envelope.

2- They have random access facility.

3- Data are stored in concentric tracks

4- the floppy disks sizes are 8, 5 1/4, 3 1/2 inch.

5- storing capacity of 3 1/2 inch disks is 1.44 megabytes i.e. one million four hundred thousand characters.



D-Features of optical disks

1- this is a random access device.

2- Data is written into the disk by burning a permanent pattern into the surface of the disk by means of high precision laser beam.

3- data is read by using the laser at lower intensity and detecting the pattern reflected from its beam by the surface of the disk there are many types of optical disks:

1- compact disk read-only memory (CD-ROM) storing devices feature high capacity, low cost.

It has become popular for recorded music as well as information (such as books) a variant is the digital video disk (DVD), used for movies.

2- Write once, read many (WORM) disk can be written.

-3 rewritable CD is a less common technology that allows the disk to be written upon and written up to 1.000 times.



Why format a disk?

- Originally when you purchased a pack of floppy disks (diskettes), you had to format them prior to use. Today, most floppy disks are supplied preformatted.

Formatting a disk is like putting lines on a blank sheet of paper, so that you can write on that paper. Formatting allows the operating system (i.e. Windows) to read information stored on the disk and also to store information on the disk.

The manufacturer will have formatted your hard disk for you prior to delivering the PC to you. You should be very careful about formatting a disk, as any data on the disk will be lost after re-formatting. You would not normally format a hard disk; this should only be done by a qualified person.