Department Of Computer Application (BBA)
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BCA Sem - 2

Memory System

Secondary Memory

Primary memory has limited storage capacity and is volatile. Secondary memory overcome this limitation by providing permanent storage of data and in bulk quantity. Secondary memory is also termed as external memory and refers to the various storage media on which a computer can store data and programs. The Secondary storage media can be fixed or removable. Fixed Storage media is an internal storage medium like hard disk that is fixed inside the computer. Storage medium that are portable and can be taken outside the computer are termed as removable storage media.

Fixed Storage

A Fixed storage is an internal media device that is used by a computer system to store data, and usually these are referred to as the Fixed Disks drives or the Hard Drives.
Fixed storage devices are literally not fixed, obviously these can be removed from the system for repairing work, maintenance purpose, and also for upgrade etc. But in general, this can't be done without a proper toolkit to open up the computer system to provide physical access, and that needs to be done by an engineer.
Technically, almost all of the data i.e. being processed on a computer system is stored on some type of a built-in fixed storage device.

Types of fixed storage:

- Internal flash memory (rare)
- SSD (solid-state disk) units
- Hard disk drives (HDD)

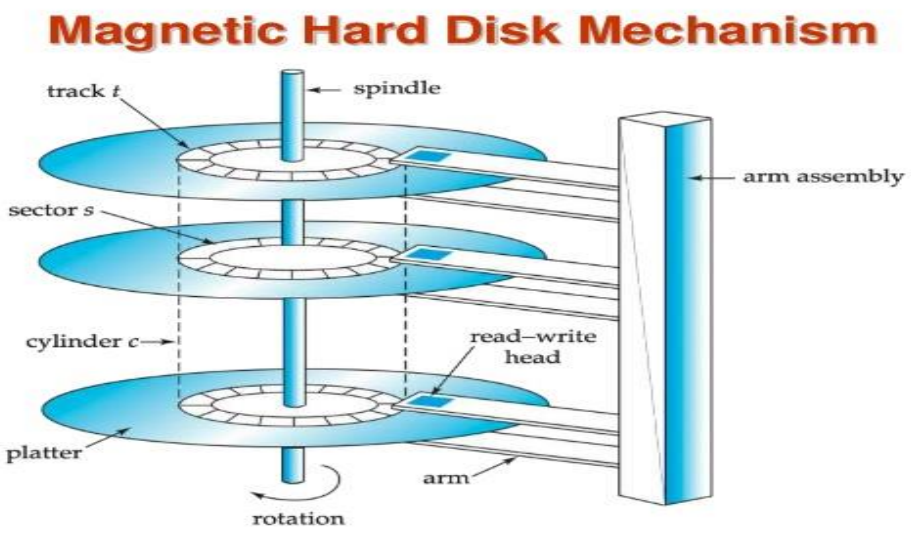
Hard disk :

The hard disk drive provide permanent storage in the computer where all programs and data are stored for long time period. It the fixed memory system where software are installed to provide basic application facility to computer .

The Hard disk provides relatively quick access to large amount of data stored on electromagnetically charged surface or set of surfaces.

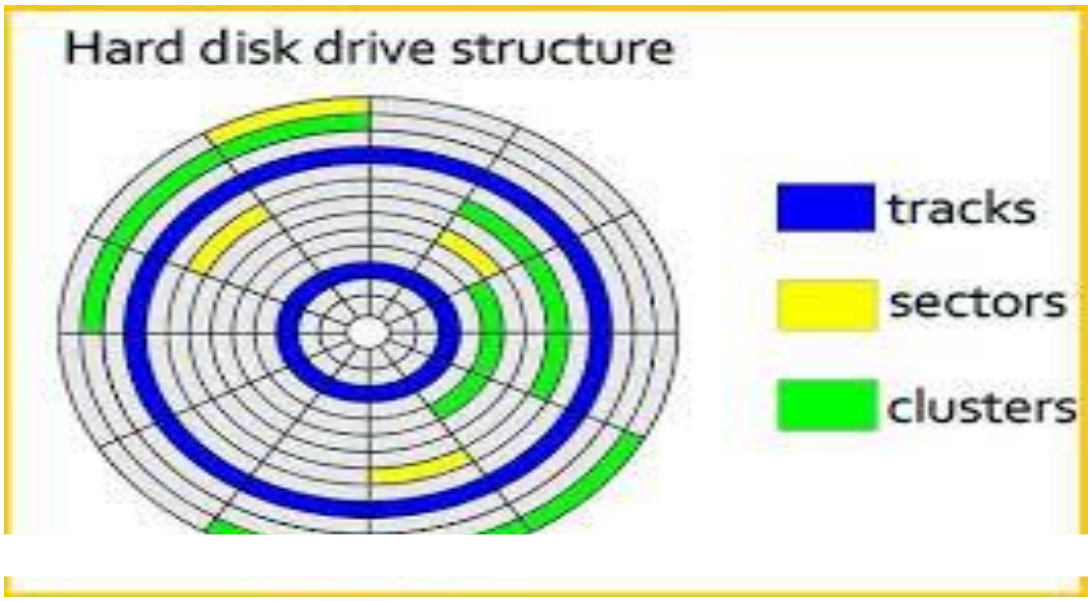
A hard disk is basically a set of disks, stacked together that has data recorded electromagnetically in concentric circle known as tracts.

A single hard disk includes several platters that are covered with magnetic recording medium. Each platter requires two read/write head one for each side. The internal construction can be shown as :-



NOTE: Diagram is schematic, and simplifies the structure of actual disk drives

The data is stored on the surface of the platter in sectors and tracks as shown above. tracks are concentric while sectors are pie-shaped wedge on the track.i.e tracks are divided into a number of segments known as sector. Each track and sector have equal data storage . it may be shown as :



We have two type of mechanism in construction

1. Fixed head moveable plate hard disk
2. Moveable head fix plate hard disk

During accessing the disk , plate in hard disk drive spin with the help of spindle and motor. Rotation of the plate decide the rate of data accessing generally 7200 rpm 5400 rpm hard disk is popular in the market.

The R/W head does not touches the disk platters instead just barely skims them, supported by a cushion of moving air that is generated by the spinning of platters.

The performance of the disk depends on access time which is time required to read and write on the disk.

Seek time :- this is time taken to position the R/W head over the appropriate cylinder(tracks and sector)

Transfer time :- time taken by the R/w head to Read/Write data on the disk tracts and sector

Rotational delay:- this is the time taken to bring the target sector to rotate under the R/W head.

Seek time and rotational delay combinedly is known as latency time .

Advantage :-

1. Magnetic disks enable random access of data which is useful for all type of real world application.
2. It can be used as shared device in multiuser environment.
3. Data can store both online and offline
4. It can store large amount of data .
5. Cost of data storage is very low.
6. Data transfer rate of magnetic hard disk is very high in comparison of other magnetic media.

Disadvantage :

1. They must be stored in dust free environment.
2. They are larger in size and heavier in weight in comparison of other storage device.

Solid State Storage Devices (SSD) :

It were developed by Storage Tek Company in 1978. In 1983 sharp 5000 laptop computers developed SSD 0f 128 KB. In 1995 M-System developed SSD on Flash based memory.

SSD can be defined as the device that contains all the property of hard disk device to store the data and use solid –state memory which has no moving part. It do not use magnetic and optical medium to store data . these memory are semiconductor memory .

Structure : The structure of SSD define as non volatility , low consumption and high reliability of DRAM and NAND flash memory. So, we can say that it is the type of DRAM. It is generally designed to store data and program in portable computer like Laptop , notebook, Smart devices that consume low power and access data with very high speed.

Advantage :

1. It has better performance in terms of processing, searching ,and accessing.
2. Low power consumption and low heat generation.
3. It has high reliability.
4. It has small dimension
5. small form factor.

Disadvantage :

1. It is costly memory
2. It has low capacity
3. Low writing speed
4. Low storage density
5. Affect by power loss, data can be damaged due to power failure .

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