**Secondary Storage**

* The Secondary storage devices which are built into the computer or connected to the computer. Mainly it is used to store the data permanently in the computer. It is non-volatile, so it permanent store the data even when computer is turned off.
* Because we all have many data which we don’t use on regular basis so we store them in secondary storage, so we can use the data whenever we need like images, audio, video, documents etc.
* So as you all know that primary memory has limited capacity, so it is important to have another form of memory which that has a larger storage capacity. It can store substantial amount of data.
* CPU can’t directly access the secondary memory, first the information of secondary memory or data is transferred to the main memory(which is primary memory) than the CPU can access it.
* It is also known as external memory or auxiliary memory. It can store large amount of data in range of gigabytes to terabytes.

**Distinguishing Characteristics**

**of Secondary Storage**

**Storage Capacity:-** Maximum amount of data which data storage medium can hold.

**Access Speed:-** How quickly the required data is retrieved by the storage devices.

**Access Method:-** What particular mechanic/algorithm is used to locate specific data at a particular place on a storage medium.

**SASD:-** Sequential Access Storage Device

**DASD:-** Direct(Random) Access Storage Device

**Portability:-** Readily and easily transported from one computer system to another.

**Fixed Storage**

* Fixed storage is generally known as fixed disk drives or hard drives.
* Fixed storage does not mean that you can not remove them from the computer system, you can remove the fixed storage device for repairing, for the upgrade, or for maintenance etc. with the help of an expert or engineer.

**Hard Disk Drives**

* This is the most common type of storage device that is used in almost all the computer system. Every computer contains at least one hard drive to store the data and software. In Windows Operating System, the hard drive is known as C Drive and in MAC it is simply called as the Hard Drive. The Desktop Computer which have external hard drives are used for backup purpose or additional storage.
* It permanent stores large amount of data, as it is non-volatile storage device and is located within the drive unit on the computers motherboard and comprises one or more platter packed in an air-sealed casing. The data is written on the platters by moving a magnetic head over the platters by the spin.

Each platters consists of a number of invisible circles and each circle having the same center called traks.

Hard drive is made up of series of circular disks arranged on over the other almost 42 inches a spindle.

Disks are made of non-magnetic material like aluminum alloy and coated with 10-20mm of magnetic material

Standard Diameter of disks is 14 inches and then rotate with the speed of 4200rpm for PC to 15000 rpm for servers.

A magnetic reader are is used to read data from and write data on disks. A circuit based, which is called the disk controller or interface based is present on the back of a hard drive. It allows the hard drive to communicate with the computer system.

* The first personal computer contains a hard drive of less then 1 megabyte, while modern computers contain a hard drive of 1 terabyte.

**Solid-State Drives**

* Unlike a hard drive, it does not have moving components so it offers many advantages, such as faster time, noiseless operations, less power consumption and more.
* SSD do not have a physical disks, There are no moving mechanical components in SSD. This makes them different from the conventional electromechanical drives such as hard disk drives(HDD) or floppy disks, which contain movable read/write head and spinning disks
* As compare to HDD, its cost is very high and HDD cost is cheaper, there is the reason of its fastness, because fast products cost more you know like: Apple Phones and MacBook’s etc.
* SSD store and retrieve data via using only electronic circuits. Data is saved or store to a pool of NAND Flash and NAND itself made up of floating gate transistors.
* It comes with the capacity of 250GB, 500GB and 1TB, Mostly MAC laptops have 1 TB SSD.

I think mam and all my friends listening us so they will have a query, so I am assuming that and giving answer of 2 major queries

Now the Questions arises,

Q. Can we use both SSD and HDD?

Ans:- Yes, we can use both SSD and HDD in laptops, Mostly people recommend to use SSD as primary and HDD as secondary.

Now one more Question arise

Que. How do we know we have both SSD and HDD in our laptops?

Ans:- Simply press the Window Key + R key on keyboard shortcut to open the Run Box, type **dfrgui** and press enter.

When the disk defragmenter window is shown, look for the media type column and you can find out which drive is Solid State Drive(SSD) and which one is Hard Disk Drive (HDD).

**Removable Storage**

* Removable storage is generally known as disks drives or external drives.
* We can easily remove them from the computer system while the computer system is running. Removable storage device are portable so we can easily transfer data from one computer to another.
* Also, removable storage devices provide the fast data transfer rate associated with storage area network(SANs).