

Course Name: O Level (2nd Sem)

Subject: ITTNB

Topic: Secondary Memory

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Secondary Memory

This type of memory is also known as external memory or non-volatile. It is slower than the main memory. These are used for storing data/information permanently. CPU directly does not access these memories, instead they are accessed via input-output routines. The contents of secondary memories are first transferred to the main memory, and then the CPU can access it. For example, disk, CD-ROM, DVD, etc.

1. Magnetic storage media:

Magnetic media is coated with a magnetic layer which is magnetized in clockwise or anticlockwise directions. When the disk moves, the head interprets the data stored at a specific location in binary 1s and 0s at reading. Examples: hard disks, floppy disks and magnetic tapes.

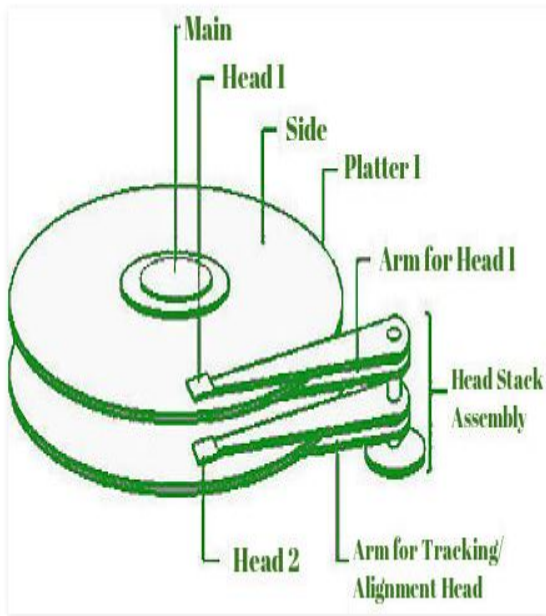
Floppy Disk: A floppy disk is a flexible disk with a magnetic coating on it. It is packaged inside a protective plastic envelope. These are one of the oldest type of portable storage devices that could store up to 1.44 MB of data but now they are not used due to very less memory storage.



Hard disk: A hard disk consists of one or more circular disks called platters which are mounted on a common spindle. Each surface of a platter is coated with a magnetic material. Both surfaces of each disk are capable of storing data except the top and bottom disk where only the inner surface is used. The information is recorded on the surface of the rotating disk by magnetic read/write heads. These heads are joined to a common arm known as access arm.

Hard disk drive components:

Most of the basic types of hard drives contains a number of disk platters that are placed around a spindle which is placed inside a sealed chamber. The chamber also includes read/write head and motors. Data is stored on each of these disks in the arrangement of concentric circles called tracks which are divided further into sectors. Though internal Hard drives are not very portable and used internally in a computer system, external hard disks can be used as a substitute for portable storage. Hard disks can store data upto several terabytes.



2. Optical storage media:

In optical storage media information is stored and read using a laser beam. The data is stored as a spiral pattern of pits and ridges denoting binary 0 and binary 1. Examples: CDs and DVDs blue ray disc.

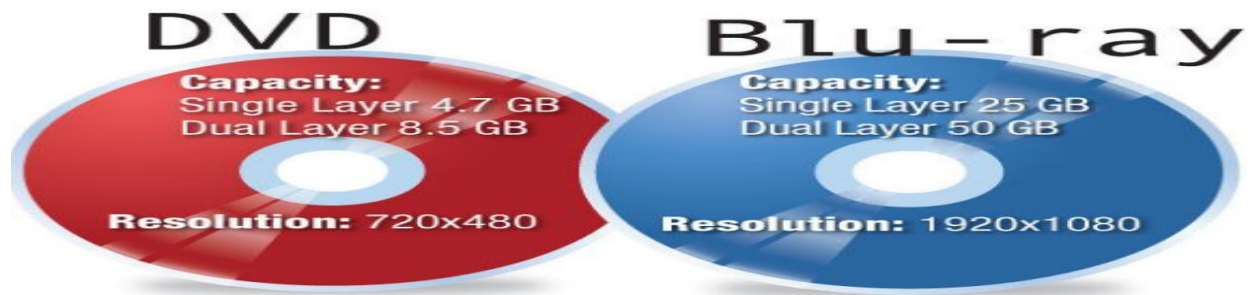
Compact Disk: A Compact Disc drive (CDD) is a device that a computer uses to read data that is encoded digitally on a compact disc (CD). A CD drive can be installed inside a computer's compartment, provided with an opening for easier disc tray access or it can be used by a peripheral device connected to one of the ports provided in the computer system. A compact disc or CD can store approximately 650 to 700 megabytes of data.

- **DVD:**

It stands for Digital Versatile Disk or Digital Video Disk. It looks just like a CD and uses a similar technology as that of the CDs but allows tracks to be spaced closely enough to store data that is more than six times the CD's capacity. It is a significant advancement in portable storage technology. A DVD holds 4.7 GB to 17 GB of data.

- **Blue Ray Disk:**

This is the latest optical storage media to store high definition audio and video. It is similar to a CD or DVD but can store up to 27 GB of data on a single layer disk and up to 54 GB of data on a dual layer disk. While CDs or DVDs use a red laser beam, the blue ray disk uses a blue laser to read/write data on a disk.



Solid State Memories: Solid-state storage devices are based on electronic circuits with no moving parts like the reels of tape, spinning discs etc. Solid-state storage devices use special memories called flash memory to store data. Solid state drive (or flash memory) is used mainly in digital cameras, pen drives or USB flash drives.

Pen Drives: Pen Drives or Thumb drives or Flash drives are the recently emerged portable storage media. It is an EEPROM based flash memory which can be repeatedly erased and written using electric signals. This memory is accompanied with a USB connector which enables the pendrive to connect to the computer. They have a capacity smaller than a hard disk but greater than a CD

Memory Card: A memory card is a type of storage device that is used for storing media and data files. It provides a permanent and non-volatile medium to store data and files from the attached device. Memory cards are commonly used in small, portable devices, such as cameras and phones. A memory card is also known as a flash card. Most memory cards today range in size from as small as 4 GB (gigabyte) up to as large as 128 GB.

Solid State Drive: An SSD is a storage medium that uses non-volatile memory as a means of holding and accessing data. An SSD has no moving parts which gives it advantages such as faster access time, noiseless operation, higher reliability, and lower power consumption. SSDs have become suitable replacements for a standard hard drive in both desktop and laptop computers.



Exercise:

- 1-Difference between primary memory and secondary memory.
- 2-Write the advantages of Secondary memory.