1. Describe with a neat sketch about the various directory structure.

The main memory is too limited to handle all data and programs. Secondary storage must be provided by the computer system as a backup to the primary memory. Disks are the primary on-line storage medium for both programs and data in most modern computer systems. Compilers, assemblers, word processors, editors, and formatters are among the programs that are stored on a disc before they are loaded into memory. They then process data on the disc as both a source and a destination. As a result, proper disc storage management is critical to a computer system's success.

Magnetic disk

Magnetic disks provide the bulk of secondary storage for modern computer systems make up the majority of modern computers' secondary storage.

- Each disc platter, like a CD, has a flat circular shape. The diameter of the platters ranges from 1.8 to 3.5 inches.
- Magnetic materials are applied to the platter's surface. Above the surface of every platter, it can read and write heads "Files"
- Heads attached to a disk arm that moves all the heads as a unit. The platter is logically divided into circular tracks, which is subdivided into sectors
- The set of tracks that are at one arm position makes up a cylinder. Rotation per minute –drive rotates 60 to 250 times per second. Transfer rate –flow between the drivers and computer
- Positioning time or Random –access time has two parts

    1. Seek time-time to move for the disk arm to the desired cylinder

    2. Rotational latency-the time required for the desired sector to rotate to the disk head

- Head will damage the magnetic surface is called a head crash. Disk h causes a head crash.
- Disks are removable example CDs, DVD and Blu-ray discs removable flash-memory device
- Disk Drive attached to a computer by a set of wires called an I/O bus.

Different types of Buses

- Advanced Technology Attachment (ATA)
- Serial ATA(SATA)
- eSATA
- universal serial bus (USB)
- Fiber Channel (FC)

.

Controllers are special electronic processors it carried out data transfer on the bus

There are two types of controller

- Host controller –it controller at the computer end of the bus
- Disk controller is built into each disk drive

Solid-State Disks

- It's a Nonvolatile memory it can used like hard drive
- Many variations of the technologies from DRAM with battery to allow it to maintain its state in power failure through flash-memory technologies –SLC(single-level cell chip) and MLC(multilevel cell chip)
- SSD Characteristics

    o   More reliable than traditional hard disk because of moving parts and no seeking time

    o   It consume less power

    o   It expensive than the HDD

    o   Less capacity

    o   May have shorter life span

    o   It much faster

    o   No disk head ,No disk-scheduling algorithms ,No moving parts, so no seek time or rotational latency

- SSDs are used in laptop computers to make them smaller, faster, and more energy-efficient

    ·   SSD is design to connect directly to system bus can be too slow -> connect directly to PCI for

Magnetic Tape

·   Magnetic tape was used as an early secondary-storage medium Its Relatively permanent and holds large quantities of data Its Access time slow compared with that of main memory and magnetic disk Random-access ~1000 times slower than disk so tapes are not useful for secondary storage

·Tapes are Mainly used for backup, storage of infrequently-used information, transfer medium between systems to another system Kept in a spool and wound or rewound past read-write head

2. Discuss about the various file access methods and draw neat sketch explain about the:

a) Directory structure b) File sharing

Systems use a sequential access process. The operating system reads the file word by word in this form, and we have a pointer that points to the file's base address. If we need to read the first word in the file, there is a pointer that offers the word we want to read and increments the value of the word by 1, and this process will continue until the file is finished.

The Modern World system provides index access as well as direct file access. However, since more files, such as text files, audio files, and video files, must be accessed sequentially, the sequential access method is one of the most common.

Direct Access Method

• The Relative Access Method is another name for the Direct Access Method. We mostly use the Direct Access Method in the Database System. The majority of the time, information from the database in filtered form is required. In that case, the sequential access speed can be slow and inefficient.

• Presume that each storage block holds four documents, and that we already know that the block we need is in the tenth block. The sequential access approach is ineffective in this case. That if we use this, this approach will traverse all of the blocks in order to get to the record we need.

• As a result, the Direct Access approach provides a more satisfactory result in this case.

Index Access Method:

• Another important form of file access is the index access method. In this process, an index is

generated for each file, and the index is similar to the index at the back of a book.

The pointer to the various blocks is included in the index. If we want to find a record in the file, we must first scan the index, and then we can access the file directly using the pointer.

We can search quickly and easily in a large database using the Index Access process. However, the approach will need some extra memory space to store the value of the index

a) **Directory structure :**

A directory is a container that is used to contain folders and files. It organizes files and folders in a hierarchical manner.

b) **File sharing :**

- For multiple users-File sharing, file naming and file protection is a challenging and important task.

- In order to handle this, file access control and protection need to be done.

- If a user wants to share a file with other user, proper protection schemes need to be followed.

- Whenever a file is shared for various users on distributed systems, it must be shared across distributed systems. In order to share and distribute files, Network File System (NFS) is used.

- For single user system, the system need to maintain many files and directory attributes.