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Report on (External Memory)

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Course: Computer Organization and Assembly Language Theory

Timing: Tue (8:30 am to 11:30 am)

External Memory:

External memory can also be known as secondary memory or backing store. It is used to store a huge amount of data because it has a huge capacity. At present, it can measure the data in hundreds of megabytes or even in gigabytes. The important data of external memory is that whenever the computer switches off then stored information will not be lost. Floppy Disks and Drive, Hard Disks, CD/DVD drive and magnetic tapes are some of the secondary storage devices. The external memory has many types some of types are here down below:

1.Magnetic Disk:

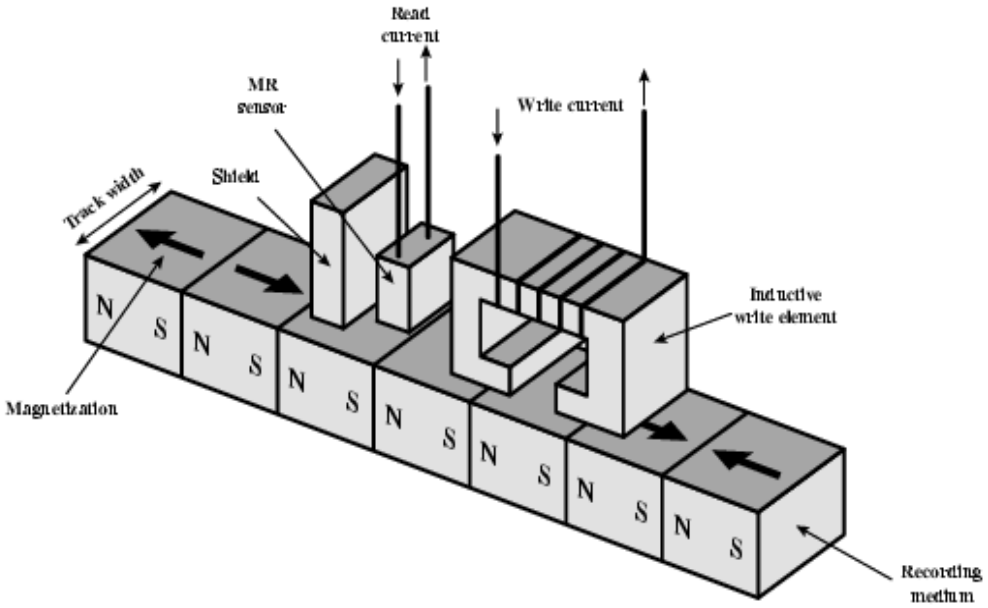
A disk is a type of circular platter constructed by a nonmagnetic material, which is known as a substrate. It is covered with a magnetic coating used to hold the information. The substrate is traditionally constructed by aluminium or aluminium alloy material. But recently, another material has been introduced, which is known as glass substrates. There are various benefits of glass substrates, which are described as follows:

- It has the ability to increase disk reliability by improving the uniformity of a magnetic film surface.
- It is used to reduce the errors of read-write by doing a significant reduction in overall surface defects.
- It has better stiffness, which will help to reduce disk dynamics. It has the great ability that it can withstand against shock and damage.

- Disk substrate coated with magnetizable material (iron oxide or rust)
- Substrate used to be aluminium
- Now glass
    - Improved surface uniformity
        - Increases reliability
    - Reduction in surface defects
        - Reduced read/write errors
    - Lower flight heights (See later)
    - Better stiffness

Better shock/damage resistance

Inductive Write MR Read



2. CD:

Made in 1982, Compact Discs (CDs) are one of the oldest forms of external memory containing audio or software data whose memory is read-only. A CD-ROM Drive or optical drive is the device used to read them. At the time, it was impressive how CDs were able to store up to 700 megabytes (MB).

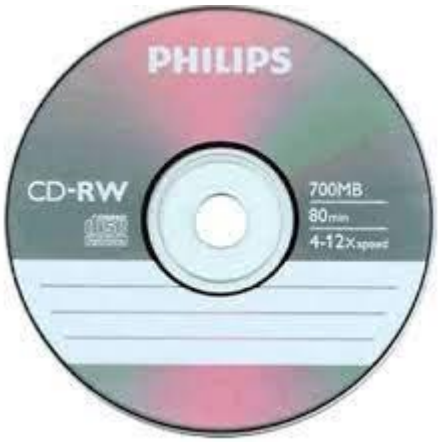
It was made initially to replace cassette tapes until it grew and led to several types of CDs being made. The differences between each type lie in the read and write restrictions for users.

- **CD Read-Only Memory (CD-ROM):** This type of CD doesn't allow users to erase nor write over whatever is in the disc.

  Example: a person can play a music CD on the computer.

- **CD-Recordable (CD-R):** A CD like this gives users the ability to write on the CD only once but has an unlimited number of reads available. CD-R can record data written by a CD burner.

- **CD Re-Writable (CD-RW):** With a CD like this, you can erase and write over it for up to 1000 times. CD-RW require specialized readers that have sensitive laser optics.



3.DVD:

Digital Versatile Discs (DVDs) are much like CDs in that it also uses laser light to store and retrieve data. This particular way of storing or retrieving data is characteristic of optical storage devices.

A DVD is an optical disc that uses light to read and write the stored data on a flat disc. Digital data is a sequence of 0's and 1's (binary numbers). A DVD stores data in a binary format. This data is then converted into its original analog counterpart using conversion algorithms.

Although a CD and a DVD are similar in many ways, they're also different in just as many aspects too. One difference is their storage capacity.

In comparison to CDs, DVDs have much *higher* storage capacity. This external memory is capable of storing 4.7 gigabytes (GB) of data as a standard.

Usually, people use DVDs to store movies and videos, while CDs are more commonly used to store music.

4.Hard Drive:

One of the more common external memory devices in this day and age are external hard drives. An external hard drive is similar to a hard drive you'd find in a computer.

The difference between the two, however, is that an external hard drive is portable and connects to a computer via a USB cable or even without a wire. Plus, an external hard drive can connect with other computers, unlike an internal hard drive.

An external hard drive has a high storage capacity. Its storage capacity can range from 500MB to 1TB.

Aside from storing random data, there are many specific uses for an external hard drive. You can use it to store back-up data for your internal hard disks, or you can partition it so you can use it to share with other people.

External hard drives are among the best external memory storage options for users out there right now. With their portability and massive storage capacity, this comes as no surprise.

Memory Card:

Memory cards are smaller and thinner external memory that users usually store in other devices. The most common types of memory cards are CompactFlash, a Memory Stick, an SD Card, and the xD-Picture Card.

You can use memory cards for a variety of devices, including video game consoles, mobile phones, and cameras. Memory cards are usually either a supplement or the primary storage of specific equipment.

The largest storage capacity of a memory card is at around 512GB.

You can access memory cards either through a slot in your laptops or if they don’t have a memory card slot, a memory card reader.

Cloud Storage:

Nowadays, you don’t have to have physical devices to have external memory storage. Online, or “cloud storage” is another option that utilizes the Internet.

Although technically the cloud storage is a physical server, it still enables you to access your data anywhere. As long as you have an Internet connection and you’ve saved your files on a cloud storage provider, you should be good to go.

Popular cloud storage service providers include Google Drive, Dropbox, and Microsoft’s OneDrive.

With cloud storage, you usually pay a monthly fee to be able to store your data, which is unlike other external memory on this list, which typically require one-off payments. There are also free options available, but with limited storage.

Conclusion:

External memory is a useful device that’s proving more and more necessary in this day and age. Depending on your needs and other factors, such as budget, there are different types of external memory you can choose from. We hope this guide has helped you learn more about external memory, and what options are out there to suit your needs.