Multimedia Storage: Magnetic and Optical Media

A Technical Report Submitted in partial fulfilment of the requirements for the Continuous Internal Evaluation II for the subject of

Multimedia Systems (OEC-CS701B)

by

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SEPTEMBER 2025

ACKNOWLEDGEMENT

I am deeply grateful to my course coordinator Prof. Rupsa Sarkar for her encouragement, keen interest, valuable suggestions and congenial help throughout the course of report writing on assigned topics. I owe her a debt of gratitude for modeling and structuring the format of report writing with her valuable tips and suggestions.

I am also indebted to the Department of Computer Science & Engineering, CEMK, for providing me with all the necessary facilities that made it possible for me to make this report.

I humbly extend my sense of gratitude to other faculty members, laboratory staff, library staff and administration of this Institute for providing me their valuable help and time with a congenital working environment.

Last but not the least, I would like to convey my heartiest thanks to all my classmates who have helped me with their valuable suggestions during the drafting of the report.

Date: 04/09/2025 (PUSPITA PANJA)

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Abstract:

Multimedia storage plays a vital role in preserving and accessing digital information, including text, audio, images, and video. Two of the most widely used traditional storage technologies are **magnetic media** and **optical media**. Magnetic storage, such as hard disk drives, floppy disks, and magnetic tapes, relies on magnetized surfaces to record and retrieve data, offering large storage capacity and fast access times. On the other hand, optical storage, including CDs, DVDs, and Blu-ray discs, employs laser technology to read and write data, providing durability, portability, and cost-effective distribution of multimedia content. While magnetic media is well-suited for high-capacity and frequently updated data, optical media is preferred for long-term archiving and sharing due to its resistance to environmental damage. This paper explores the working principles, advantages, limitations, and applications of magnetic and optical media in multimedia storage, highlighting their continued relevance despite the rise of solid-state and cloud-based alternatives.

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Introduction:

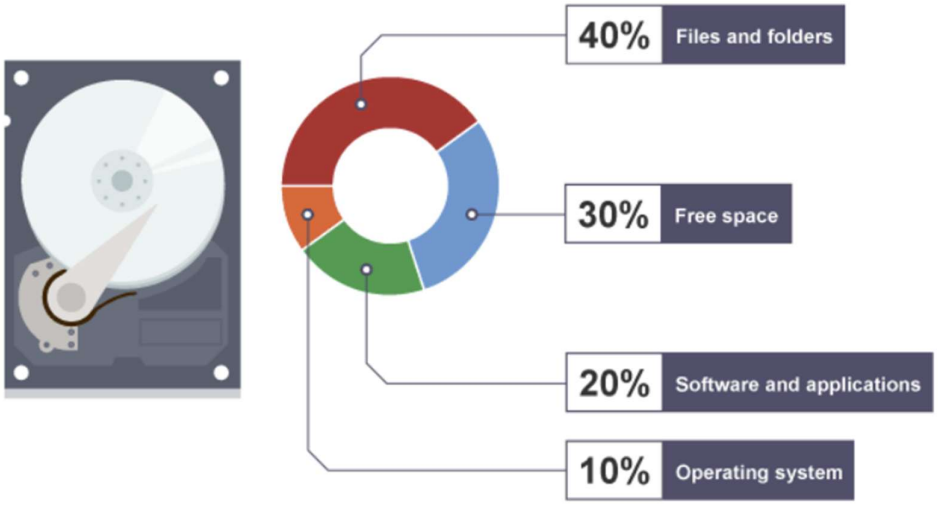
The magnetic and optical disks are the storage devices that provide a way to store data for a long duration. Both are categorized as secondary storage devices. In this article, we are going to discuss the Difference between Magnetic Disks and Optical disks in detail.

Magnetic Disk:

A magnetic disk is a storage device that uses a magnetization process to read, write, rewrite, and access data. The magnetic disk is made of a set of circular platters. It is covered with a magnetic coating and stores data in the form of tracks, spots, and sectors. Hard disks, zip disks, and floppy disks are common examples of magnetic disks. The number of bits stored on each track does not change by using the simplest constant angular velocity.

Features of Magnetic Disk:

- Magnetic disks can store a huge amount of data.
- Magnetic disks are transportable and budget-friendly.
- Magnetic disks are reliable storage devices.



Optical Disk:

An optical disk is any computer disk that uses optical storage techniques and technology to read and write data. It is a storage device for optical (light) energy.

It is a computer storage disk that stores data digitally and uses laser beams to read and write data. It uses optical technology in which laser light is cantered on the spinning disks.

Features of Optical Disk:

- Optical disks rely on a red or blue laser to record and read data.
- Most of optical disks are flat, circular and 12-14 cm in diameter these days.

Difference in Magnetic Disk and Optical Disk:

Magnetic Disk	**Optical Disk**
Media type used is Multiple fixed disk	The media type used is a Single removable disk
Intermediate signal to noise ratio	Excellent signal to noise ratio
Sample rate is Low	Sample rate is High
Implemented where data is randomly accessed.	Implemented in streaming files.
Only one disk can be used at a time	Mass replication is possible
Tracks in the magnetic disk are generally circular	In optical disk the tracks are constructed spirally.
The data in the magnetic disk is randomly accessed.	In the optical disk, the data is sequentially accessed.
In the magnetic disk, only one disk is accessed at a time.	An optical disk allows mass replication.
The copying of data takes more time in magnetic disk compared to optical disk.	The storing and accessing of data take place at a much faster rate using laser beams than a magnetic disk.
The storage capacity is high in magnetic disk i.e. up to several Gigabytes, Terabytes.	The storage capacity of optical disk is comparatively low i.e. up to 27GB in the case of Blue-ray.
Magnetic disks are a crucial part of computers.	Optical disk is optional component in computers.

Magnetic disks are mainly used to hold data, instructions, software applications.	Optical disks are portable and generally used to store music, videos, movies.
Examples include- • Hard Disk • Floppy Disk • Magnetic Tape, and more.	Examples include- • CD • DVD • Blue-ray, and more.

Conclusion:

Magnetic disks and optical disks represent two different types of storage devices, each catering to various needs in data management. Magnetic disks are favoured for their speed and capacity, making them perfect for operating systems, software applications, and active data storage. However, optical disks are often favoured for their longevity and resilience, resulting in a good choice for archiving and media distribution.

Reference:

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