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DEPARTMENT OF COMMERCE WITH INFORMATION TECHNOLOGY

21UCI507 -Business Information Technology

Auxiliary Storage Devices

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Auxiliary Storage Devices

- **Secondary memory devices** used to store large amounts of data permanently.
- They are used when primary memory (RAM) is insufficient, expensive, and volatile.

Unlike primary memory, auxiliary memory:

- Stores data permanently
- Is non-volatile
- Has large storage capacity
- Is slower than main memory
- Is cost-effective

Need & Characteristics for Auxiliary Storage

Auxiliary storage is required because:

- Primary memory is very expensive
- Primary memory has limited capacity
- Data needs to be stored for long-term use
- Backup and recovery of data is necessary

Characteristics of Auxiliary Storage

- Permanent storage (Non-volatile)
- Large capacity
- Low cost per bit
- Slower access time compared to RAM
- Used for long-term data retention

Types of Auxiliary Storage Devices

1. Magnetic Tape

Used mainly in mainframe computers for storing large volumes of data.

Features:

- Long plastic ribbon coated with magnetic material
- Stores data sequentially
- Low cost
- Suitable for backups and archival storage

Advantages:

- Economical
- Compact
- High storage capacity
- Reusable

Disadvantages:

- Slow access
- Data must be read sequentially

Types of Auxiliary Storage Devices

2. Magnetic Disk

Circular disk coated with magnetic material.

Features:

- Data stored in concentric circles called tracks
- Allows direct access
- Faster than magnetic tape

Examples: Hard Disk Drive (HDD)

Advantages:

- Faster access
- High capacity
- Reliable

Types of Auxiliary Storage Devices

3. Floppy Disk

A portable small magnetic disk.

Features:

3.5 inches in size

Capacity: 1.44 MB

Low cost

Easy to carry

Limitations:

Very low storage

Easily damaged

Almost obsolete now

Types of Auxiliary Storage Devices

4. Optical Disks

Uses laser technology to read/write data.

a) CD-ROM (Compact Disk Read Only Memory)

Read-only storage

Capacity: ~700 MB

Data cannot be modified

b) WORM (Write Once Read Many)

Data written once

Cannot be erased or modified

c) Erasable Optical Disk

Data can be written, erased, and rewritten

Uses magnetic-optical technology

Types of Auxiliary Storage Devices

5. Flash Drive (Pen Drive)

Uses flash memory technology.

Features:

Small, portable

USB connection

Stores from GB to TB

Fast data transfer

Advantages:

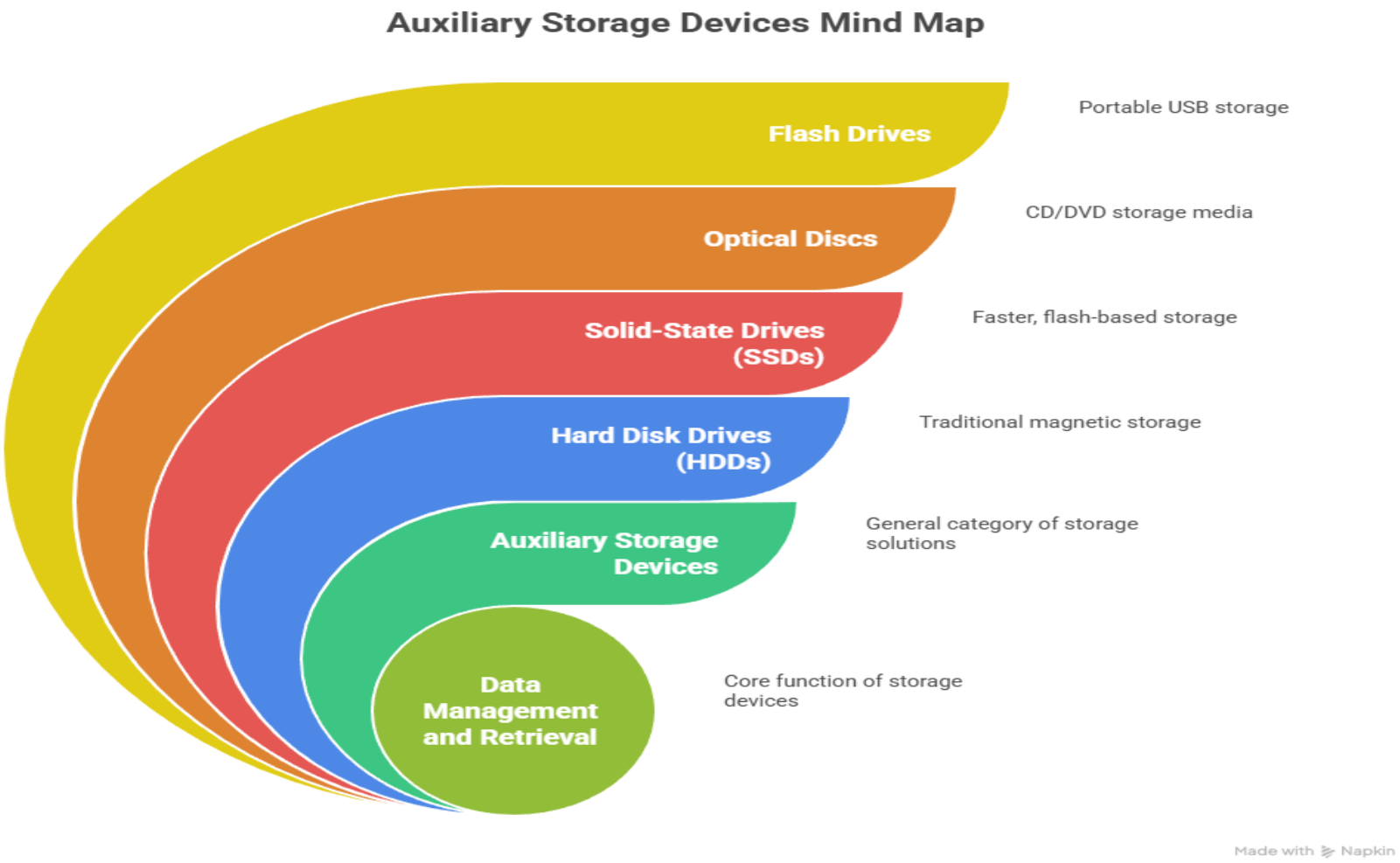
Highly portable

Durable

High capacity

Reusable

Mind Map


Auxiliary Storage Devices Mind Map
Flash Drives
Portable USB storage
Optical Discs
CD/DVD storage media
Solid-State Drives (SSDs)
Faster, flash-based storage
Hard Disk Drives (HDDs)
Traditional magnetic storage
Auxiliary Storage Devices
General category of storage solutions
Data Management and Retrieval
Core function of storage devices
Made with Napkin

Case Study: Auxiliary Storage Devices

1. Problem Scenario

A school computer lab wants to store:

- Student project files
- Videos and photos from events
- Software backups
- Teachers' lesson materials

But the lab computers have **limited internal storage**.

The school needs to choose the **best auxiliary (secondary) storage devices**.

Case Study: Auxiliary Storage Devices

Stage 1 – Empathize

Understand what the school needs:

- Large storage capacity
- Safe and long-term data backup
- Easy to carry
- Affordable solutions
- Fast access for class activities

Stage 2 – Define

Problem Statement:

The school needs reliable and easy-to-use storage devices to save large amounts of data because computer RAM and internal storage are not enough.

Goal: Select the **most suitable auxiliary storage devices**.

Case Study: Auxiliary Storage Devices

Stage 3 – Ideate

Think of possible storage solutions:

Types of Auxiliary Storage Devices

- Hard Disk Drive (HDD) – High capacity
- Solid State Drive (SSD) – Very fast
- Pen Drive / USB Flash Drive – Portable
- Memory Card – For cameras, mobiles
- CD/DVD – Low cost, long-term archival
- External Hard Disk – Portable large storage
- Cloud Storage – Online backup solution

Case Study: Auxiliary Storage Devices

Stage 4 – Prototype (Simple Solution Plan)

Create a suggested list:

1. External Hard Disk (1 TB)

•Stores large event videos and photos

•Good for backups

•Portable

2. Pen Drives (32–64 GB)

•Students can submit project files

•Easy to carry

3. Cloud Storage (Google Drive / OneDrive)

•Stores lesson materials

•Accessible anywhere

•Automatic backup

4. SSD for Lab Computers

•Faster loading of software

•Improves performance

5. DVD Storage (Optional)

•Used for long-term archiving of school events

•Low cost

Case Study: Auxiliary Storage Devices

Stage 5 – Test

Present the suggested plan to:

- Teachers
- Lab Assistant
- Principal

Ask:

- "Is it easy to use?"
- "Does it fit the budget?"
- "Will it meet storage needs for the whole year?"

Final Outcome

Students understand:

- What auxiliary storage devices are
- Why they are needed
- Differences between HDD, SSD, pen drive, cloud, etc.
- How to choose the right device for real-life situations

The school selects:

- External hard disk for backup
- Pen drives for student projects
- Cloud storage for teaching materials

Auxiliary Storage Devices

Next Topic:

Input Devices