

# Storage

## Chapter 3



# Storage



- What is **storage**?
  - Holds data, instructions, and information for future use

## Storage medium

is physical material used for storage

Also called **secondary storage** such as : floppy disks, CDs, Zip disks



# Storage



## • How does volatility compare?

- ▶ Memory is **volatile**—holds data and instructions temporarily
- ▶ Storage medium is **nonvolatile**—contents retained when power is off

Volatile

**ON**

**OFF**

**Screen Display**

**Display  
appears**

**Display  
disappears**

**Memory**  
)most RAM(  
)chips on motherboard(

**Data and  
instructions  
available to user**

**Data and  
instructions erased**

Nonvolatile

**Storage Medium**  
)floppy disks, Zip disks,  
hard disks, CDs(

**Contents  
available to user**

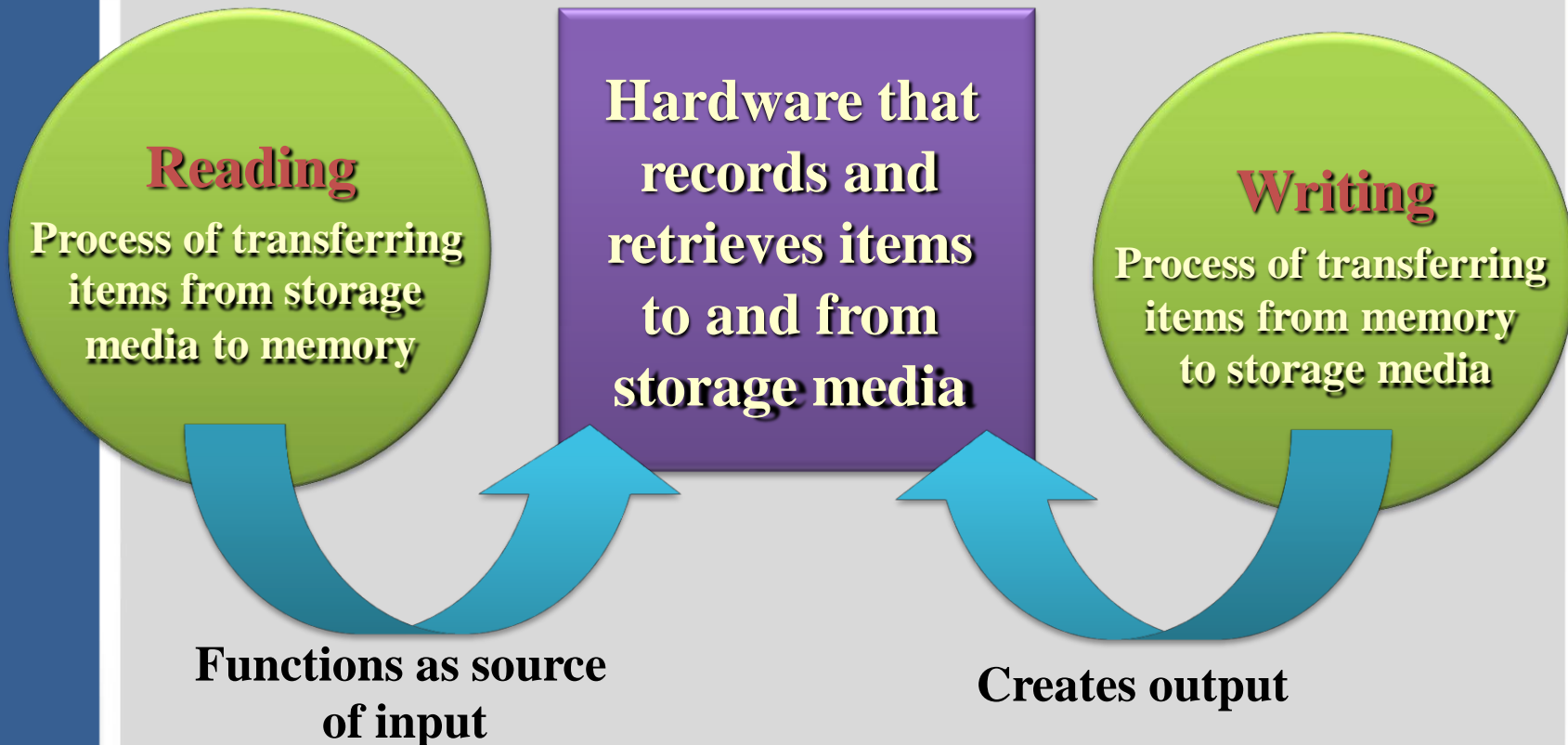
**Contents  
retained**

# Storage



What is a **storage device**?

Hardware that records and retrieves items to and from a storage medium. Examples are Floppy drive, Hard disk drive etc.



# Storage



- What is **capacity**?

➤ Number of bytes (characters) a storage medium can hold

**Kilobyte (KB)** ( 1 thousand



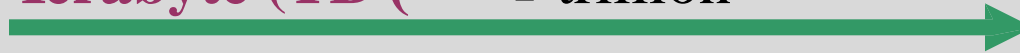
**Megabyte (MB)** ( 1 million



**Gigabyte (GB)** ( 1 billion



**Terabyte (TB)** ( 1 trillion



**Petabyte (PB)** ( 1 quadrillion



**Exabyte (EB)** ( 1 quintillion





# Hard Disks



- What is a **hard disk**?
  - High-capacity storage
  - Consists of several inflexible, circular platters that store items electronically
  - Components enclosed in airtight, sealed case for protection

hard disk installed  
in system unit



# Hard Disks



What are **external hard disks** and **removable hard disks**?

- **Used to back up or transfer files**

**External hard disk**—freestanding hard disk that connects to system unit



**Removable hard disk**—hard disk that you insert and remove from hard disk drive



# CDs and DVDs



- What are **CDs** and **DVDs**?
  - Flat, round, portable metal discs with protective plastic coating
  - Can be read only or read/write
  - Most PCs include CD or DVD drive, most play audio CDs

Push the button to slide out the tray.

Insert the disc, label side up.

Push the same button to close the tray.



# CDs and DVDs



## • What is a **CD-ROM**?

- Compact disc read-only memory
- Cannot erase or modify contents
- Typically holds 650MB to 1 GB
- Commonly used to distribute multimedia and complex software



# CDs and DVDs



What are **CDs** and **DVDs**?

- **CD-ROM** stands for compact disc-read-only memory.
- Once inserted in the CD-ROM drive, the text, video images, and so on can be read into RAM for processing or display.
- The data on the disk are fixed-they cannot be altered. This is in contrast to the read/write capabilities of magnetic disks.
- What makes CD-ROM so inviting is its vast capacity to store data and programs. The capacity of a single CD-ROM is up to 680 MB-about that of 477 diskettes.

# CDs and DVDs



- What are **CD-Rs** and **CD-RWs**?

**CD-R** (compact disc-readable)  
—disc you can write on once

**CD-RW** (compact disc-rewritable)  
—erasable disc you can write on multiple times

Must have  
**CD recorder**  
or **CD-R drive**

Cannot erase  
disc's contents

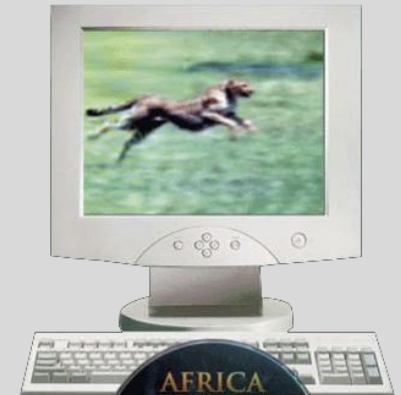
Must have  
CD-RW software  
and **CD-RW drive**

# CDs and DVDs



What is a **DVD-ROM** (digital versatile disc-ROM or digital video disc-ROM)?

- High capacity disc capable of storing 4.7 GB to 17 GB
- Must have **DVD-ROM drive** or DVD player to read DVD-ROM
- Stores databases, music, complex software, and movies



DVD



DVD drive

# CDs and DVDs



- What are **CDs** and **DVDs**?

- DVDs are poised to replace CD-ROMs. The DVD (digital videodisk) looks like the CD and the CD-ROM, but it can store from 7 to 14 times as much information (up to about 10 GB.) A DVD can store the video for a full-length movie.

- DVD drives are back-wards compatible; that is, they can play all of your CD-ROM and CDs. DVDs probably will replace videotapes and CDs in a few years

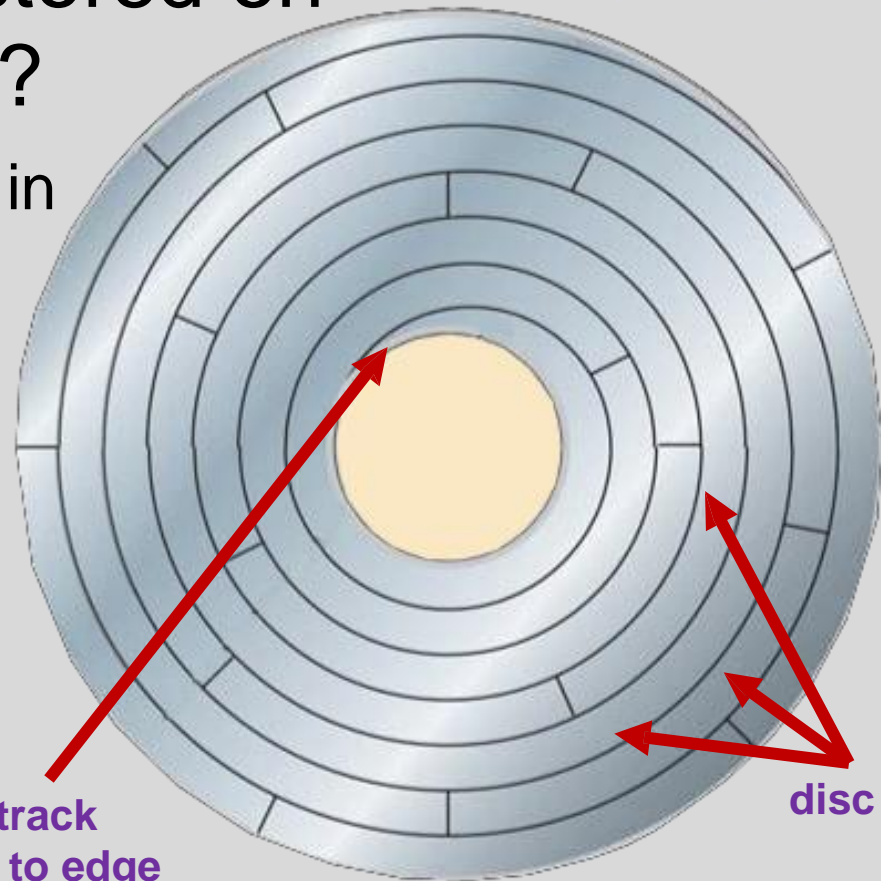


# CDs and DVDs



- How is data stored on a **CD** or **DVD**?

- Typically stored in single **track**
- Track divided into evenly sized **sectors** that store items



single track  
spirals to edge  
of disc

disc sectors

# Tape



- What is **tape**?
  - Magnetically coated plastic ribbon capable of storing large amounts of data at low cost
  - Primarily used for **backup**



# Tape



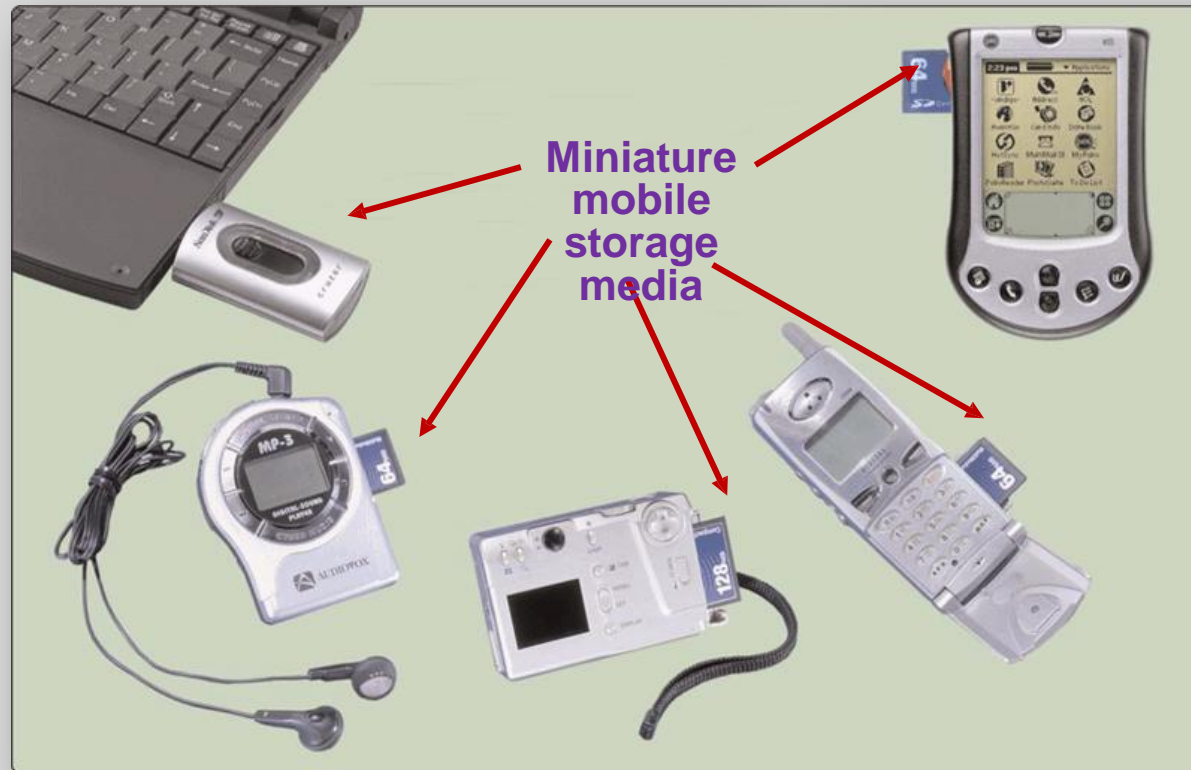
- How is data stored on a tape?
  - Sequential access
    - Reads and writes data consecutively, like music tape
    - Unlike direct access — used on floppy disks, Zip disks, hard disks, CDs, and DVDs — which can locate particular item immediately

# Miniature Mobile Storage Media



What is **miniature mobile storage media**?

- Storage for small mobile devices



# Miniature Mobile Storage Media



What are common types of miniature mobile storage media?

**CompactFlash**



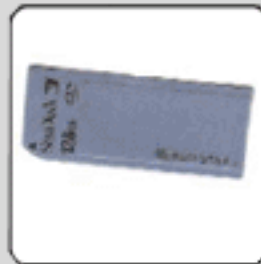
**Smart Media**



**Secure Digital**



**Memory Stick®**



**Microdrive™**



**USB Drive™**

