Storage

Chapter3

ITBIS105
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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

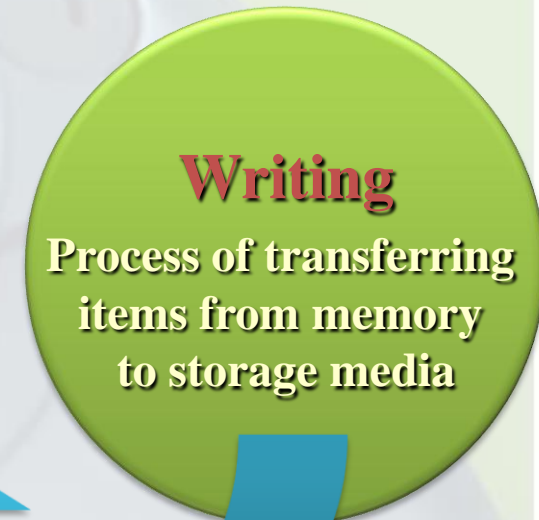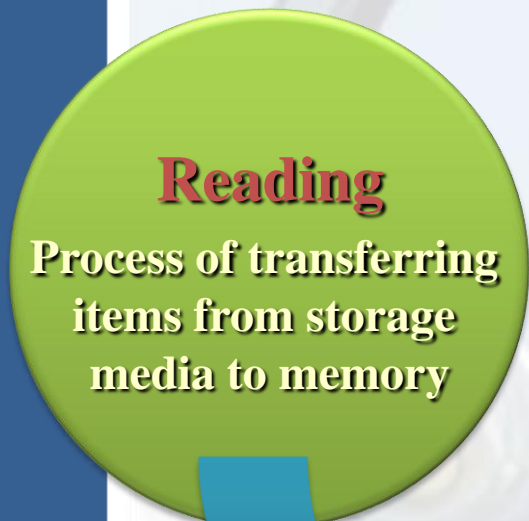|	ON	OFF
Screen Display	Display appears	Display disappears
Memory (most RAM) (chips on motherboard)	Data and instructions available to user	Data and instructions erased
Storage Medium (floppy disks, Zip disks, hard disks, CDs)	Contents available to user	Contents retained

Volatile

Nonvolatile

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.

Reading
Process of transferring items from storage media to memory

Hardware that records and retrieves items to and from storage media

Writing
Process of transferring items from memory to storage media

Functions as source of input

Creates output

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 |

Floppy Disks

- What is a floppy disk?

  ➢ Portable, inexpensive storage medium (also called diskette)

  Thin, circular, flexible film enclosed in 3.5" wide plastic shell

shutter

shell

liner

magnetic coating

metal hub

flexible thin film
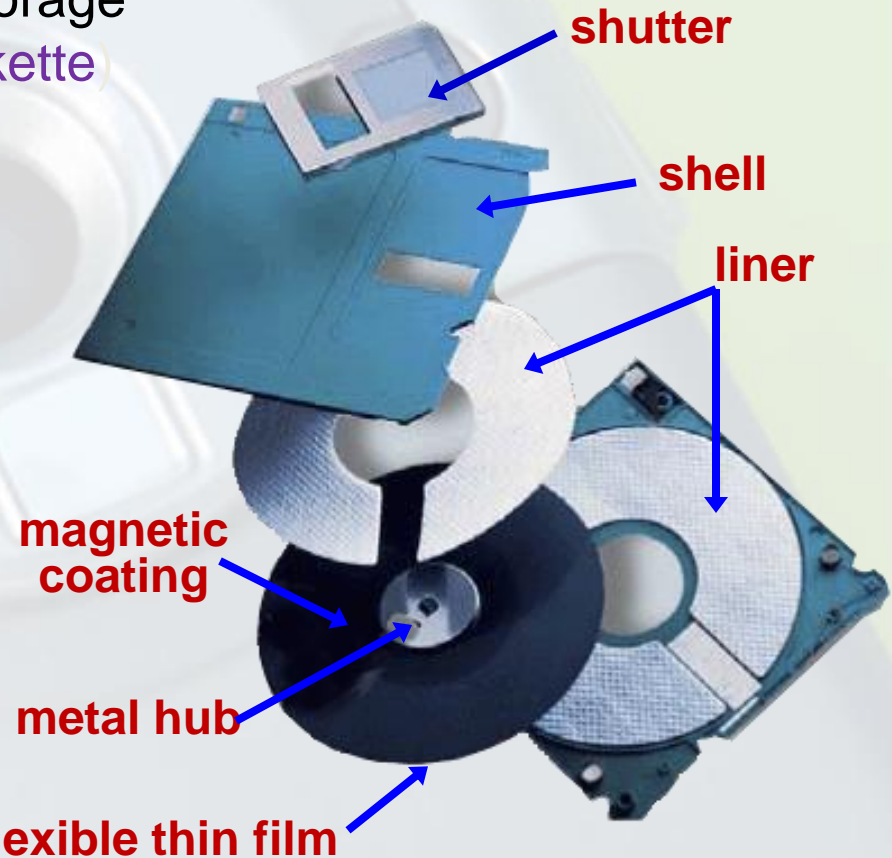
Floppy Disks

- What is a floppy disk drive?

  ➢ Device that reads from and writes to floppy disk

    ▪ One floppy drive, named drive A
    ▪ If two floppy drives, second designated as drive B

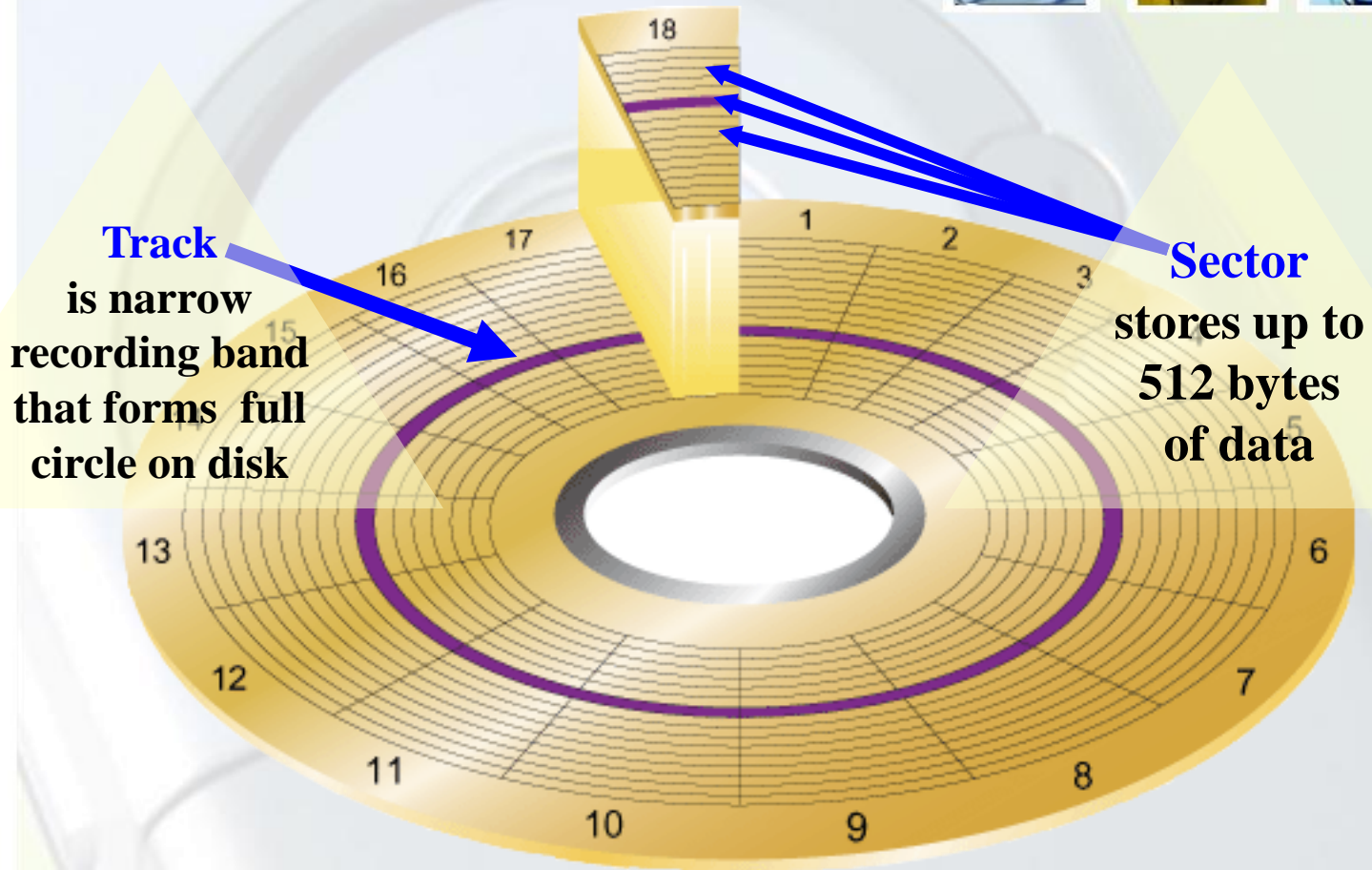Floppy disk drive built into a desktop computer

External floppy disk drive attaches to a computer with a cable

Floppy Disks

What are tracks and sectors?

Track
is narrow recording band that forms full circle on disk

Sector
stores up to 512 bytes of data

Formatting prepares disk for use and marks bad sectors as unusable

Floppy Disks

• What are tracks and sectors?

- **Tracks** are configured in concentric circles in which data are stored.
- PC disks use **sector** organization to store and retrieve data. The recording surface is divided into **sectors** (a disk-storage concept of a pie-shaped portion of a disk or diskette in which records are stored and subsequently retrieved).

Floppy Disks

How do you care for a floppy?

➢ Proper care helps maximize disk's life

➢ Floppy disk can last at least seven years

- **Never open the shutter and touch the disk's surface**
- **Avoid exposure to heat and cold**
- **Avoid exposure to magnetic fields**
- **Avoid exposure to contaminants such as dust, smoke, or salt air**
- **Keep disks in a storage tray when not using them**

Zip Disks

- What is a Zip disk?

  ➢ **Magnetic medium that stores 100 MB or 250 MB of data**

  ➢ **Used to back up and to transfer files**

  - **Backup** is duplicate of file, program, or disk in case original is lost

  ➢ **Zip disks require a Zip drive— high capacity drive that reads from and writes on a Zip disk**

Zip disk

External Zip drive

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**

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

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

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 650 MB 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 mush 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
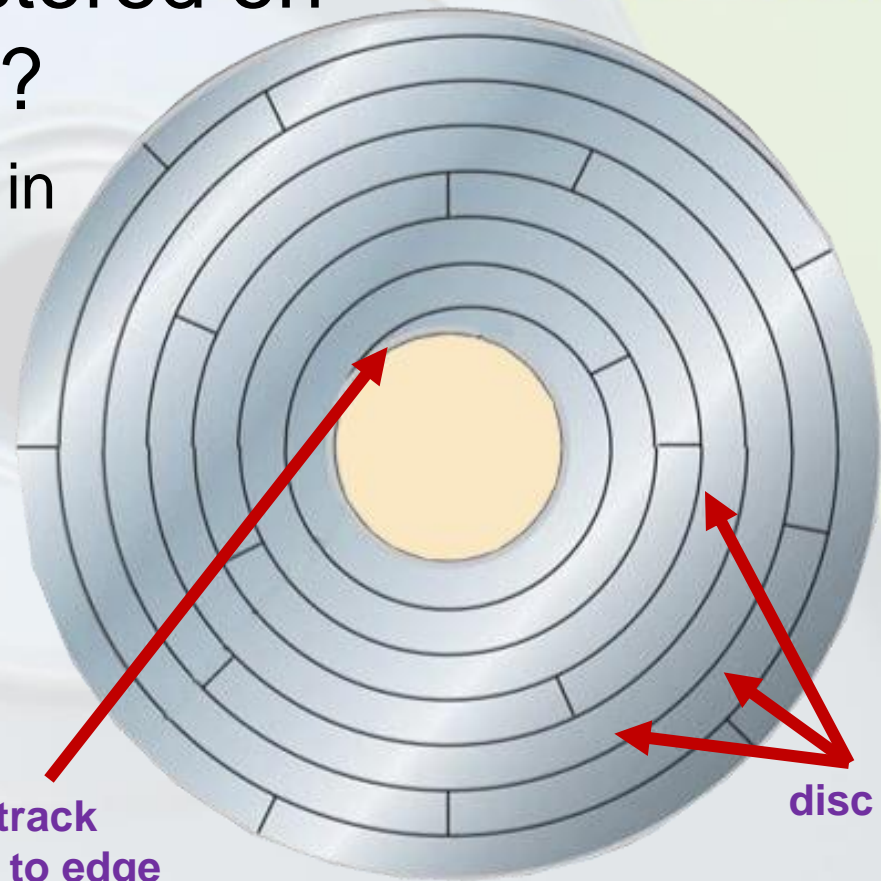
single track spirals to edge of disc

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

Miniature Mobile Storage Media

What are common types of miniature mobile storage media?

CompactFlash

Smart Media

Secure Digital

Memory Stick®

Microdrive™

USBDrive™