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UNIVERSITI TEKNOLOGI MALAYSIA

Google

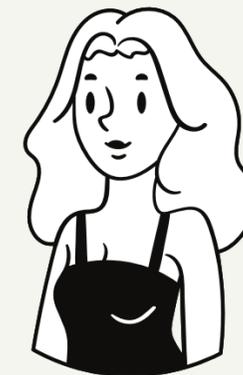# Chapter 7

SECONDARY
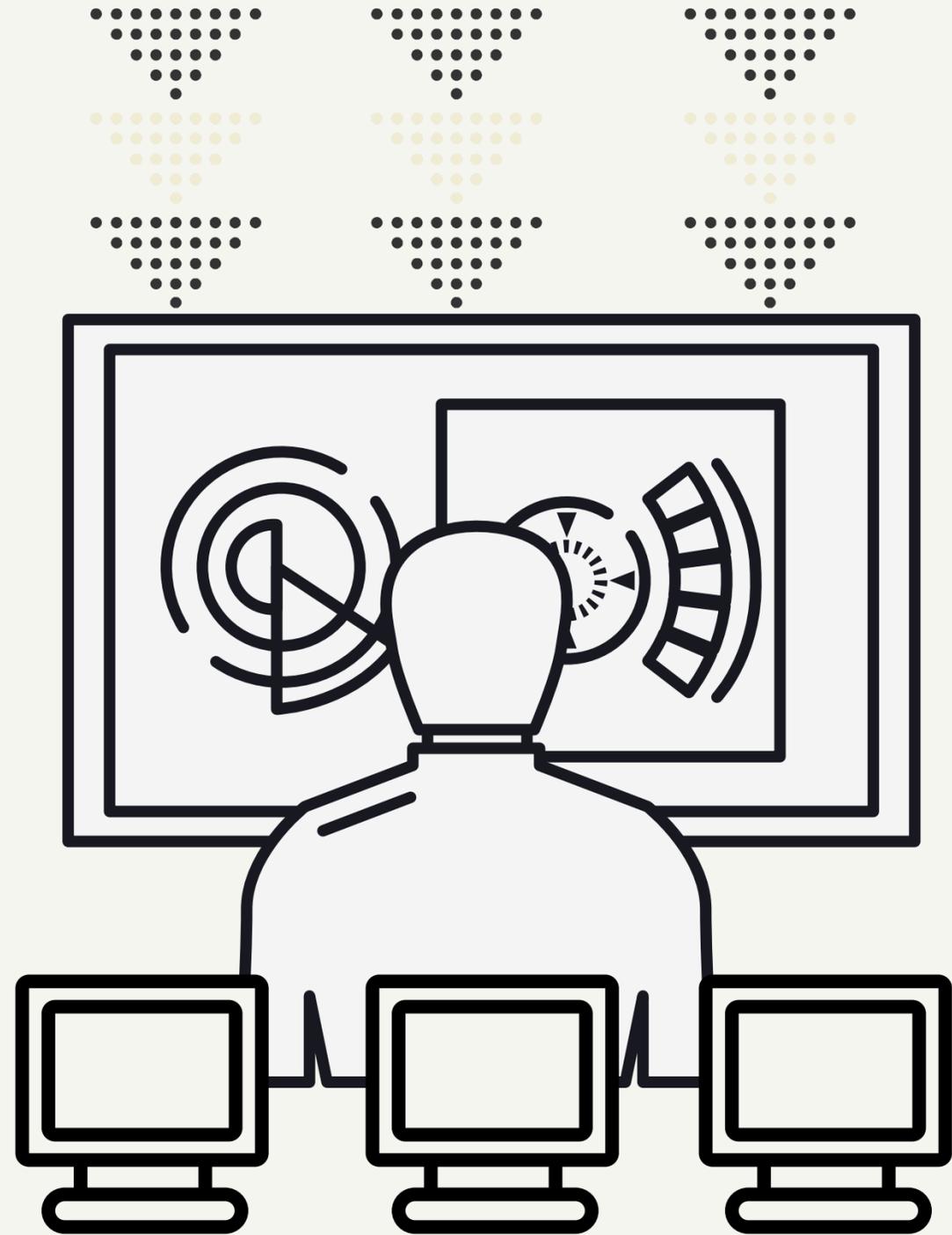
STORAGE

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TODAY'S TOPIC

INTRODUCTION

- Data storage has expanded from text and numeric files to include digital music files, photographic files, video files, and much more.
- These new types of files require secondary storage devices with much greater capacity.
- In this chapter, you learn about the many types of secondary storage devices including their capabilities and limitations.

WHAT IS STORAGE?

PRIMARY STORAGE

- Volatile storage
- Loses content when the computer loses power
- Temporary storage

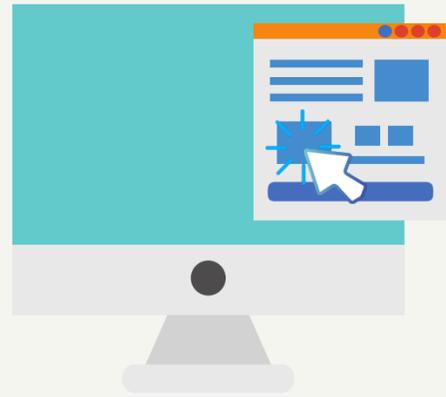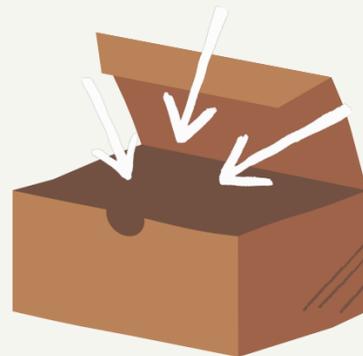For example : Random Access Memory (RAM)

SECONDARY STORAGE

- Nonvolatile storage
- Stores programs and data regardless of power
- Permanent storage
- Permanently saves information for future use

SECONDARY STORAGE CHARACTERISTIC

CAPACITY

How much the media can hold

High capacity value than primary storage

ACCESS SPEED

Amount of time required to retrieve data from storage

Writing is the process of saving information to storage

Reading is the process of accessing information from storage

MEDIA

Physical materials that holds data and programs

STORAGE DEVICES

Hardware that reads data and programs

Disk

Electromagnetic charges

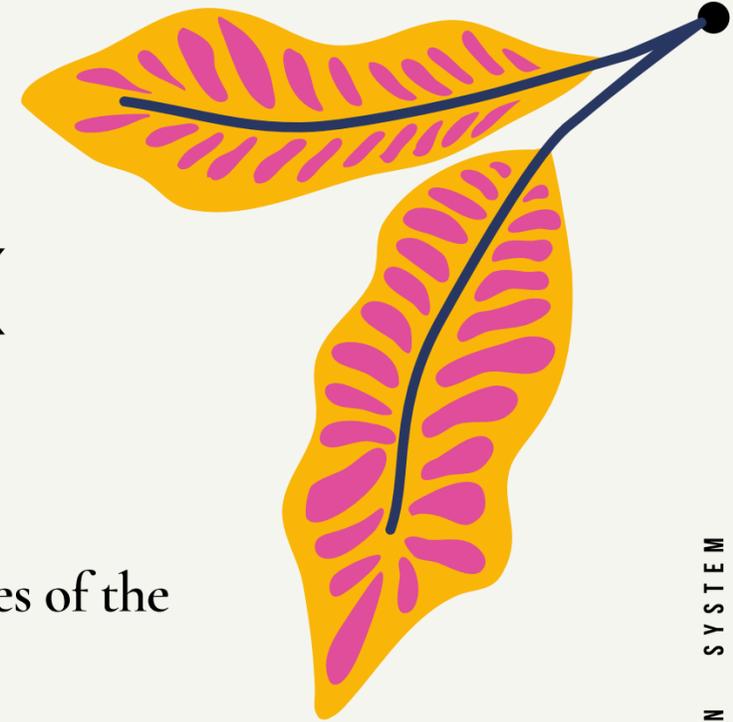0 1 0 0 0 0 0 1 **Binary representation**
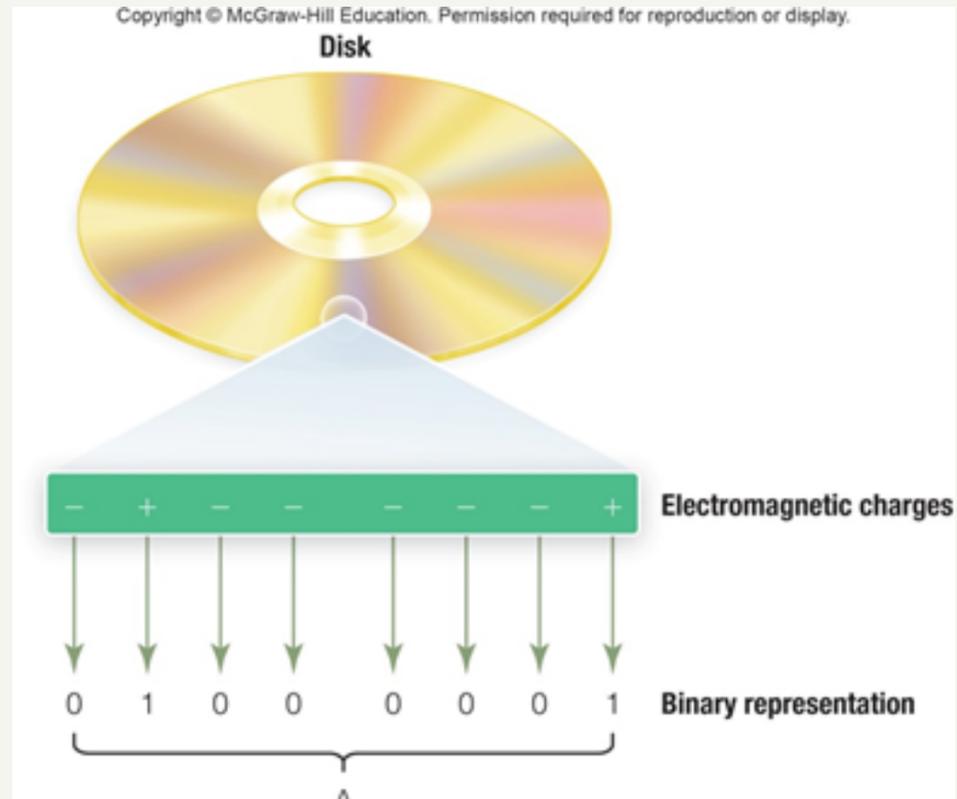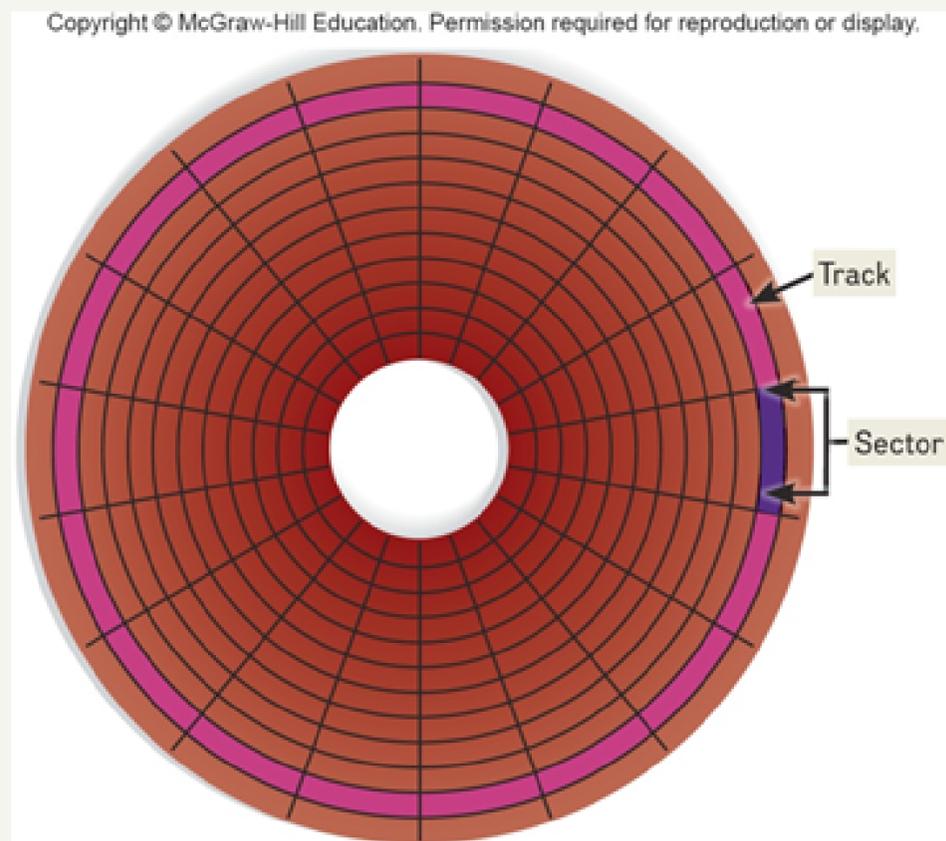
Track

Sector

HARD DISK

Save files by altering the magnetic charges of the disk's surface to represent 1s and 0s

- Use rigid, metallic platters that are stacked one on top of one another

- Store and organize files using tracks, sectors, and cylinders

HEAD CRASH

Occurs when read-write head makes contact with the hard disk's surface or with particles on its surface. The data are rendered unreadable, and the drive has to be replaced. However, in some cases, the data can be recovered

- Disastrous

Disk head

Human hair

Dust particle

Fingerprint

Smoke particle

TECHNOLOGY INFORMATION SYSTEM
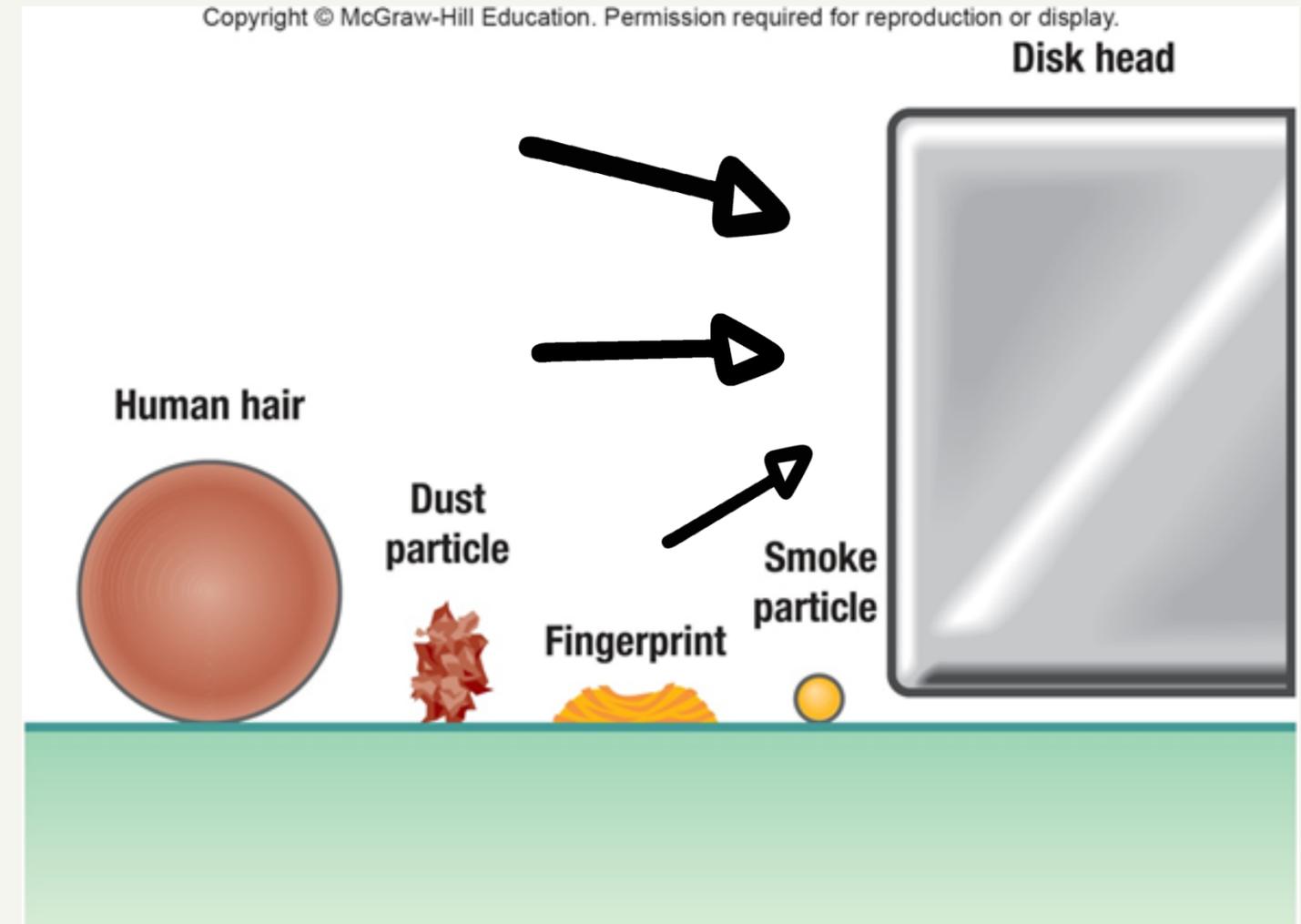
TYPES OF HARD DISK

INTERNAL

EXTERNAL

- Located inside the system unit
- Used to store programs and data files
- You should perform routine maintenance and periodically backup all important files.

- Removable
- Portable
- Used to complement internal hard disk

THERE ARE 3 WAYS TO ENHANCE PERFORMANCE

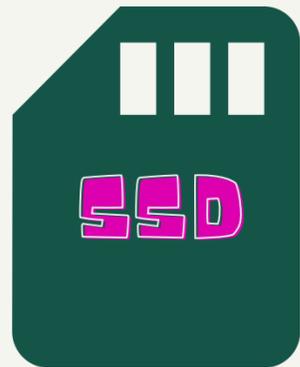| Technique	Description
Disk caching	Uses cache and anticipates data needs
RAID	Linked, inexpensive hard-disk drives
File compression	Reduces file size
File decompression	Expands compressed files

Courtesy of CalDigit, Inc.

SOLID-STATE STORAGE

SOLID–STATE DEVICES (SSDS) HAVE NO MOVING PARTS
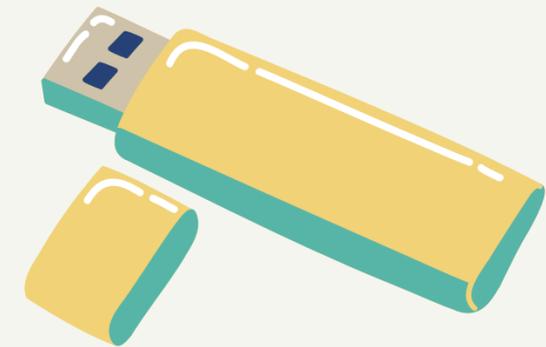
Faster and more durable than hard disks
Access to slash memory or solid state storage

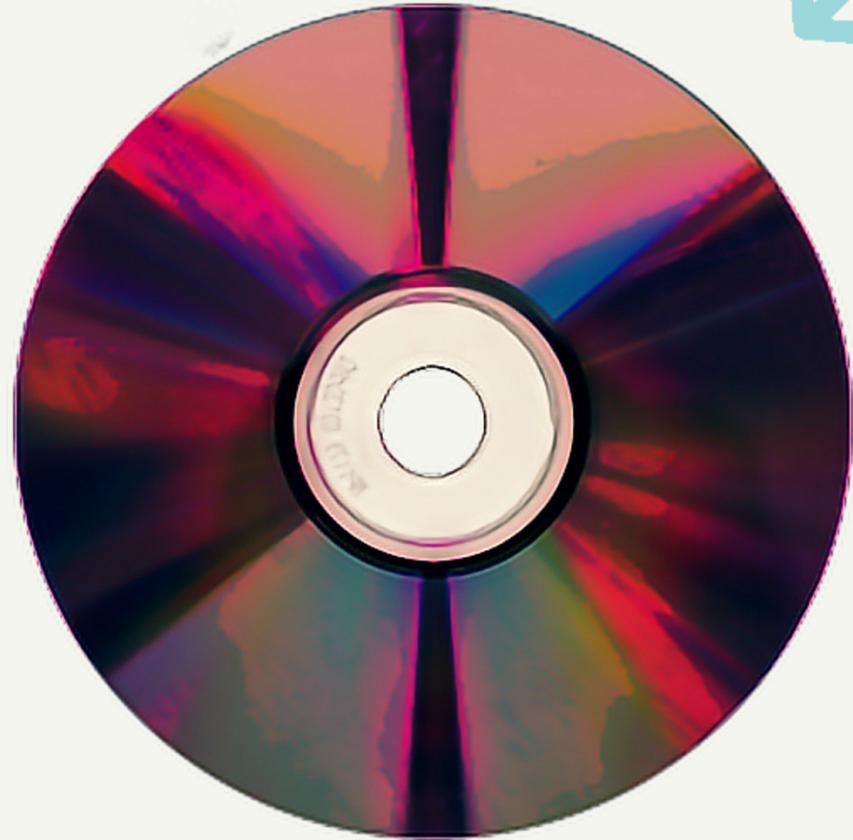Widely used in laptops, smartphones, GPS navigation systems

Connect to USB port
Capacity of 1 GB to 256 GB
Portable

SOLID-STATE DRIVES

FLASH MEMORY CARDS

FLASH DRIVES

OPTICAL DISCS

- Hold over 128 gigabytes (GB) of data
- Use reflected light to represent data
- Lands represent 1s and 0s on the disc
- Pits are bumpy areas on the disc that, when light is reflected, determine the 1s and 0s
- Use tracks and sectors to organize and store files but only use a single track unlike the hard drive

Format	Typical Capacity	Description
CD	700 MB	Once the standard optical disc
DVD	4.7 GB	Current standard
Blu-ray	50 GB	Hi-def format, large capacity

Type	Access	Description
CD-ROM	Compact disc – read only mode	Cannot be written to or erased
CD-R	Compact disc – recordable	Can be written to
CD-RW	Compact disc – rewritable	Can be written to and erasable

CLOUD STORAGE

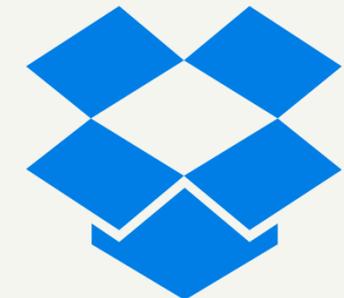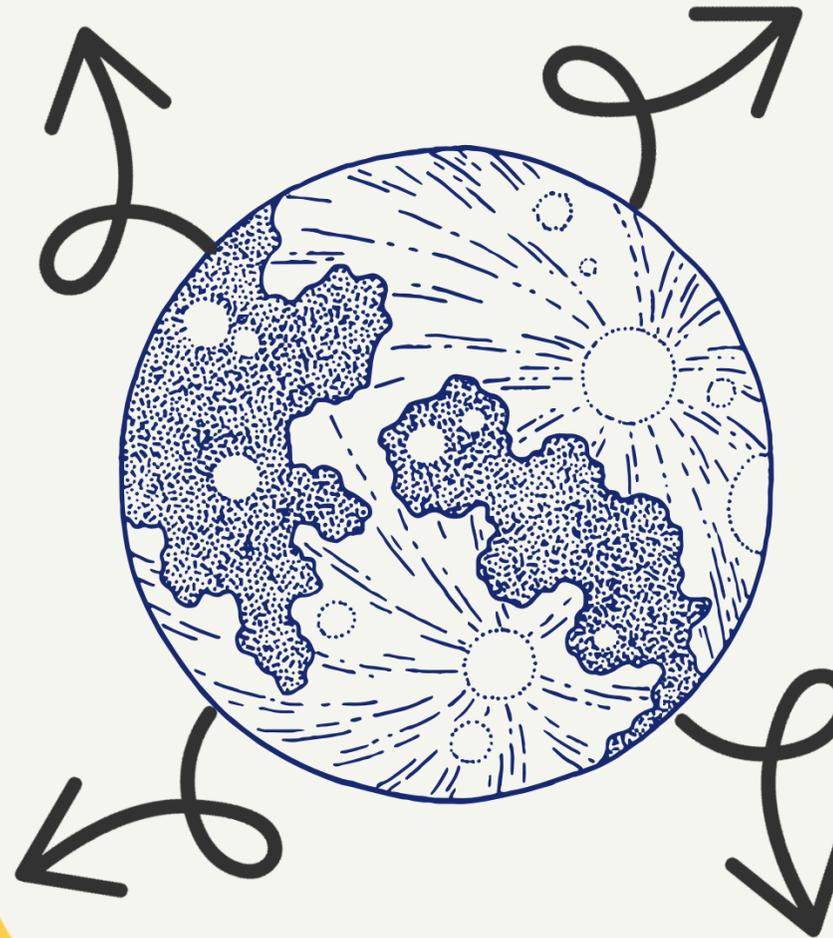The Internet acts as a "cloud" of servers

- Applications provided as a service rather than a product
- Supplied by servers that provide cloud storage or online storage

ADVANTAGES

- Maintenance
- Hardware upgrades
- File sharing and collaborations

DISADVANTAGES

- Access speed
- File Security

CHECK OUT THESE CLOUD STORAGE!

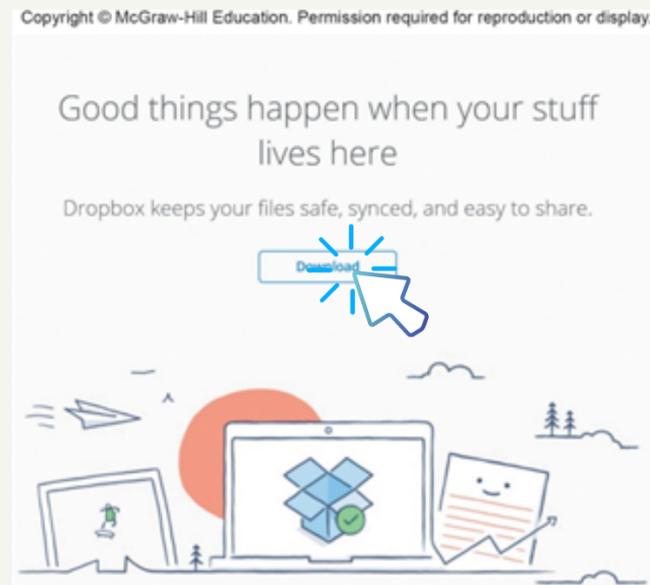| Company	Location
Dropbox	www.dropbox.com
Google	drive.google.com
Microsoft	www.skydrive.com
Amazon	amazon.com/cloud
Apple	www.icloud.com

TECHNOLOGY INFORMATION SYSTEM
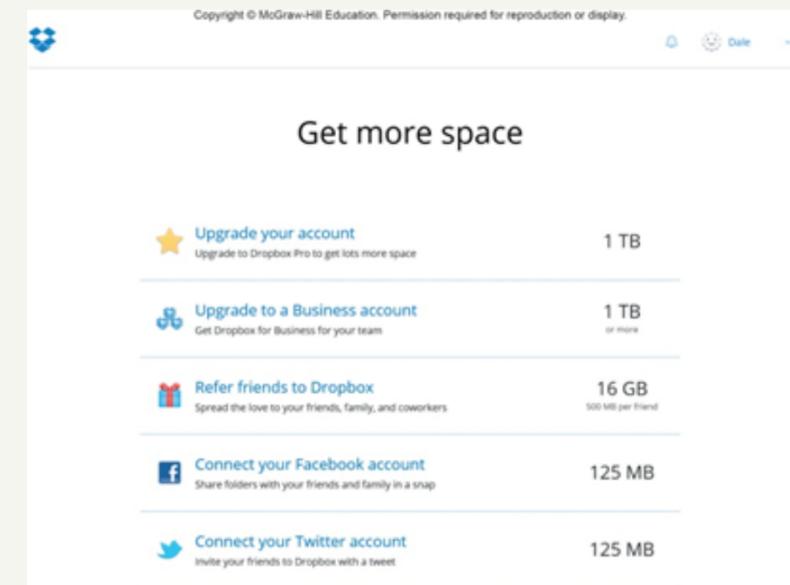
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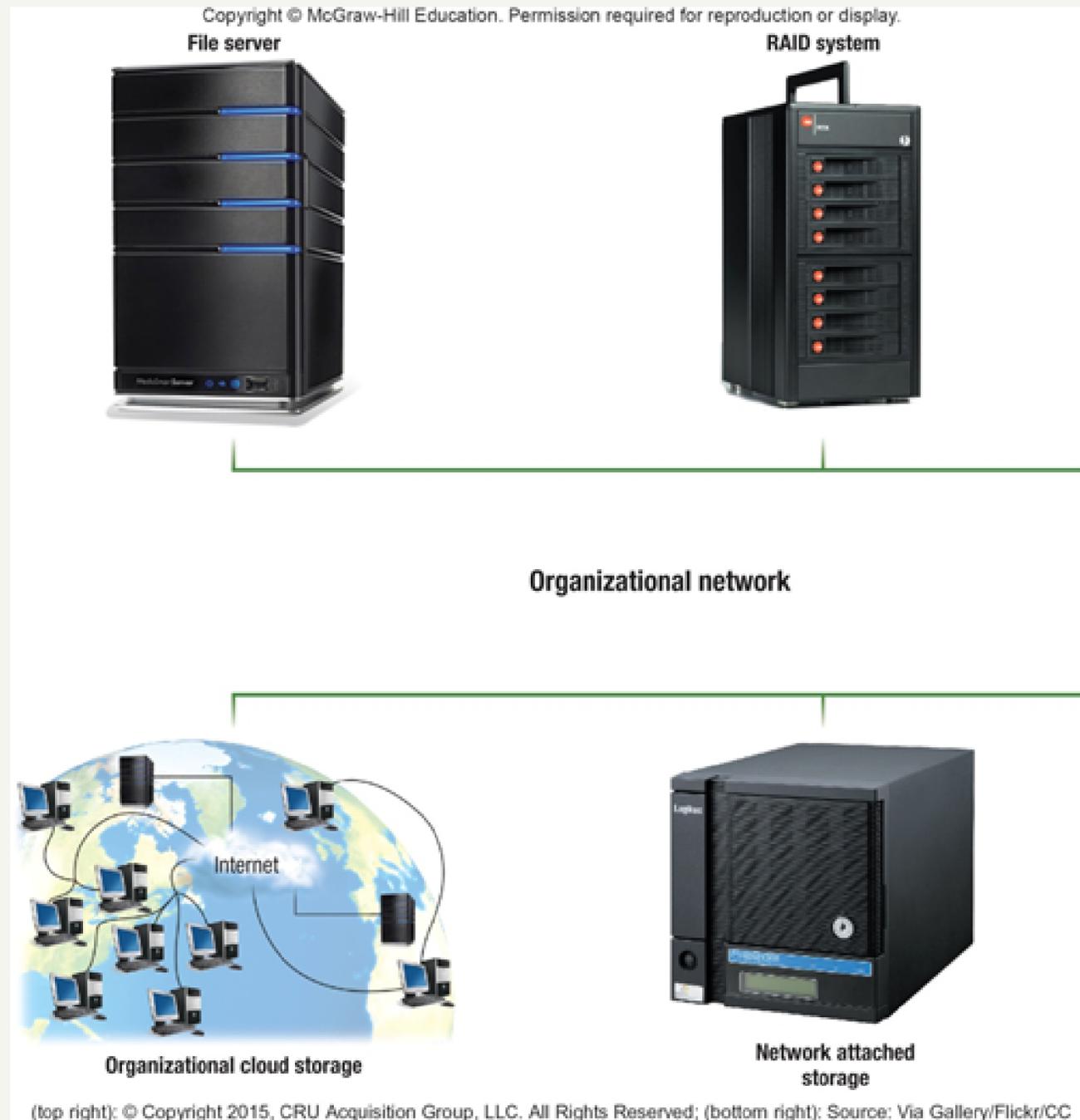
SIMPLE STEPS TO MAKE FOR FREE A CLOUD STORAGE

Go to dropbox website and start your free account!
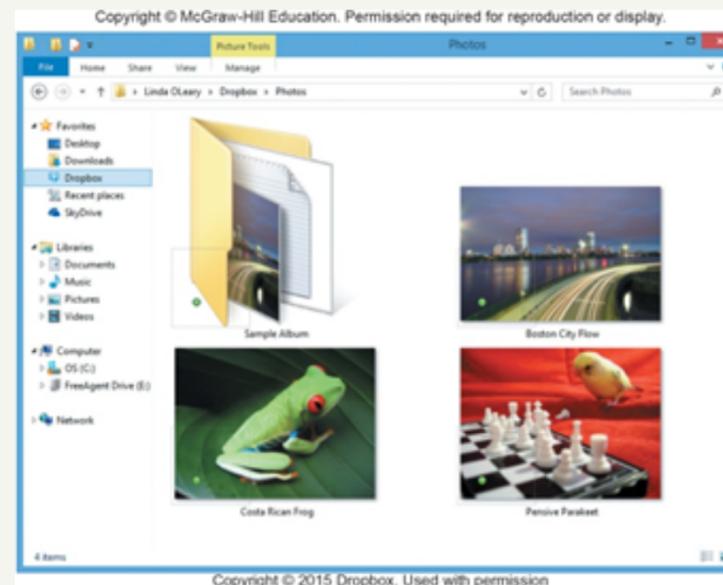
Upload selected files to dropbox

Sharing your dropbox and connect with other people through the cloud storage

File server

RAID system

Organizational network

Internet

Organizational cloud storage

Network attached storage

TECHNOLOGY INFORMATION SYSTEM

MASS STORAGE DEVICES

- To meet the needs of organizations requiring large amounts of secondary storage requirements
- Enterprise storage system
- Safe use of data across an organizational network
- Devices include:
- File servers
- Networked attached storage (NAS)
- RAID systems
- Organizational cloud storage

TECHNOLOGY INFORMATION SYSTEM

STORAGE AREA NETWORK (SAN)

- Architecture to link remote computer storage devices
- Enterprise storage systems can be connected to computers to provide local system access
- User's computer provides file system, but SAN provides disk space
- House data in remote locations and still allow efficient and secure access

- Disaster recovery specialists are responsible for recovering systems and data after a disaster strokes
- General employer requirements
- Bachelors or associates degree in computer science or information systems
- Experience in the field and skills in networking, security and DBA
- Communication and skills and be able to handle high-stress situations
- Annual salary of $70 K to $88 K

Tech guy

Career in IT

Are you ready?

- At some point, hard drives will no longer be able to keep up
- Looking at ways of increasing capacity without increasing size
- Currently hard drive maxes out at 128 GB per square inch.
- New technologies may advance this to 6.25 TG (6,250 GB) per square inch.

IS EVERYTHING CLEAR?

QUESTIONS?

THANK YOU FOR LISTENING!