

Minia university  
Computers and Information College  
Computer science department

# *Introduction to Computer Science*

Computer Hardware Components: CPU, Memory, and I/O  
What is the typical configuration of a computer sold today?

# Types of computer



•Personal computer (PC)



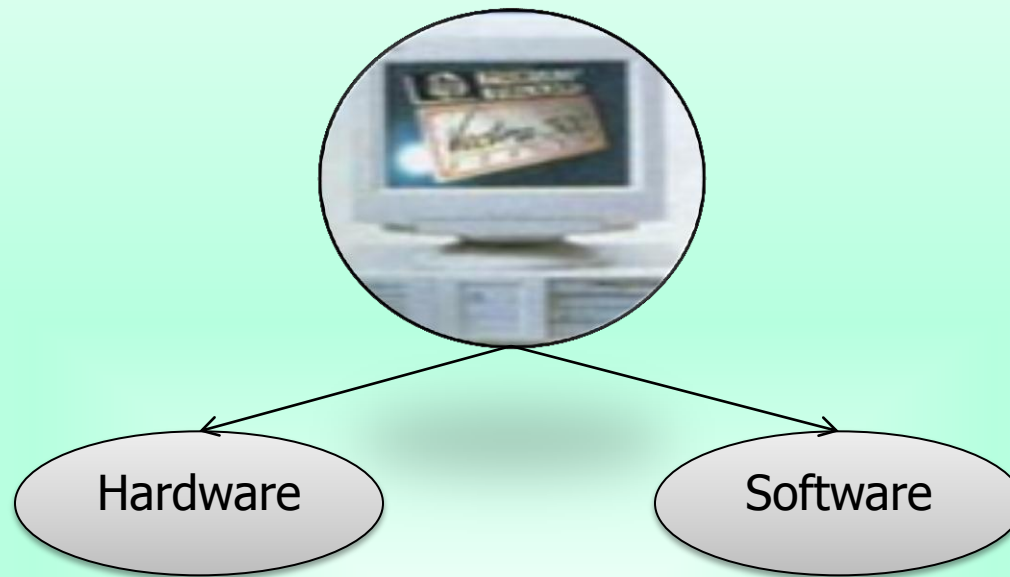
•Laptop (portable computer)



•PDA (Personal Digital Assistant)   
(mobile phone)



•Main frame computer 

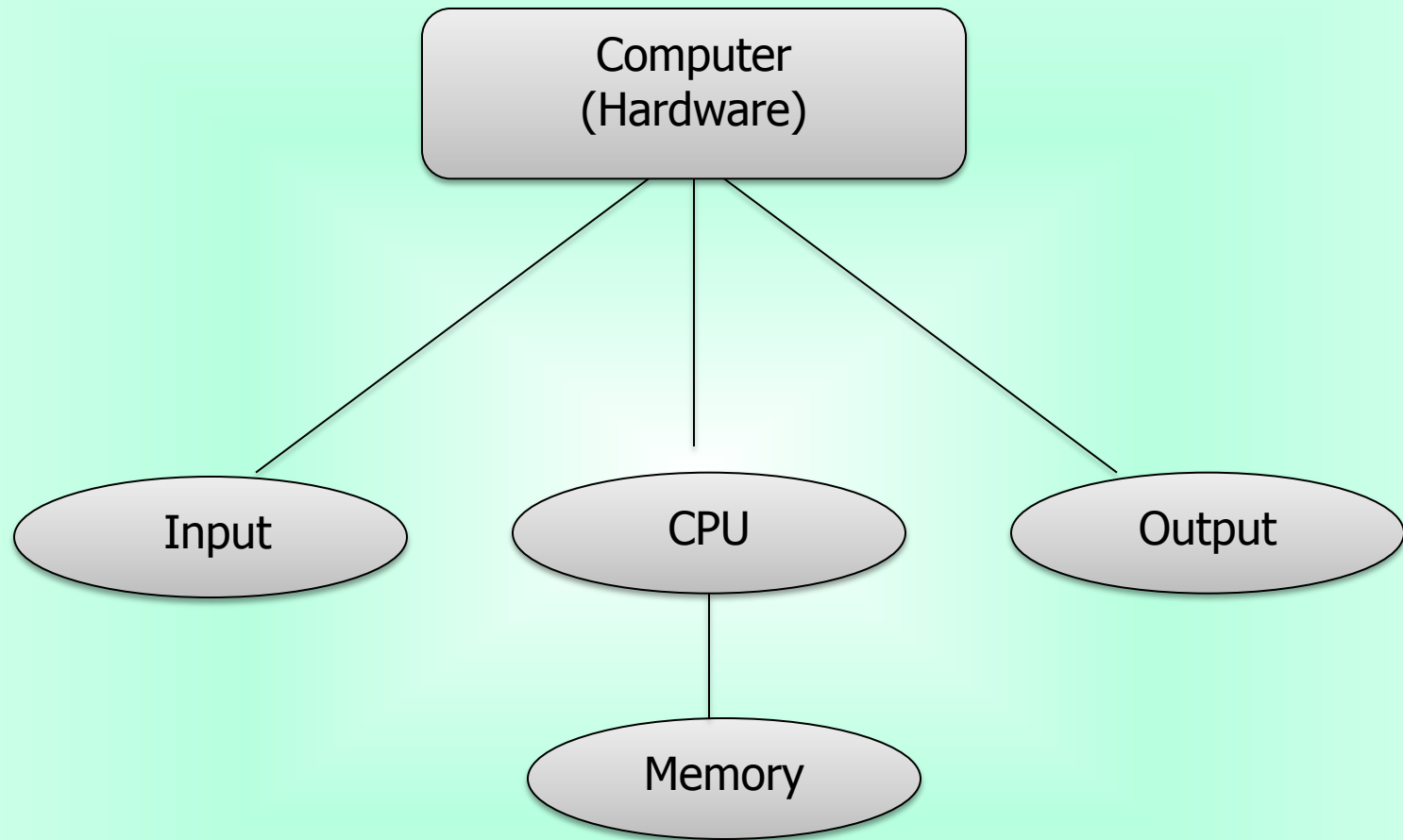


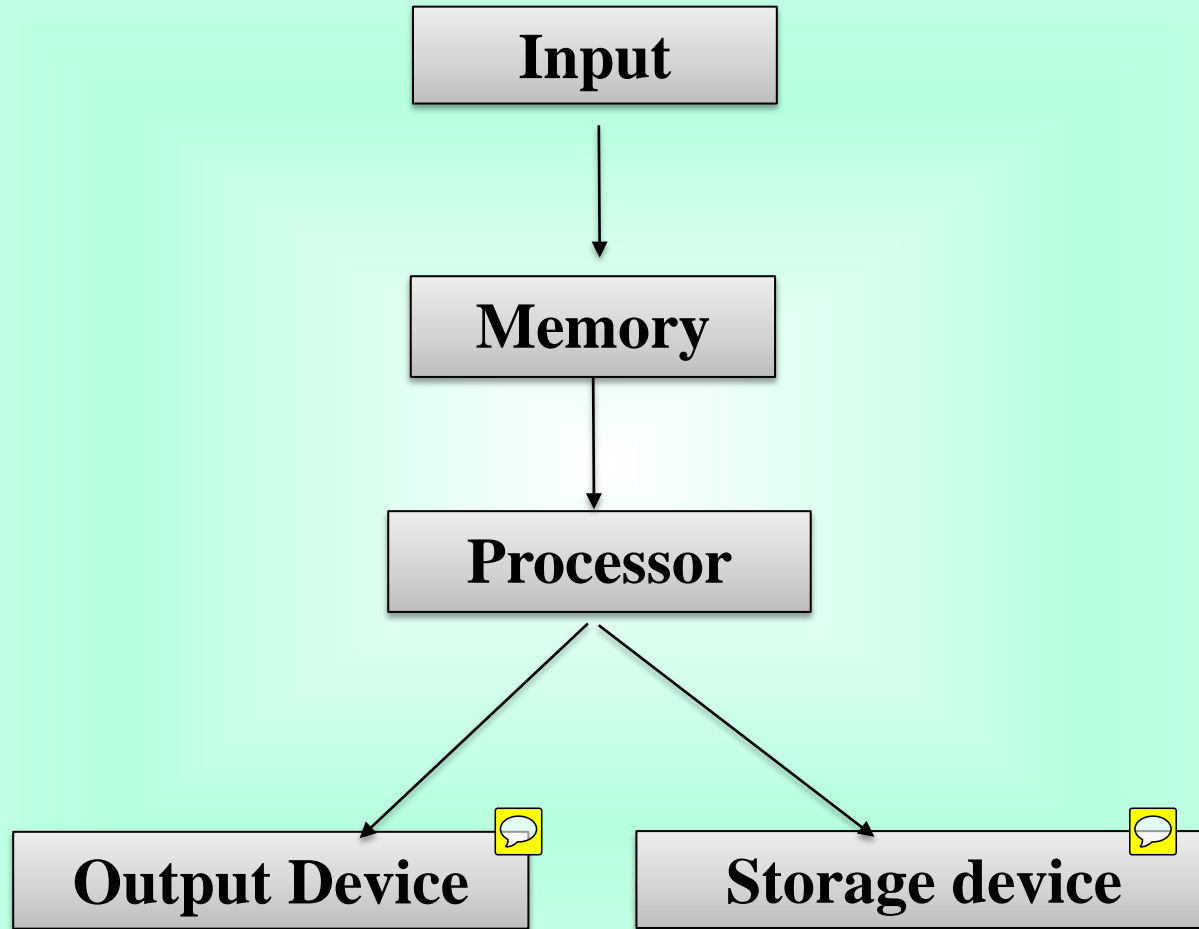
- **Hardware:** The term hardware refers to the physical components of your computer such as mouse, keyboard, monitor, CPU( system case), RAM
- **Software:** is the collection of instruction to make the computer work

# Computer Parts(Hardware)

- There are many parts that work together to make a computer work.









# Input device



•Keyboard



•Mouse - trackball - touch Pad



•Scanner



•light pen



•Digital camera



•Web came



•Microphone



•Joysticks

# Output device



•Monitor



•Plotter (more complex drawing )



•Speaker



•Printer

## Output & Input device



❖Touch screen




# Hardware

- Physical parts of the computer, including processor and memory chips,💬 input/output devices, tapes,💬 disks, modems, cable, etc.



# Computer Case

- Contains the major components of the computer. It helps protect them. 



# Front of the Computer Case



# Inside the Computer Case



# Keyboard (input)

- Used to enter information into the computer and for giving commands.💬



# Mouse (input)

- An input device operated by rolling its ball across a flat surface. The mouse is used to control the on-screen pointer by pointing and clicking, double-clicking, or dragging objects on the screen.



# Touchpad (input)

- A pressure-sensitive and motion sensitive device used in place of a mouse.



# CD Rom Drive

- The drive that plays CDs and reads data that has been stored on the CD.






# CD

- Compact Disk – A type of optical storage device.



# Floppy Disk Drive

- A device that holds a removable floppy disk when in use; read/write heads read and write data to the diskette. 






# Printer

- An output device that produces a hard copy on paper. It gives information to the user in printed form.



# Barcode Reader

- An input device that converts  a pattern  of printed bars  into a number that a computer can read. They are often used by businesses to quickly input price and product information.



# Scanner

- A device that allows pictures to be placed into a computer.



# Microphone

- Allows the user to record sounds as input to their computer.



# Speakers

- Used to generate or reproduce voice, music, and other sounds.



# Sound Card

- Connects the speakers and microphone to the computer.





# Monitor (output)

- A display screen to provide “output” to the user. It is where you view the information your are working on.



# Video Card (output)

- Connects the computer to the monitor. It is a circuit board attached to the motherboard that contains the memory and other circuitry necessary to send information to the monitor for display on screen.



# Modem

- The place where the computer is connected to the phone line.



# Network Card

- A circuit board that connects the computer to the rest of the network usually using special cables.



# CPU

- The Central Processing Unit



# Processor

- The CPU – The chip or chips that interpret and execute program instructions and manage the functions of input, output, and storage devices.



# RAM

- Random Access Memory  
RAM is a computer's temporary memory, which exists as chips on the motherboard near the CPU. It stores data or programs while they are being used and requires power.



# Hard Disk

- Magnetic storage device in the computer.





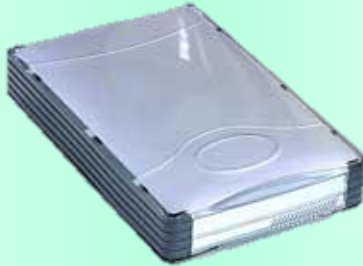
# Storage Capacity

- Bit
- Byte = 8 bit
- Kilobyte = 1024 byte
- Megabyte = 1024 kilo byte
- Gigabyte = 1024 mega byte
- Terabyte = 1024 giga byte

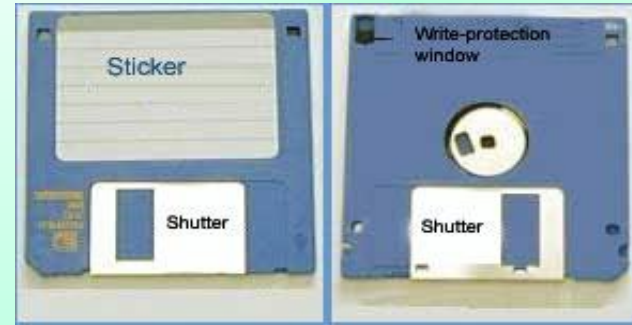
## Computer performance

- Free space on Hard disk
- Capacity of RAM
- Speed of CPU
- Quality of equipments is installed on PC
- Number of application running

# Storage Devices



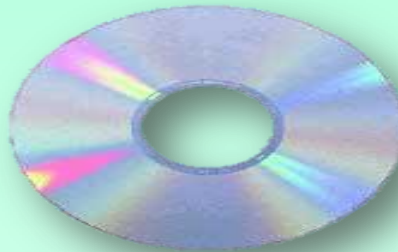
- **Hard disk 4---1000Gb**
  - **fastest at accessing data**



- **Floppy disk 1.44Mb**
  - **Slowest at accessing data**



- **Zip disk**  
**100---750Mb**



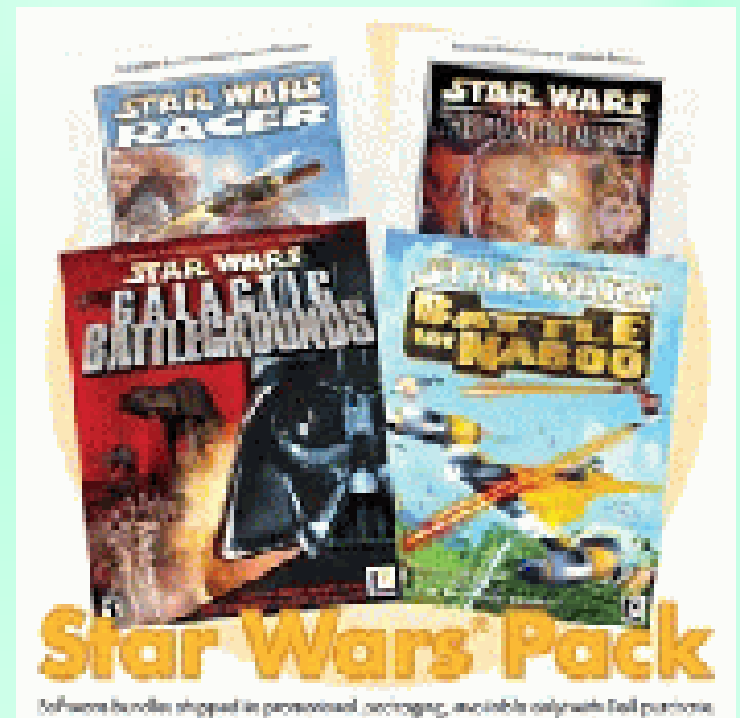
- **CD**  
**650---700Mb**  
**DVD : 4Gb**



- **Tap Backup**  
**2---100Gb**

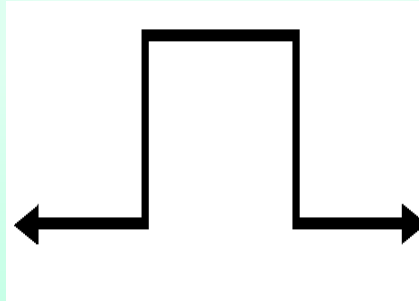
# Software

- Programs that tell the computer what to do. It provides instructions that the CPU will need to carry out.



# Software

**Operating system**



**Application**

- Sets up the look and feel of your computer interface
- Control the hardware and software of your computer

- You can run more than one at the same time
- This can be used to edit data files

# Operating system

- Collection of instructions That makes the computer work
- Types of Operating system/OS
  - Dos
  - Windows
  - Unix
  - Linux
  - Mac

# DOS

- Disk Operating System

This software connects the hardware with the programs you want to run.

MS-DOS:

Microsoft DOS (Disk Operating System) is a command line user interface. MS-DOS 1.0 was released in 1981 for IBM computers.

# Example of MS-DOS

```
C:\WINDOWS>dir h:

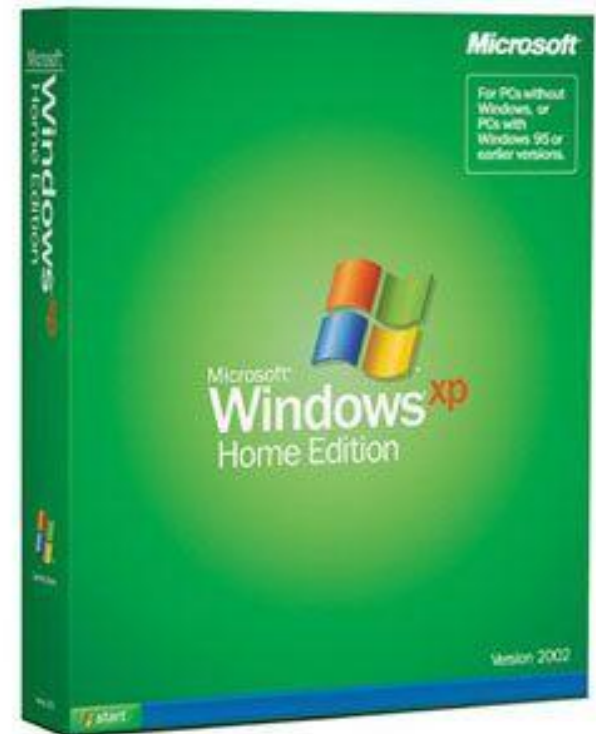
Volume in drive H is USERS
Directory of H:\TLC FILES

.                <DIR>
..               <DIR>
HUMANRES SHW      317,952  09-14-01  8:12a Human resources Activity 2.shw
HUMANRE0 SHW      196,608  09-17-01  2:08p Human Resources Activity 5.shw
HUMANRE1 SHW      135,680  09-18-01  1:46p Human Resources Job Application.shw
CASHIER1 SHW      126,976  09-20-01  9:00a Cashiering Lesson 1.shw
THELORAX WPD        3,862  08-29-01  2:56p The Lorax.wpd
TLCDISCL SHW      167,424  09-19-01 10:57a TLC Disclosure.shw
KASH      SHW      105,472  09-19-01  1:32p KASH.shw
ETHICS    SHW       94,208  09-19-01  1:44p Ethics.shw
CASHIER0 SHW      200,192  09-20-01  3:26p Cashiering Lesson 2.shw
COMPUTER SHW      140,800  09-21-01 11:05a computer basics.shw
      10 file(s)      1,489,174 bytes
      2 dir(s)       12,395.44 MB free

C:\WINDOWS>_
```

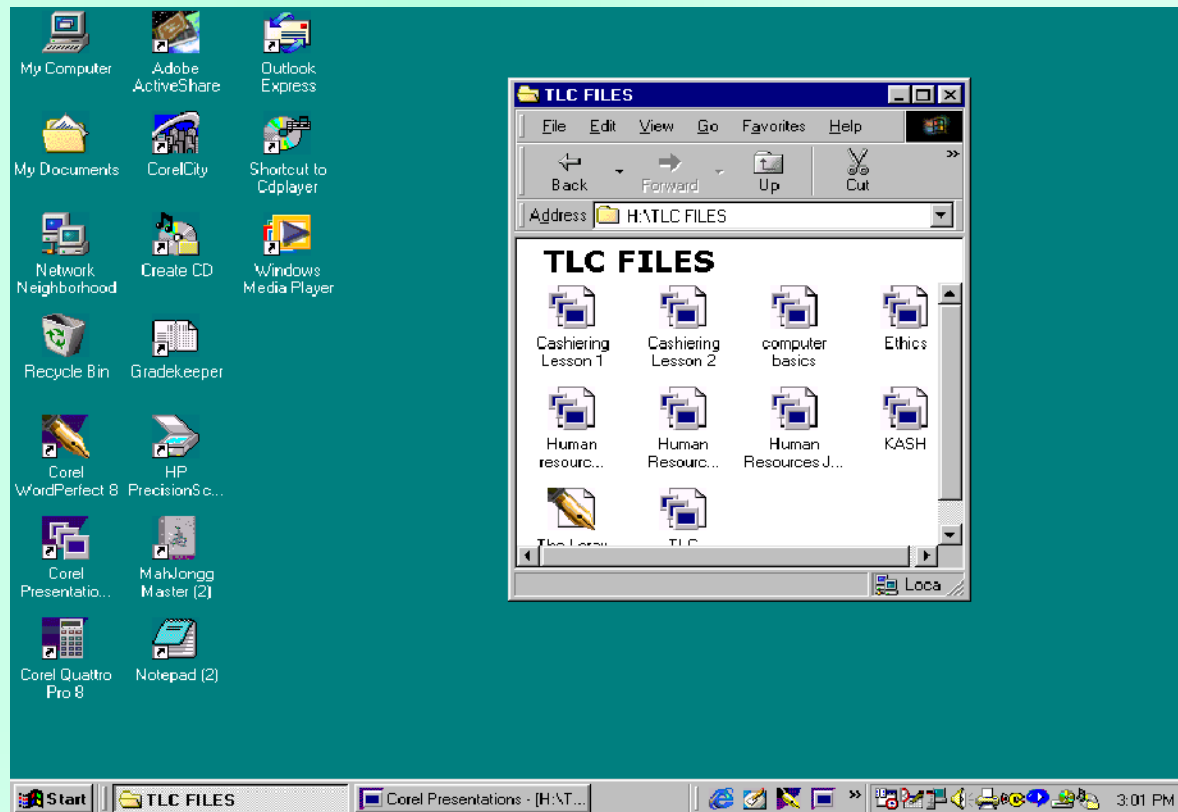
# Windows

- A family of operating systems developed and produced by Microsoft Corp. It provides a software graphical user interface (GUI) used on IBM and compatible computers.





# Example of Windows (GUI)



# Important terms

## Difference between Primary and Secondary

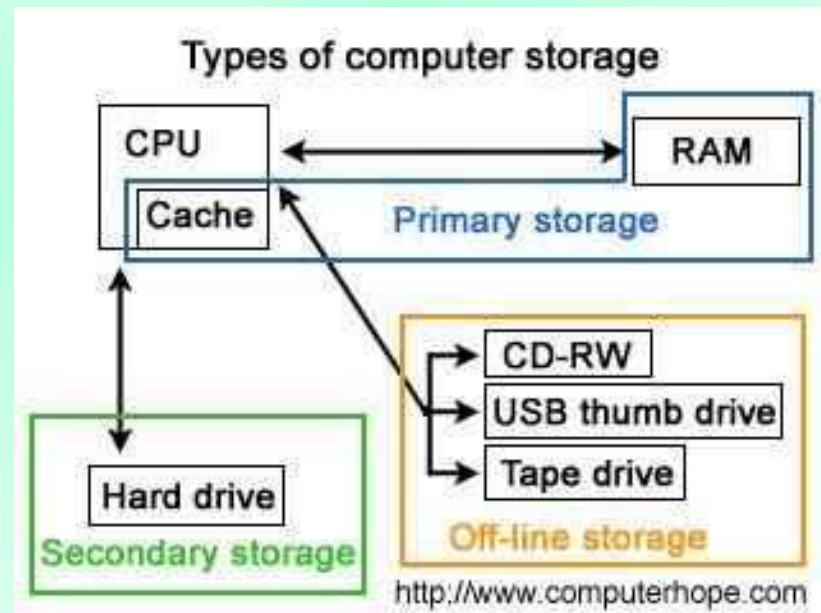
1. All secondary storage is permanent
2. Most Primary Storage is temporary.
3. Secondary storage is usually cheaper and large
4. Primary Storage is expensive and smaller.
5. Primary storage is smaller in capacity (L2 Cache is only 2MB)
6. Secondary Storage is bigger in capacity
7. Primary storage is usually faster therefore more expensive
8. Secondary storage connects to the CPU via cables and therefore is slower
9. Primary storage is closer to the CPU and/or is integrated onto it and therefore is faster.
10. Examples of Primary storage: RAM ,L2 Cache..  
Secondary Storage; Hard drive, CD-ROM.

# Important terms

## Secondary Storage

**Called : external memory and auxiliary storage, secondary storage** is a storage medium that holds information until it is deleted or overwritten regardless if the computer has power. For example, a floppy disk drive and hard drive

primary storage is accessed much faster than secondary storage because of the price and size limitations  
secondary storage is used with today's computers to store all your programs and your personal data.



# Important terms

## Format

- Format is a special software(system file) added to unformatted disk so it can store data

## Backup

- Copying your computer files onto a separate storage device
- Keeping copies of data in two locations

# Important terms

## Freeware

Freely available

Software You can use it for free , you haven't pay for it

## Shareware

for trial period

- Software you can try it for free but you have to pay if you need to keep it.
- It is illegal غير قانونی if you copy and sell it .

# Important terms

## ■ Virus

is a program that can damage files or hard disk  
Antivirus can detect and disinfect Virus

## ■ Antivirus is the program that can

- Check virus everyday.
- Delete email from unknown source.
- Putting a virus check in a floppy drive.
- Regularly visiting the web sites of your anti virus software supplier.
- Running a virus check on an email attachment.

# Network

Two or more computers connect together and allow PCs to Share information (files), disk storage and resources as (printers).

## Classification According to :

1. Network by area
2. Network by user
3. Network by connection



# Network by area

## LAN & WAN

### local Area Network (LAN)

- Is system of individual pcs are connecting to gather within company or organization .
- Authorized users can access data stored anywhere on a LAN.
- Large data files can be transferred between computers using a LAN.

### WAN

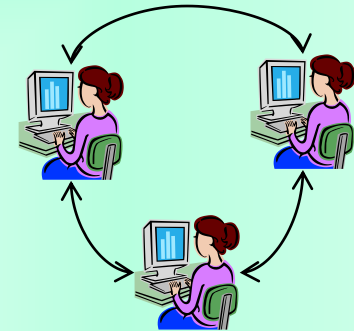
- Wide Area Network
- Allows pcs connect to gather over a wide area
- Type of network that links computers in different cities or countries



# Network by area

## LAN

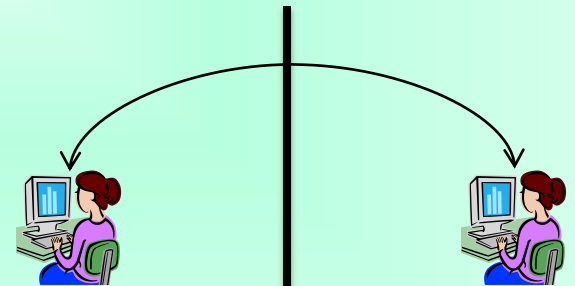
- Authorized users can access and data stored anywhere on a LAN.
- Large data files can be transferred computers using a LAN.



Organization A

## WAN

- Type of network that links computers in different cities or countries
- is a geographically-dispersed collection of LANs.



City or Country **A**

City or Country **B**

# Internet and WAN

**The Internet** is a Global collection of networked computers all over the world, Or it is A wide Area network of computers linked together

- So we can say that The Internet is the largest WAN
- A network device called a router connects LANs to a WAN. the router maintains both a LAN address and a WAN address(IPs).

# WWW (world wide web)

- Refers to vast collection of linked documents .
- Small part of internet.
- A vast collection of linked documents held on computers all over the world .
- Can accessed using a web browser.

# WLAN & SAN

- **Wireless Local Area Network** - a LAN based on WiFi wireless network technology
- **Storage Area Network** - connects servers to data storage devices through a technology like Fibre Channel.

# Network by users

## Intranet & Extranet

### Intranet

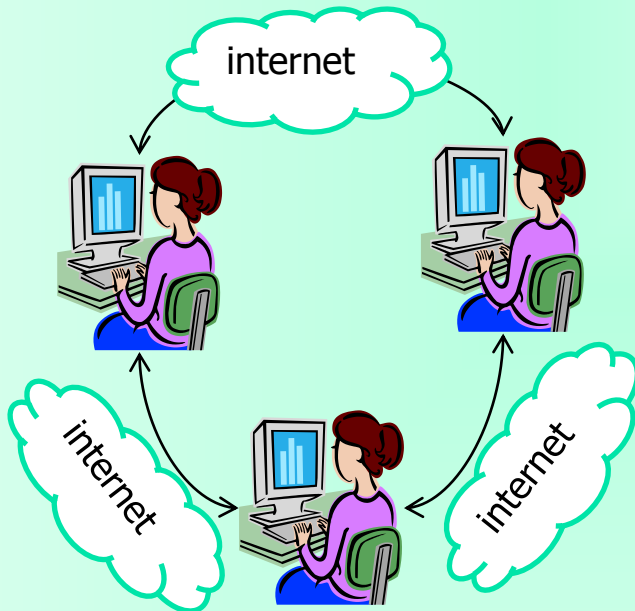
- An internal **internet** using **e-mail** and **web** within a single origination and access members of **the same** company **organization** to access it

### Extranet

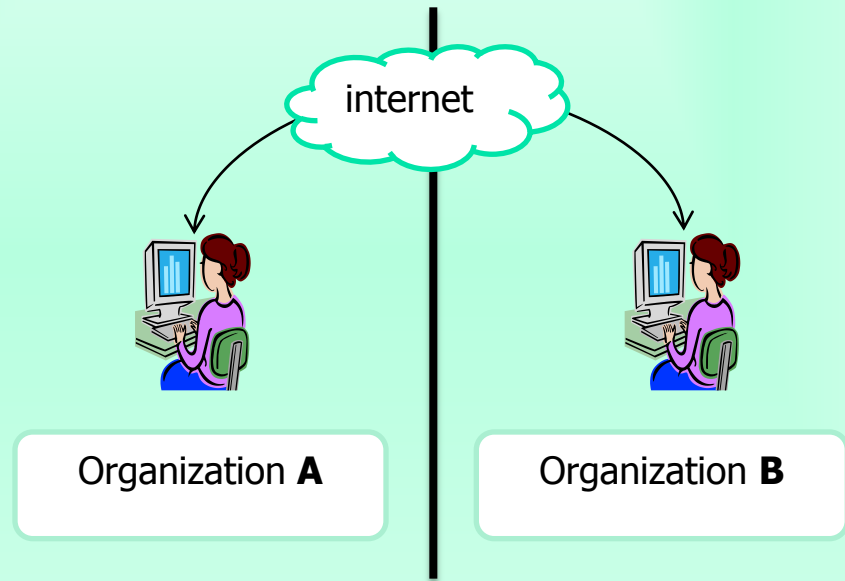
- **Internet** between **organizations** and allow external users to access it by username and password.

# Network by users

## Intranet & Extranet



LAN Using The internet



Large LAN Using The internet

# Network by connection

- PSTN: public Switched telephone network  
شبكة التليفون العامة
- ISDN: Integrated Service Digital Network  
الخدمه التكاملية الرقميه it is a digital line used for both voice and data
- ADSL: Asymmetric Digital subscriber line  
خط اشتراك رقمي غير متماثل

# Requirements of the internet

- Telephone line
- ISP : [Internet service provider]
- Modem [14.4Kbps to 56.6Kbps] convert digital and analog signals