

Computer Components

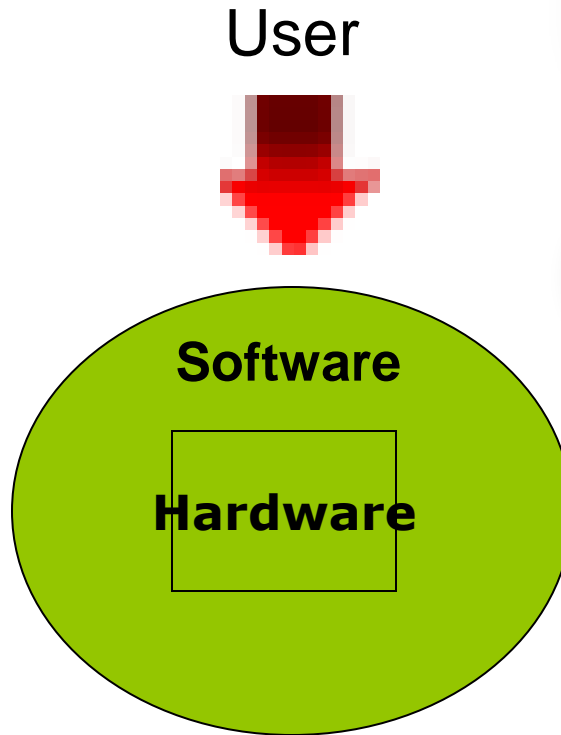


Computer Definition

- A computer is a machine that is used to store and process data electronically

A Computer System

- Hardware
- Software
- User



A Computer System (Contd.)

- In general, a computer is a machine which accepts data, processes it and returns new information as output.



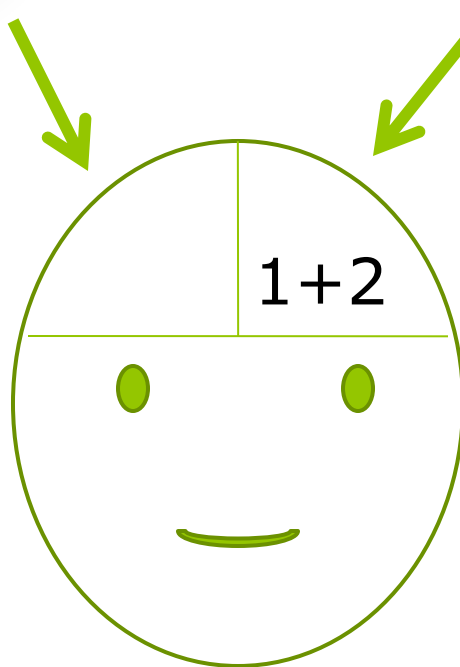
Brain

memory

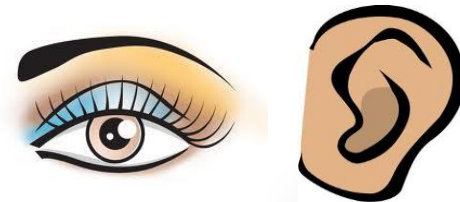
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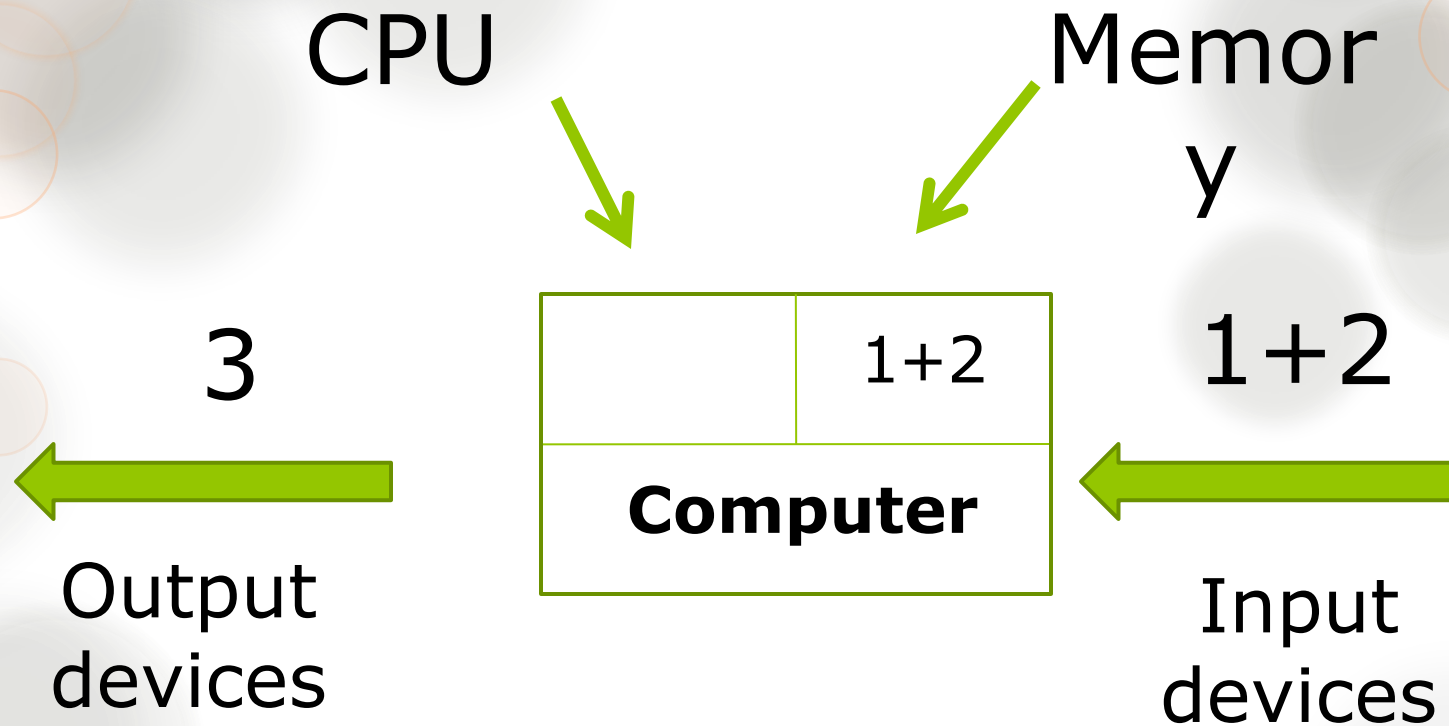
1+2

1+2



mouth





Computer components

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graph TD; A[Computer components] --> B[Software]; A --> C[Hardware];
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Software

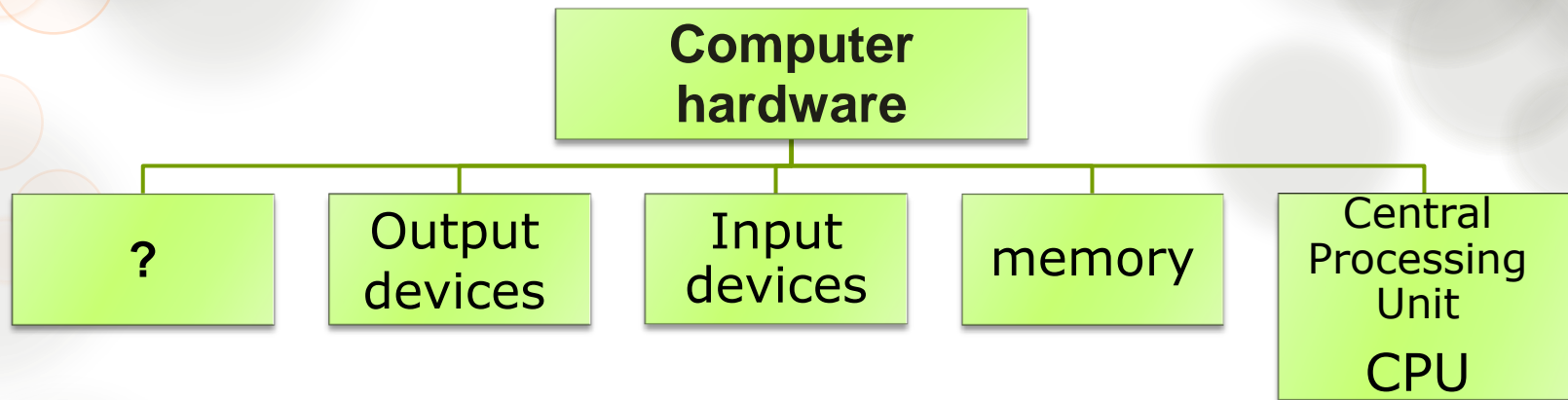
Hardware

Hardware

- Pieces of equipment that make up a computer system.
- These are the parts you can touch (although many parts are contained within the computer's case).

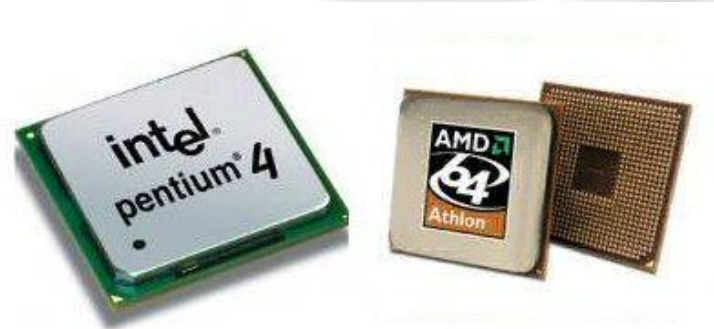
Example of Computer Specification

| Asus K43SV | Asus K43E | ASUS recommends Windows® 7 | ASUS® Inspiring Innovation • Persistent Perfection |
|---|---|---|--|
| » Intel® Core™ i5-2410M Processor 2.30 GHz | » Intel® Core™ i3-2310M Processor 2.10 GHz |  | متوفر نظام التشغيل بالعربية  |
| » Windows® 7 Home Premium | » Windows® 7 Home Basic | | |
| » 4 GB RAM, 500 GB HDD | » 3 GB RAM, 320 GB HDD | | |
| » 15.6" Colorshine HD LED | » 14.0" Colorshine HD LED | | |
| » 1 GB Dedicated VRAM | » DVD Super MultiDrive | | |
| SR 2599 | SR 1899 | | |



The Central Processing Unit (CPU)

- The brains of the computer
All the "thinking", calculating and processing is done by the CPU.
- The CPU also control the transfer of information between the secondary and main memory
- The speed at which CPU can process information is Known as its Clock Speed
-



The Central Processing Unit (CPU)

- This is measured in megahertz (MHz) or gigahertz (GHz).
 - 1 megahertz = 1 million cycles per second.
 - 1 gigahertz = 1000 megahertz.
- The CPU also incorporates an
 - **Arithmetic Logic Unit** (which performs the calculations and logical operations within the computer)
 - **Control Unit** (which fetches, decodes and executes data from the memory).



Memory

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graph TD; Memory[Memory] --> RAM[RAM]; Memory --> ROM[ROM];
```



(RAM)

13

CSC1103- Nouf AlJaffan



(ROM)

Saturday, 02 February 2013

RAM (Random Access Memory) or main memory

- Random access memory is used in a PC to temporarily store data when you are using applications.
- RAM is also used to store program instructions and feed information to the CPU to process.
- RAM is not permanent, when you switch off the PC (or shut down), the contents of RAM are lost or emptied This is known as volatile memory.

Language of Computers

- Computers only understand the electronic signals.

Either Current is flowing or not.

○ Current Flowing : ON

○ Current Not Flowing : OFF

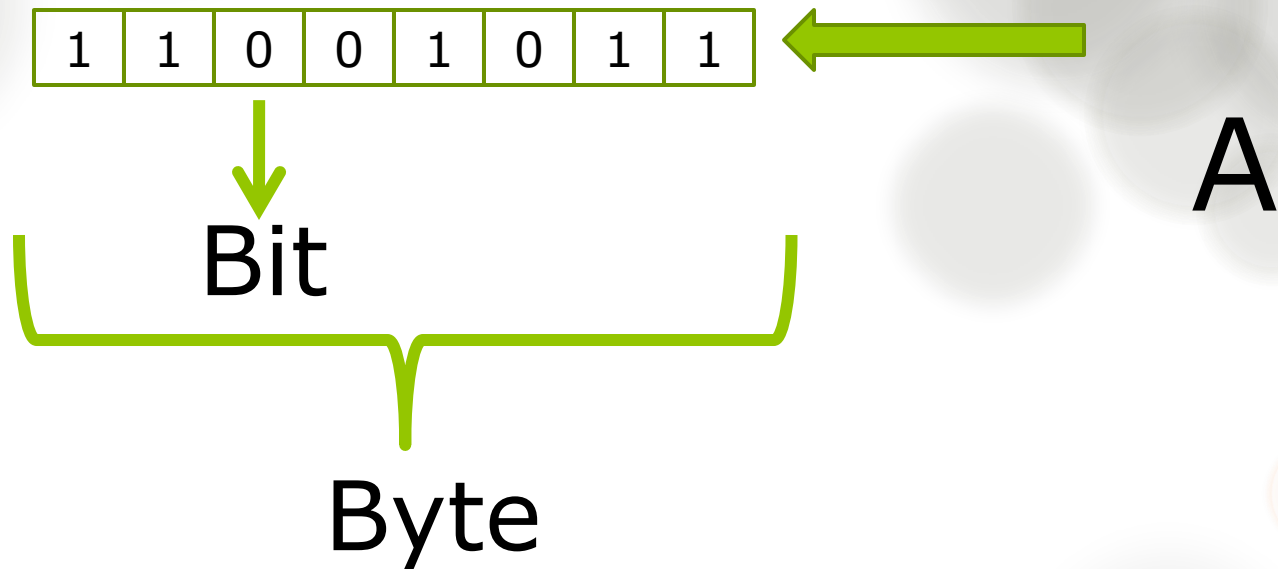
- Binary Language

○ ON : 1

○ OFF : 0

○ Bit, Byte, KB, MB, GB

The Information Storage Unit



| bit | the amount of storage space needed to hold either a 1 or a 0 in memory (binary numbering) This is the smallest unit of computer memory |
|---------------|---|
| byte | Equal to 8 bits , this is the amount of storage space needed to hold one character |
| Kilobyte(KB) | bytes1024 |
| Megabyte(M B) | 1024KB |
| Gigabyte(GB) | 1024MB |
| Terabyte(TB) | 1024GB |

ROM (Read Only Memory)

- This is a special type of memory which contains all the information the computer needs to switch itself on, check that all its systems are working and to tell the PC what things are plugged into it.
- Data stored cannot be changed or overwritten by you, and stays the same even when the PC is switched off.

Input devices

- An input device is any device that is used to supply information to a computer (as data or for the selection of commands/menus/icons etc)





Output devices

Any devices that allows the result of computer processing activity to be seen or heard

Printer



Plotter



Output device: Screen

○ CRT



○ LCD



○ Plasma



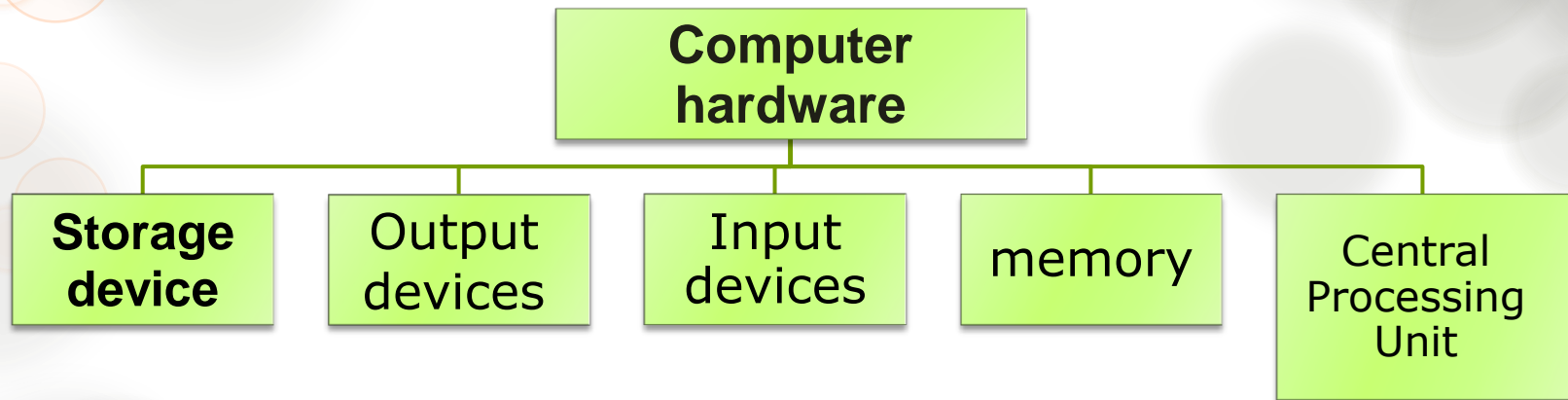
Output device

DataShow



Speaker





Storage drives

- Storage drives are used to store and transfer data files.
- After data is entered into a computer, it must be saved as a file to preserve its contents after the computer is switched off.

Hard Disk

- drive HDD Usually fixed inside the computer and stores **large volumes** of data, which can be **accessed** and **retrieved** quickly.
- A software application must also install files onto the hard disk drive in order to run .
- when the user requests its use the access time of a HDD is measured in milliseconds(msec)



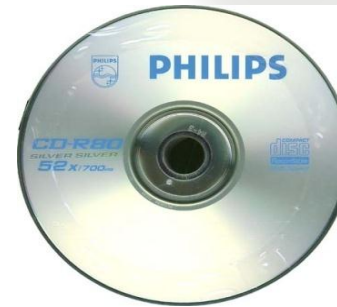
Floppy disk drive:



A floppy disk drive is like a hard disk, but with removable disks called floppies, floppy disks or diskettes.

Floppies

can be used to transfer small files from one PC to another (up to 1.4MB)



CD-ROM/DVD-ROM Drive:

CD-ROM (Compact Disk – Read Only Memory)

CD-ROM -> CD-R -> CD-RW -> DVD -> DVD-R

Computer components

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graph TD; A[Computer components] --> B[Software]; A --> C[Hardware]
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Software

Hardware

Software

- Software is set of programs (which are step by step instructions) telling the computer how to process data.
- Software needs to be installed on a computer, usually from a CD.
- Softwares can be divided into two groups:
 - System SW
 - Application SW

Software (Contd.)

System Software

- It controls the overall operation of the system.
- It is stored in the computer's memory and instructs the computer to load, store, and execute an application.
- Examples: Operating System (OS), Translators
DOS, Microsoft Windows , Unix, Linux, OS2, BeOS, OS-X (Mac OS) and so on
- **Operating system cannot run without the BIOS**

Software (Contd..)

Application Software

- They are Softwares written to perform specific tasks.
- The basic types of application software are:
word processing, database, spreadsheet, desktop publishing,
and communication.

Examples: MSOffice, MSOutlook, BANKSOFT

Application Software

- Applications Software must be compatible with the Operating Systems
- Common Applications Software:
 - Word Processing as Microsoft Word
 - Spreadsheets as Microsoft Excel
 - Database as Microsoft Access
 - Presentation as Microsoft PowerPoint
 - Web browsing as Internet Explorer

Sara Turn on her computer and then open the word processor to write her homework

What are the steps taken by the computer to do this task in order ?

- 4** Load MS word in to the RAM
- 1** Run the BIOS software from the ROM
- 3** read the OS files from HDD and copy them to the RAM
- 2** the BIOS carries out the Power On Self Test(POST)



Types of computer

Types of Computers

On the basis of Computing Power & Size:

- Laptop / Palmtop
- Micro Computer / Desktop
- Mini Computer / Mainframe
- Super Computer

Types of computer (PC)

1- Personal Computer



| Capacity | Speed | Cost | Typical users |
|----------|-------|------|---------------|
| ? | ? | ? | ? |

Types of computer (PC)

2- Network Computer



| Capacity | Speed | Cost | Typical users |
|----------|-------|------|---------------|
| ? | ? | ? | ? |

Types of computer (PC)

3-laptop computers



| Capacity | Speed | Cost | Typical users |
|----------|-------|------|---------------|
| ? | ? | ? | ? |

Types of computer (PC)

4-PDA



| Capacity | Speed | Cost | Typical users |
|----------|-------|------|---------------|
| ? | ? | ? | ? |

Types of computer (PC)

5-Mainframe

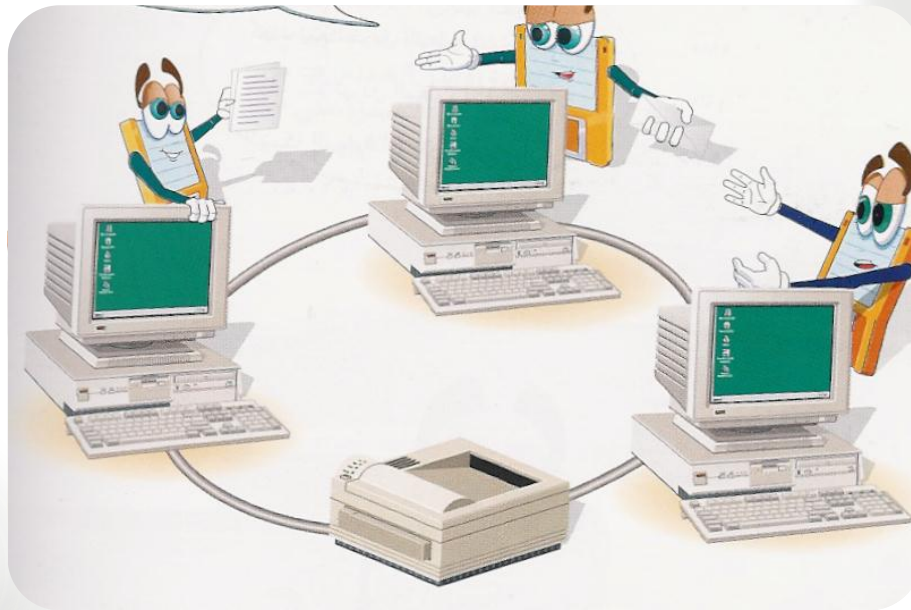


| Capacity | Speed | Cost | Typical users |
|----------|-------|------|---------------|
| ? | ? | ? | ? |



Computer Network

- A Computer Network is interconnection of Computers to share resources.
- Resources can be : Information, Load, Devices etc.



Types Of Computer Networks

On the basis of Size:

- Local Area Network (LAN)

Its a network of the computers locally i.e. in one room, one building.

- Wide Area Network (WAN)

Its a network of the computers spread widely geographically.

Benefits of Computer Networks

- Information Sharing
- Device Sharing
- Load Sharing
- Mobility
- Fast Communication
- Anywhere Anytime Banking

Internet

- Internet is a huge network of computer networks.
- Internet provides many services:
 - Email
 - World Wide Web (www)
 - Remote Login (Telnet)
 - File Transfer (FTP)

Intranet

- *Intranet* is the generic term for a collection of private computer networks within an organization.