

# ***Introduction in Computer Science***

*Computers Types :*

- ***MicroComputers***
- ***Main Frames***
- ***SuperComputer***

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## ***MicroComputer***

- **The Most Used**
- **The Cheapest**
- **The Most Portable**
- **Design for Homes and Offices**

**Types :**

- 1- Desktop computers
- 2- Laptops
- 3- Gaming Consoles
- 4- sound and navigation systems of Cars
- 5- smartphones
- 6- Tablets
- 7- Calculators

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## ***Main Frames***

*can store a huge amount of data*

*a large machines must be in air-conditioned Room*

*Designed for the Large Organization as:*

- × Health Institution
- × Banks
- × Education Institution

# ***SuperComputers***

- *The Most Powerful*
  - *Used for Research and Exploration*
  - *Used for Personalized Medicine , Space Explortion, earthquake studies and Nuclear Weapons Testing*
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## **Introduction to Computers**

**Computer :** is an electronic device that stores or retrieves data

**Computer :** Its composition is divided into two components

***1- HardWare***

***2- Soft Ware***

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## **HardWare**

is the Physical Components in the Devices and it is  
4 Sections

**1- Inputs Units**

**2- Outputs Units**

**3- Storage Units**

**4- System Units**

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## **1- Inputs Units**

are Devices allow the Users to enter any data and the Devices as :

**1- Keyboard**

**5- Scanner**

**2- Mouse**

**6- JoySticks**

**3- Touchpad**

**7- Light pen**

**9- WebCam**

**4- Microphone**

**8- Bar code reader**

## 2- Outputs Units

are devices that allow information to display in a human readable form As :

**1- Printers    2- Speakers    3- Projectors    4- Monitors**

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### **1- Printers**

is an output device that prints information on paper.

### **2- Speakers**

is the device that outputs sound from the computer.

### **3- Projectors**

is an optical device that projects an image or moves images onto a surface.

### **4- Monitors**

- × the main output device of a computer.
- × Display size is measured in diagonal inches.
- × Monitors are formed as a matrix of pixels.
- × pixels are the smallest unit that can take color.
- × The sharpness of the image depends upon the number of pixels.
- × The display quality is measured in resolution
- × resolution is the number of pixels in the display rows and columns
- × The aspect ratio of a display is the ratio of its width to its height
- × standard aspect ratio (4:3) and widescreen (16:9).

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## ***3- Storage Units***

is any computing hardware used for storing and moving data files temporarily and permanently and can be internal or external to a computer.

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### ***Types of Storage Units***

*1- Hard Disk Drive    2- Compact Disk    3- USB Flash Drive*

## **1- Hard Disk Drive (HDD)**

- holds the operating system files that are retrieved by the CPU to RAM when needed.
- Unlike RAM, it retains the stored data even when the computer powered off.
- measured by Gigabyte (GB), Like (RAM) , Might be 500 GB or more .
- newer type, called a solid-state drive (SSD) uses a type of memory, resulting in a fast, quiet and reliable (But Expensive => غالي نسبياً)

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## **2- Compact Disk (CD)**

*Compact Disc, DVD, and Blu-ray Drive*

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## **3- USB Flash Drive**

*a portable storage can connect to the Device via USB port and make transfer data easy and it called sometimes : Memory disk or Jump disk*

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## **4- System Units**

*The main and Essential body of computer Units Including :*

**1- central Processing Unit (CPU)**

**4- Expansion Cards**

**2- Mother Board**

**5- Power Supply**

**3- Random Access Memory (RAM)**

**6- Ports (المنافذ)**

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### **1- CPU**

*represents the brain of the computer, installed in a special socket on the motherboard, very small, thin silicon wafer encased in ceramic chips, speed is measured in gigahertz (GHz), number of cores is from the main factors of speed of CPU*

*Notice That :*

*A hertz is a cycle per second; a gigahertz is 1 billion cycles per second.*

*the single CPU run at 1.8 GHz, then quad-core (4 cores) it can process up to 4 times.*

*(4 x 1.8 GHz).*

*the famous manufactures of Personal CPU: intel & AMD*

## ***2- MotherBoard***

*is a large circuit board into which all the other components connect, considered the backbone of a computer*

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## ***3- Random Access Memory (RAM)***

*consists of computer chips that hold data, One type of memory, that temporarily stores data , measured in (GB)*

*increasing RAM means :*

*1- More App can have open at once*

*2- make some Application perform better in general*

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## ***4- Expansion Cards***

*It is a chip that contains the most important ports in the device*

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## ***5- Power Supply***

*alternating current electric power to low-voltage direct current*

**notice that :**

- Laptops can run from a built-in battery
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## **6- ports**

- × the monitors connect to **VGA , DVI & HDMI** ports .
- × Mouse & Keyboard connect to **USB or PS/2** ports .
- × printer , scanner , camera and flash disk connect to **USB or USB 3.0**
- × **USB 3.0** is the Highest speed and has an internal blue color
- × **Ethernet Port** used to connect the device to the internet

# Software

*set of programs designed to perform a well-defined function*

## ***The operating system (OS)***

*system software that manages computer hardware and software*

**V.I.P**

**Types Of (OS):**

- 1- Unix
- 2- Linux
- 3- Microsoft Windows
- 4- Android
- 5- Apple Mac Os

### **Windows Version:**

- 1- Windows xp (2001)
- 2- Windows Vista (2006)
- 3- Windows 7 (2009)
- 4- Windows 8 (2012)

### **Notice that :**

***each operating system has a version based on the features and its Usage***

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### ***graphical user interface (GUI)***

*allows the user to interact with the operating system by clicking*

### ***device driver***

*Computer Software allow the user to connect external extension to the computer with transfer data with them*

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## **Measuring Units Of Computer**

### ***Data Storage Units :***

data transfer rate is measured  
in ( Mbits per second )

• 1 bit (b) 0 or 1 = 1/8 of Byte	• 1 Byte (B) = 8 bits
• 1 Kilobyte (K = 1024 Bytes	• 1 Megabyte (MB) = 1024 KB
• 1 Gigabyte (GB) = 1024 MB	• 1 Terabyte (TB) = 1024 GB
• 1 Petabyte (PB) = 1024 TB	• 1 Exabyte (EB) = 1024 PB
• 1 Zettabyte (ZB) = 1024 EB	• 1 Yottabyte (YB) = 1024 ZB

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**CPU Speed Units :** *measured in hertz (Hz) or gigahertz (GHz).*

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**Network Speed Units :** *measured in megabits per second(Mbit/s).*

# ***Internet***

*is a large network that connect the users' Devices and servers via Ethernet Or Wi-fi*

***World Wide Web (www) :***

*is a large amounts of documents connected with domain link exp : **google.com***

***web page :*** *is an individual document* (منظمه او كيان)

***website :*** *is a group of webpages connect with themselves and publish by entity*

***Browsers :*** *is a Application allow the Users use the Internet and allow also go to different websites*

***Intranet :*** *private network connect devices with themselves but only in the office and also between the office's computer*

***Cloud :*** *an area in Internet that Users can store and retrieve their files*

***Examples : Microsoft OneDrive***

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## ***Steps to get Internet***

***Computing Devices :*** *Mobiles ,Computers ,Tablets*

***Internet service Provider (ISP):*** *company that provide us access Internet*

***Example : WE & Etisalat***

***Connection Device :*** *khuhurhdevice connect User's Device to the IPS*

***modem :*** *Device convert the data from Digital to Analog and vice versa*  
(والعكس صحيح)

***Internet Connection Ways :***

***Wired :*** *via the cable connect the device that provide you the internet and the Computer*

***Wireless :*** *connect to Internet from RadioWaves Called **Wi-fi***

**Router** : Device connect the computing device to internet via wireless Ethernet

**IP Address** : a number formed from 4 integers ,each integer range from 0 => 255 **Exp** : 192.168.1.1

**Bandwidth** : amount of data can be transfered over network in certian period  
**Measured by Megabites per second (Mbits/s)**

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**factors affecting the Bandwidth**

**1-  
IPS**

**2- billing Plans**