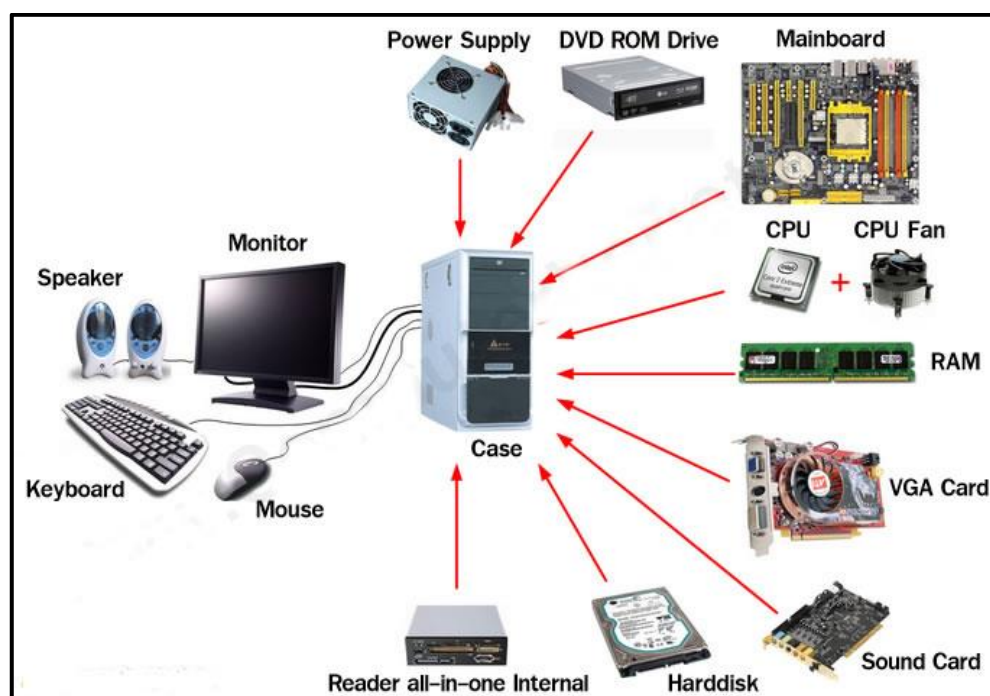## System unit

It is the box, which contains the Central Processing Unit CPU, Main Memory, Drives, and the Power Supply.

1. Central Processing Unit CPU:

Every PCs-computer contains at least one chip called microprocessor or CPU, attached on the motherboard, to perform computer processing. It's the brain of computer, it determines how fact your computer will run. The speed of the computer is measured by MHz or GHz (Mega or Giga Hertz).

Fig. 2 System Unit

Three main parts of CPU:

❖ **Arithmetic and Logic unit (ALU):** Which perform every arithmetic operations (*, +,-, /, ^...) and the logic operations (and, or, not…).

❖ **Registers:** They are holding areas for both data and instructions. There are many different registers, each with its own special purpose. E.g. there are registers that hold data, register that hold instructions, registers that store logical states (yes/no), temporary values that serve as increment counters, and so on.

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❖ **Control Unit (CU):**

Manages the flow of data through the CPU. It directs data to and from the other components within the CPU.

The functions of Control Unit:

❖ Read and interpret the program's instruction.

❖ Directs the movement of electric signals between memory and ALU and also between main memory and I/O Device.

❖ It control every operation inside the CPU.

2. Memory:

The computers have two types of memory:

A. Main Memory.

B. Secondary Memory (Storage Devices).

A. Types of the Main Memory:

1. **RAM (Random Access Memory):** The main memory in computer. It keeps system software, programs & data which are needed when the computer is working. It's a volatile memory.

2. **ROM (Read Only Memory):** It's another part of the main memory but with a very small capacity. It keeps instructions, which make the computer work when turning it on. It's non-volatile. The computer cannot write on it.

3. **Cache Memory:** It's liked to the CPU, very fast, keeps frequently used programs and data. Therefore, it helps to increase the speed of computer. It reduces the gap speed between the RAM and the CPU.

4. **Flash Memory:** It saves and erased data in faster way. It's non-volatile memory that can be used to save BIOS in computers. It can be used also in mobiles, portables, digital camera and printers.

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B. Types of Secondary Memory (Storage Devices): This memory has more capacity than the main memory. But, it's speed is slow, and the information in it are not delete when the computer is lock.

1. **Hard Disk Drive (HDD):** A hard disk is part of a unit is inside the actual computer.

2. **Optical Disk (OD):** An optical disk drive (ODD) is a disk drive that uses laser light as part of the process of reading or writing data to/from optical disk. Some drives can only read from discs, but recent drives are commonly both readers and recorders, also called burners or writers. There are three main types of optical media:

   ❖ **CD** (Computer Disk) can store up to 700MB of data.

   ❖ **DVD** (Digital Video Disk / Digital Versatile Disk) can store up to 8.4GB.

   ❖ **Blu-ray** discs it's the newest type of optical media, can store up to 50GB.

3. **USB Drive:** This is a small object that many people use to store data. USB drivers are easy to take with you from one place to another.

4. **The Cloud:** It's another word for the Internet. There are many free ways to store information in the cloud. E.g. Google Drive, Dropbox, OneDrive.

Computer Memory Measurement Units:

Unit	Description
bit (Binary Digit)	A binary digit is logical 0 & 1
Nibble	1 Nibble = 4 bits
Byte (B)	1 Byte = 8 bits
Kilobyte (KB)	1 KB = 1024 B = 210 bytes
Megabyte (MB)	1 MB = 1024 KB
Gigabyte (GB)	1 GB = 1024 MB
Terabyte (TB)	1 TB = 1024 GB
Petabyte (PB)	1 PB = 1024 TB
Exabyte (EB)	1 EB = 1024 PB
Zettabyte (ZB)	1 ZB = 1024 EB
Yottabyte (YB)	1 YB = 1024 ZB

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Some people have invented unofficial names for even larger units of bytes, for Example: Brontobyte (BB) = 2^{90} bytes (unofficial), Hellabyte (HB) = 2^{90} bytes (unofficial), Geopbyte (GpB/GeB) = 2^{100} bytes (unofficial).

Software

Is a set of programs, which is designed to perform a well-define function. A program sequence of instructions written to solve a particular problem.

Types of Software:

1. **System Software**
2. **Application Software**
3. **Open Source Software (OSS)**

1. System Software

It's the software which is used by the computer such as Operating System (OS), Programming Languages.

A. **Operating System (OS):** OS, the basic program on your computer that is automatically loaded when computer is started up, like: Linux, Microsoft Windows (XP, Vista, 7, 10 and 11), Mac OS X, MS-DOS.

Functions of Operating System (OS).

a) Booting up   **b)** User Interface   **c)** Task & resource managements
d) Monitoring **e)** File managements **f)** System security.

B. **Programming Languages:** A set of words, rules, syntax, and semantic used by a programmer to input his instructions to the computer to do a special task. There are many programming languages. Each of them is designed to solve special kinds of problems. To be a programmer you have to learn one of the computers programming languages. Some of the programming languages are: FORTRAN, PASCAL, C++, and JAVA.. etc.

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C. **Compiler and Interpreters:** Programs that translate the source code into the object code. A compiler translates a whole program. The object code can be executed them. The interpreter translates and executes one instruction at a time.

2. **Application Software:**

   ❖ Microsoft Office.

   ❖ Antivirus program: Avira, Sophos, Kaspersky.. etc.

   ❖ Web browser: Mozilla Firefox, Microsoft Internet Explorer, Opera, Safari.

3. **Open Source Software(OSS):**

   Is computer software whose source code is available under a license that permits users to use. Well-known OSS product, like Linux, Netscape, Apache,..etc.

Computers Viruses:

A virus is a small piece of software that is put on real programs. For Example: a virus might attach itself to a program such as a spreadsheet program. Each time the spreadsheet program runs, the virus runs, too, and it has the chance to reproduce (by attaching to other programs). Example of viruses: Melissa, I LOVE YOU: One of the first email-activated viruses. Trojan horses, Worms, Shortcut viruses.

The viruses influence on the computer:

1. Your computer is running slower than normal.

2. Computer applications are not working right.

3. You find unusual messages.

4. Your antivirus program is suddenly disabled or cannot be restarted.

5. New and unusual icons suddenly appear on your desktop.

6. A shortcut of every folder created with every folder.

7. And all your data remove from hard disk.

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Anti-virus software:

It is a program that is designed to prevent, detect, and remove software virus, and other malware like worms, Trojans, adware, and more. Some tips to avoid virus and lessen their impact:

1. Install anti-virus software. Updated it and use it regularly.

2. Use a virus scan before you open any new programs or files that may contain executable code.

3. If you are a member of online community or chat room, be very careful to accept files or click the links that people find or send to you within the community.

4. Make sure your back up your data (documents, bookmark, important email messages, etc.) on disk.

Dr. Ahmed A. Naser