



جامعة المستقبل كلية العلوم



Computer Sciences I

First stage

Lecture 1

Introduction to Computers

By

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What is a computer?

A **computer** is an electronic device that manipulates information, or data. It has the ability to **store, retrieve, and process** data. You may already know that you can use a computer to **type documents, send email, play games, and browse the Web**. You can also use it to edit or create **spreadsheets, presentations, and even videos**.

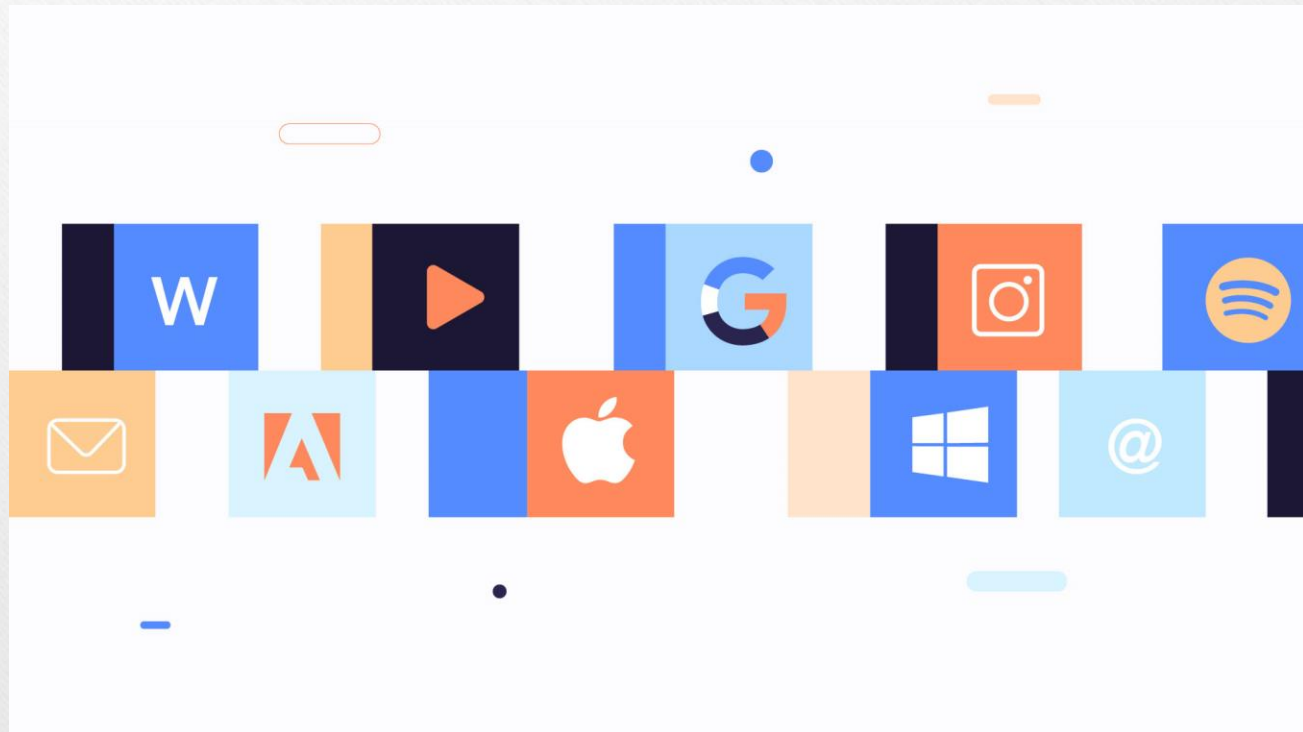
Hardware vs. software

- Before we talk about different types of computers, let's talk about two things all computers have in common: **hardware** and **software**.

- **Hardware** is any part of your computer that has a **physical structure**, such as the keyboard or mouse. It also includes all of the computer's internal parts, which you can see in the image below.



- **Software** is any **set of instructions** that tells the hardware **what to do** and **how to do it**. Examples of software include web browsers, games, and word processors.

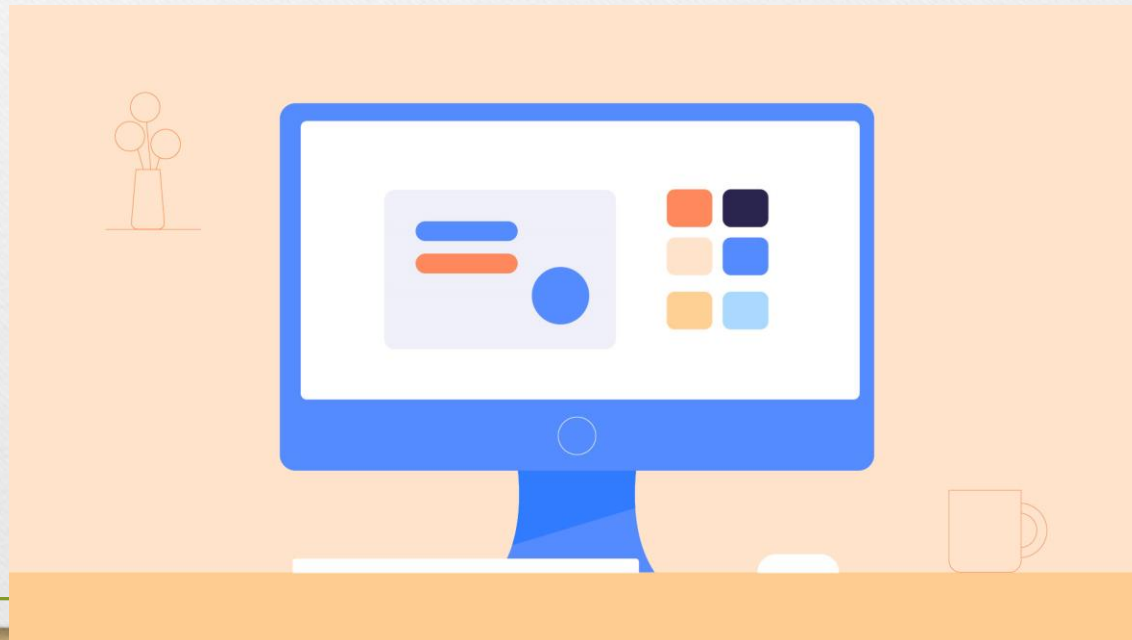


What are the different types of computers?

- When most people hear the word **computer**, they think of a **personal computer** such as a **desktop** or **laptop**. However, computers come in many shapes and sizes, and they perform many different functions in our daily lives. When you withdraw cash from an ATM, scan groceries at the store, or use a calculator, you're using a type of computer.

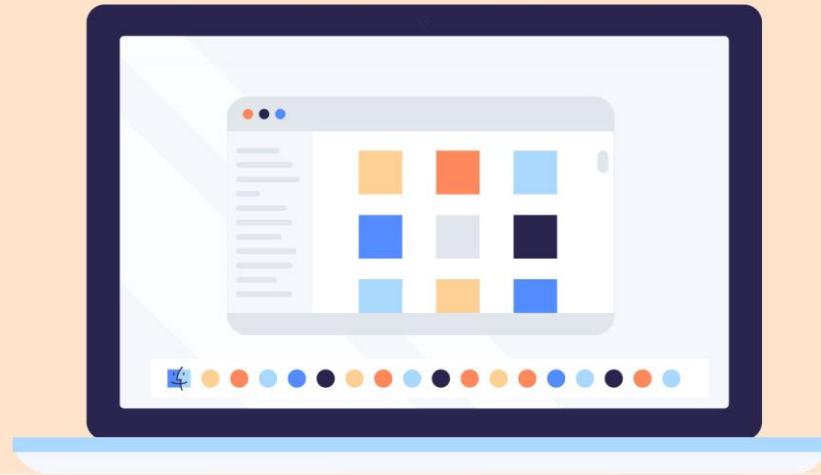
Desktop computers

- Many people use **desktop computers** at work, home, and school. Desktop computers are made up of a few different parts, including the **computer case**, **monitor**, **keyboard**, and **mouse**.



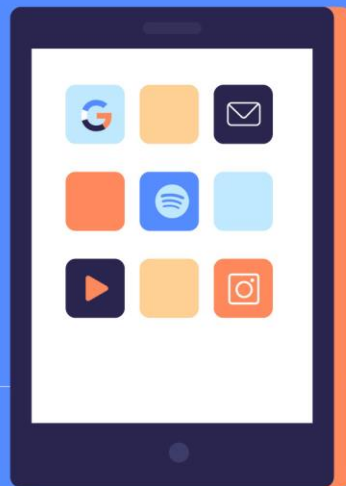
Laptop computers

- The second type of computer you may be familiar with is a **laptop computer**, commonly called a laptop. Laptops are battery-powered computers that are **more portable** than desktops, allowing you to use them almost anywhere.



Tablet computers

- **Tablet computers**—or **tablets**—are handheld computers that are even more portable than laptops. Instead of a keyboard and mouse, tablets use a **touch-sensitive screen** for typing and navigation. The **iPad** is an example of a tablet.



Basic hardware of a PC system?

- Central Processing Unit (CPU)
- Memory Unit
- Input Devices
- Output Devices
- Secondary Storage Devices

1. Central Processing Unit

- Brain of the computer.
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- It directs and controls the entire computer system and performs all arithmetic and logical operations.



2. Memory Unit

The memory is the part of the computer that holds information (data and Instruction) for processing, fig3 represents the classification of computer memory.

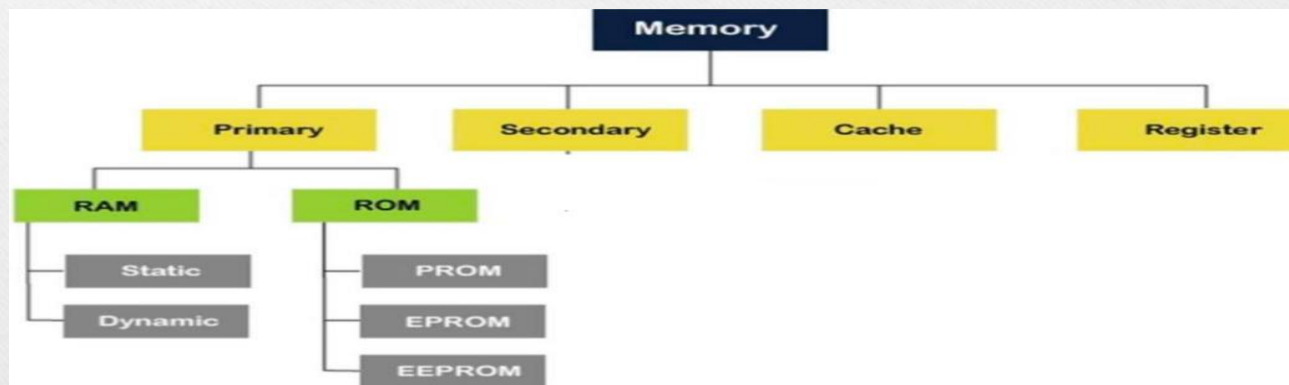


Fig (3): Classification of Computer Memory.

Primary or Main Memory

Primary memory is also known as the computer system's main memory

that communicates directly within the CPU, Main memory is used to

kept programs or data when the processor is active to use them. The

primary memory is further divided into two parts:

- 1. RAM (Random Access Memory)
- 2. ROM (Read Only Memory)

Random Access Memory (RAM) is a type of computer memory used to temporarily store data and instructions that the CPU needs while running programs. It is called random access because the CPU can read or write data in any location directly, without having to go through other locations first. RAM is volatile memory, meaning that any data stored in it is lost when the power is turned off or the computer is restarted. It is generally faster than other storage types (like hard drives), which makes it crucial for providing quick access to data needed by active programs.

Here are the types of RAM:

- Dynamic RAM (DRAM)
- Static RAM (SRAM)
- Synchronous DRAM (SDRAM)

Read-only memory (ROM)

Memory containing basic programs and instructions that the user cannot easily change or delete, such as the device driver (BIOS or Firmware).

a non-volatile memory, which means that its content remains stored even if the electricity is cut off.

Used to store the static information that the computer needs at startup (Booting) or to perform basic functions that do not change

Types of ROM:

- PROM (Programmable ROM)
- EPROM (Erasable Programmable ROM)
- EEPROM (Electrically Erasable Programmable ROM)

Cache Memory

- Cache Memory It is a very high speed memory placed between RAM and CPU. It is storage buffer that stores the data that is used more and make them available to CPU when needed at fast rate. Cache memory stores copies of the data that used frequently by CPU from main memory (Ram) locations, so that they are immediately available to the CPU when needed.

Register

- Register: Register are devices capable of storing information, receiving data from other areas within the computer and transferring information as directed by the control unit.

3. Input Devices

- Allows data and programs to be sent to the CPU.
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- Keyboard
- Mouse
- Joystick
- Microphone
- Webcam
- Scanner
- Monitor



4. Output Devices

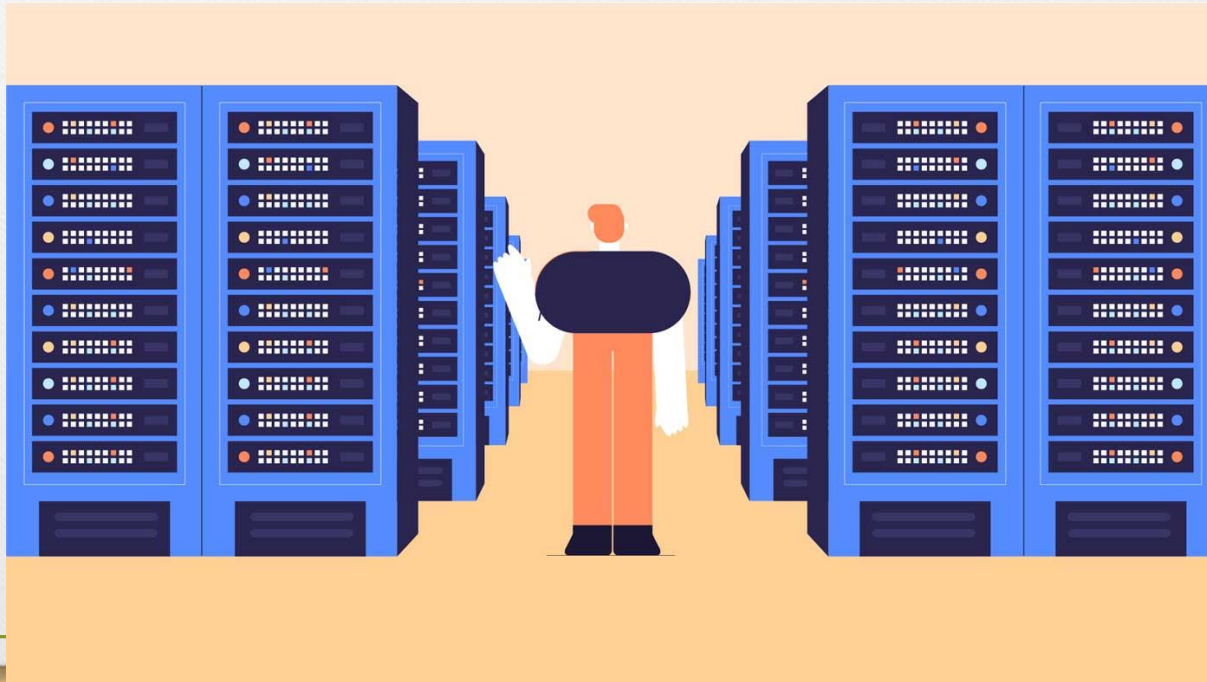
- Media used by the computer in displaying its responses to our requests and instructions.
- Monitor
- Audio Speakers
- Printer

5. Secondary Storage Devices

- Attached to the computer system to allow you to store programs and data permanently for the purpose of retrieving them for future use.
- Floppy disk, Hard disk, CD Rom

Servers

- A **server** is a computer that serves up information to other computers on a network. For example, whenever you use the Internet, you're looking at something that's stored on a server. Many businesses also use local **file servers** to store and share files internally.



A photograph of a 'Thank you' note, a brown envelope, and a black pen resting on a laptop keyboard. The note is white with the words 'Thank you' written in a black, cursive script. The envelope is made of brown kraft paper and is partially open. The pen is black with a silver clip. The laptop keyboard is silver with black keys. The entire scene is set against a light-colored wooden background.

Thank you