Ministry of Higher Education and Scientific Research

Al-Mustaqbal University

College of Engineering

Medical Instrumentation Techniques Engineering Department

Computer Application

One Class

Weeks 5

Microprocessor and system memory

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Introduction

A microprocessor is a central processing unit (CPU) that serves as the brain of a computer or electronic device, executing instructions and performing calculations. It's a key component in most modern devices, ranging from computers to smart phones and embedded systems

-The processor consists of two parts

1- Software: Software consists of three modules:

A- The control and transfer unit is responsible for exchanging information between the parts of the processor itself.

b- The bus communication unit is responsible for exchanging information between the processor and other parts of the computer.

c- The arithmetic and logic unit, which is responsible for processing digital data.

2 - hardware

Central Processing Unit (CPU)

It is the most important part in a computer technician because it processes data and coordinates work between the different parts of the computer.

This unit consists of:

From the following parts

1. Arithmetical and Logical Unit (ALU) وحدة الحساب والمنطق
   - which is responsible for processing digital data.
2. Control Unit (CU) وحدة السيطرة

- This unit monitors the implementation of the work carried out by the computer system and controls the input and output operations

3 : Main Memory Unit (MMU) وحدة الذاكرة الرئسية

-Memory

The memory in a computer system is of two fundamental types:

• Main Memory: used to store information for immediate access by the CPU. Main Memory is also referred to as Primary Storage or Main Store.

♣ Closely connected to the processor.

♣ The contents are quickly and easily changed.

♣ Stores the programs that the processor is actively working with. Main memory includes:

♣ Random Access memory (RAM): for temporary storage.

♣ Read-only memory (ROM): for permanent storage.

Main Structural Component of a Computer System The main elements associated with a computer system are as follows:

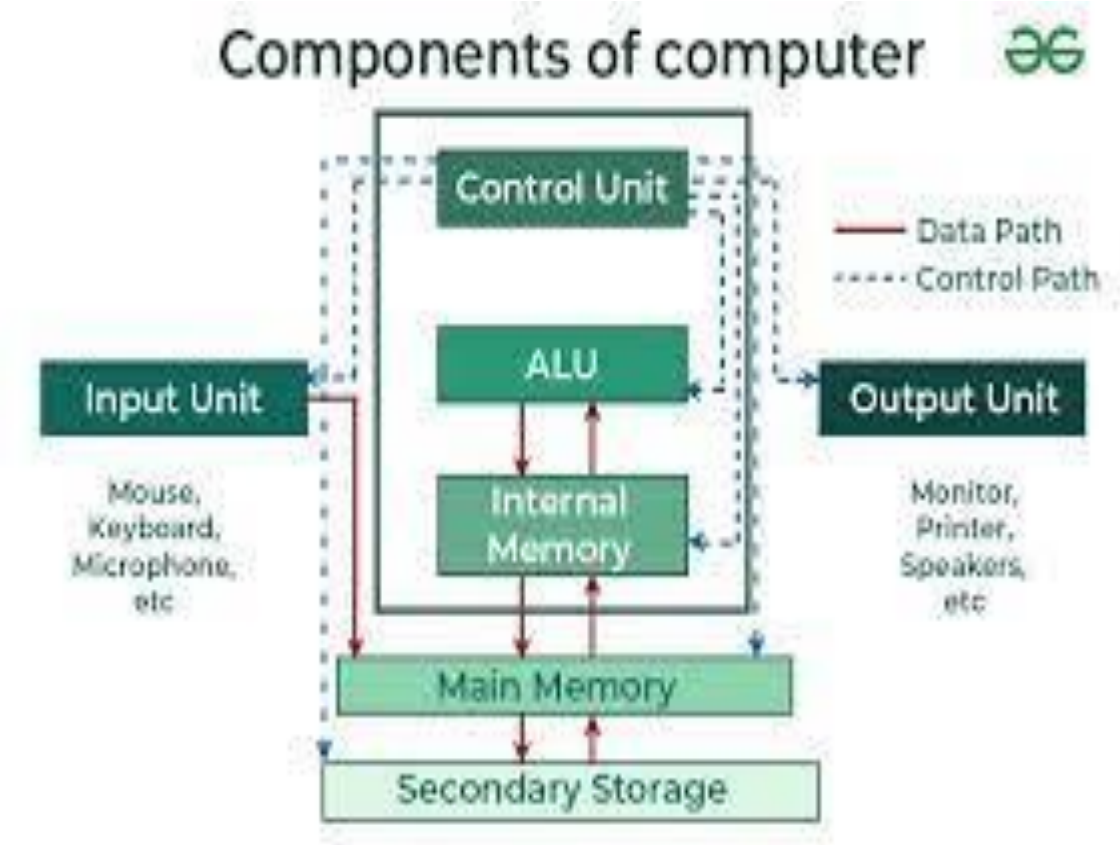
1. Central Processing Unit (CPU)

2. Main Memory

3. Secondary Storage Devices

4. Input and Output (I/O) Devices

5. Busses



Difference	Random Access Memory (RAM)	Read Only Memory (ROM)
Read/Write	Read and write operations are supported.	Only read operations are supported.
Use	Used to store the data that has to be currently processed by CPU temporarily.	It is typically used to store firmware or microcode, which is used to initialize and control hardware components of the computer.
Speed	It is a high-speed memory.	It is much slower than the RAM.
CPU Interaction	CPU can easily access data stored in RAM.	CPU cannot easily access data stored in ROM.
Size and Capacity	Large size with higher capacity, concerning ROM.	Small size with less capacity, concerning RAM.
Used as/in	CPU Cache, Primary memory.	Firmware, Micro-controllers.
Accessibility	The data stored is easily accessible.	The data stored is not as easily accessible as in the concerning RAM.
Cost	RAM is more costlier than ROM.	ROM is cheaper than RAM.
Chip Size	A RAM chip can store only a few gigabytes (GB) of data.	A ROM chip can store multiple megabytes (MB) of data.
Function	Used for the temporary storage of data currently being processed by the CPU.	Used to store firmware, BIOS, and other data that needs to be retained.