

Tikrit University / College of Dentistry

Computer Science / Level 1, First Semester, Lecture 5

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Semester 1 contain:

- 1) Computer Fundamentals (اساسيات الحاسوب)
- 2) Computer Components (مكونات الحاسوب)

Lecture 4 contain:

2) Computer Components (مكونات الحاسوب)

1. Central processing Unit (CPU) وحدة المعالجة المركزية

1.1 Arithmetic and Logical Unit (ALU) وحدة الحساب والمنطق

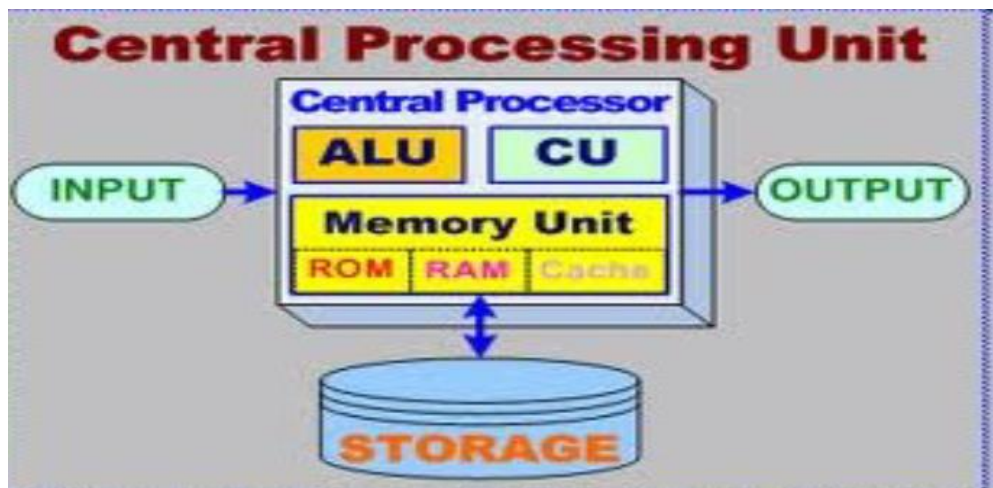
1.2 Control Unit (CU) وحدة التحكم والسيطرة

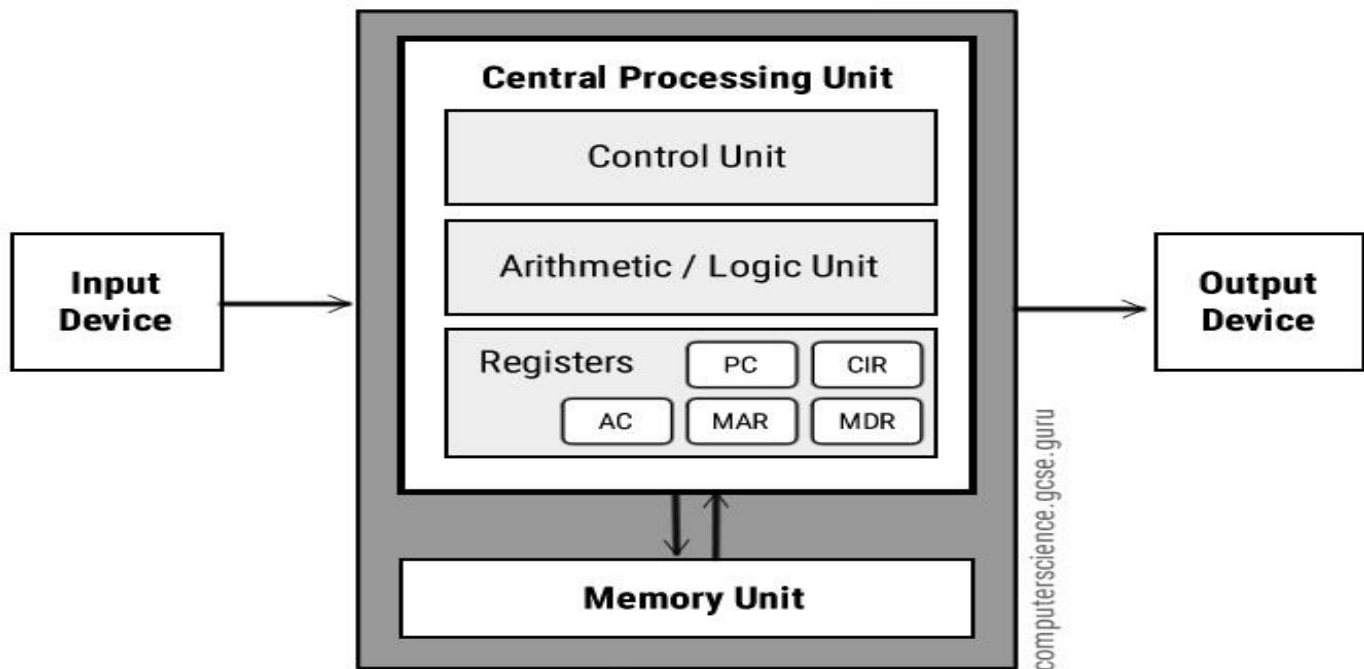
1.3 Registers المسجلات

1. Central processing unit

The CPU (central processing unit) is the heart of every embedded system and every personal computer. It comprises the ALU (arithmetic logic unit), responsible for the number crunching, and the CU (control unit), responsible for instruction sequencing and branching.

Modern microprocessors and microcontrollers provide on a single chip the CPU and a varying degree of additional components, such as counters, timing coprocessors, watchdogs, SRAM (static RAM), and Flash-ROM (electrically erasable ROM).





1.1 Arithmetic and logical unit (ALU): The first major component of any CPU is the ALU (arithmetic logic unit). It is supplying basic arithmetic operations such as addition and subtraction (in more advanced ALUs also multiplication and division) and logic operations such as AND, OR, and NOT for data words of a specific width. In fact, one can imagine the ALU as a small calculator inside the CPU. And mainly responsible for Logical comparison and decision.

1.2 The CU (control unit): is the second part of each CPU, enabling step-by-step program execution and branching. It's controls operations of other parts of CPU as well as all parts of computer by sending a control signal, and

- Control sequence of instruction to be executed control flow of data among all parts of computer.
- Interpret instructions.
- Regulate timing of processor
- Send control single to and receive control
- Single from peripheral devices

1.3 Register: is a special memory used by the CPU for temporarily storing data during execution of instruction.