AL MUSTAQBAL UNIVERSITY

COLLEGE OF DENTISTRY

COMPUTER SCIENCE

Lecture 2

By

Buthaina Abdul Kareem AL-Khafaji

Main Components Of Hardware:

The basic components of a computer system are:

1- Input unit

2- Output unit.

3- External storage.

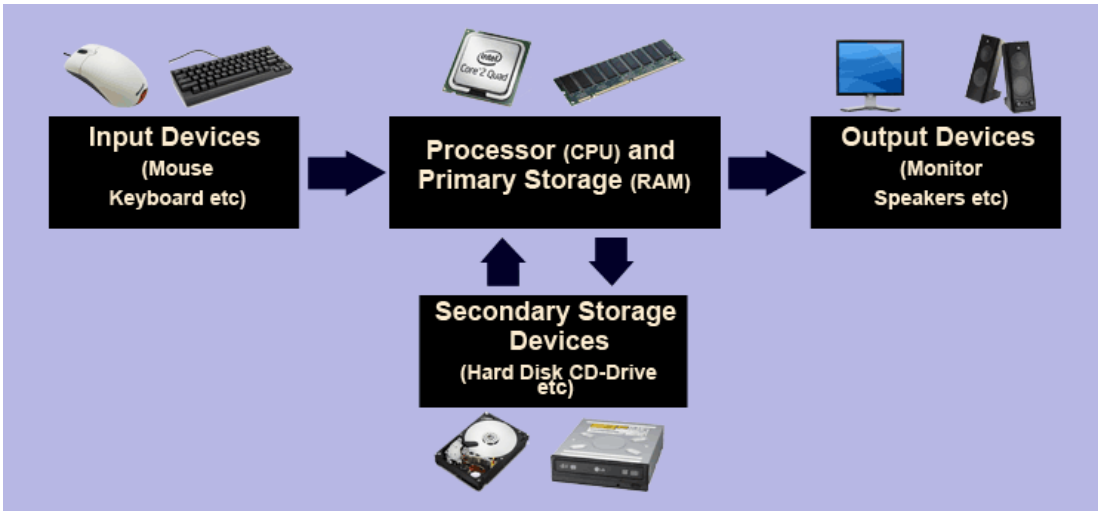
4- Central processing unit :-which consists

a- Control unit.

b- Arithmetic and logic unit.

c- Register.

5- Memory unit (internal memory).



(Fig .1)

4- Central processing unit (CPU) : -

The brain of any computer system is the CPU, which is sometime called "**Processor**" or "**Microprocessor**" in personal computer.

The CPU supervises and controls all of the peripheral equipment, perform arithmetic and makes logical decisions. The CPU is responsible for includes the data movement computations and logical operation necessary to convert data into meaningful information.

(Fig.2) Central processing unit (CPU)

4-1 Arithmetic and Logic unit (ALU) : -

Perform the processing of data including arithmetic operations such as addition, subtraction, multiplication, division and logic operations including comparison (Ex. A<B) and sorting.

4-2 Control Unit :-

- Direct and coordinates all units of the computer to execute program steps.

- Direct and coordinates all operations of the computer systems.

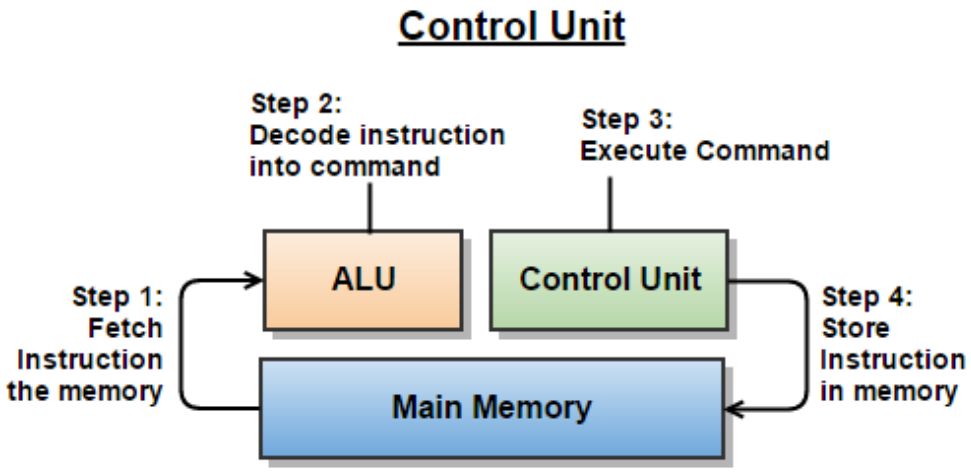
These operations include: -

1- Control to the input and output devices.

2- Entry and retrieval of information from memory.

3- Routing of information between the memory and the arithmetic and logic unit.

Control unit automatically coordinates the operation of the entire computer system, although the control unit does not performed any actual processing on the data, It acts as a central nervous system uses to send control signal to other units.



(Fig.3)

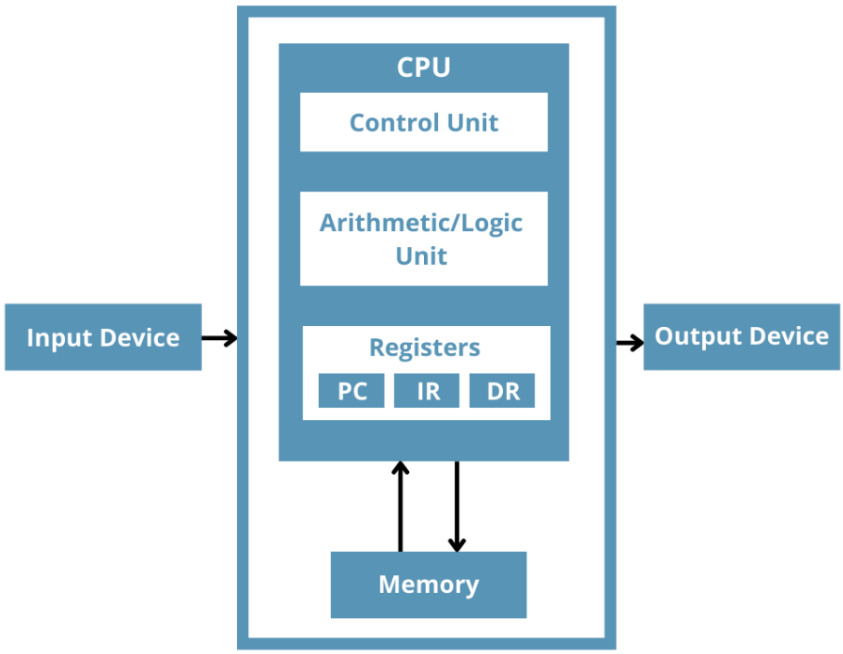
4-3 Register: -

Register are devices capable of storing information, receiving data from other areas within the computer and transferring information as directed by the control unit, it is used for temporary storage of data or instruction and **the most important register are: -**

A- Program counter (PC): It contains the address of the next instruction to be executed.

B- Instruction Register (IR): It contains the instruction being executed.

C- Address Register (AR): holds the address of memory location.



(Fig.4) Register

5- Main Memory units: -

The memory is the part of the computer that holds information

(data and Instruction) for processing, main memory also known as **primary or internal memory or primary storage**, there are two types of main memory are ROM (Read Only Memory) and RAM (Random Access Memory).

The specific function of main memory are to hold (store):

1- All data to be processed.

2- Intermediate result of processing.

3- Final result of processing.

(Fig.5) Main Memory

5-1 Type of main memory:

There is basically two type of memory

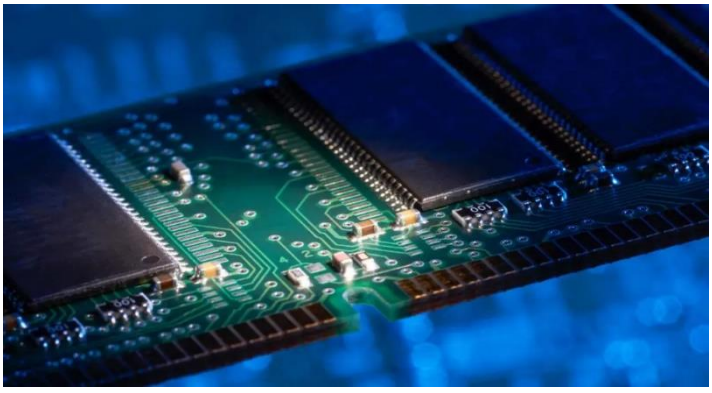
5-1-1 Random access memory (RAM):

And also called read/write memory, it is used for storing data and instruction, in this type the stored information will be lost when computers power is turned off so that it is called the(**volatile memory**) ,

it's used only for temporary storage and the ram can be either dynamic or static.

A- Static RAM: it is a semiconductor memory device in which the stored data will remain permanent stored as long as power is supplied without the need for periodically rewriting the data in to memory.

B- Dynamic RAM: it is a semiconductor memory device in which the stored data will not remain permanent stored even with power is applied unless the data are periodically rewritten in to memory, the later operation is called a refresh operation.



(Fig.6) Random access memory

5-1-2 Read only memory (ROM):

Is read only memory which can be read from but not written on so that it is called a **non-volatile memory,** when the user turn the computer off the content of ROM are not changed, the type of ROM is:

1- Programmable Read Only Memory (PROM):

It is prepared by the maker and can be electrical programmed by the user, it cannot be erased and programmed a gain this means its content can never be changed.

2- Erasable Programmable Read Only Memory (EPROM):

The maker prepares it and can be electrical programmed by the user, it can be erase (deleted) by exposure to ultraviolet light and programmed many times.

3- Electrically alterable Programmable Read Only Memory (EAPROM): Read only memory that is electrically reprogrammable.

(Fig.7) Read only memory (ROM)