Computer Science

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lessons in Computer Science
Submitted to the Public Health Department -The University of Basrah

Outline

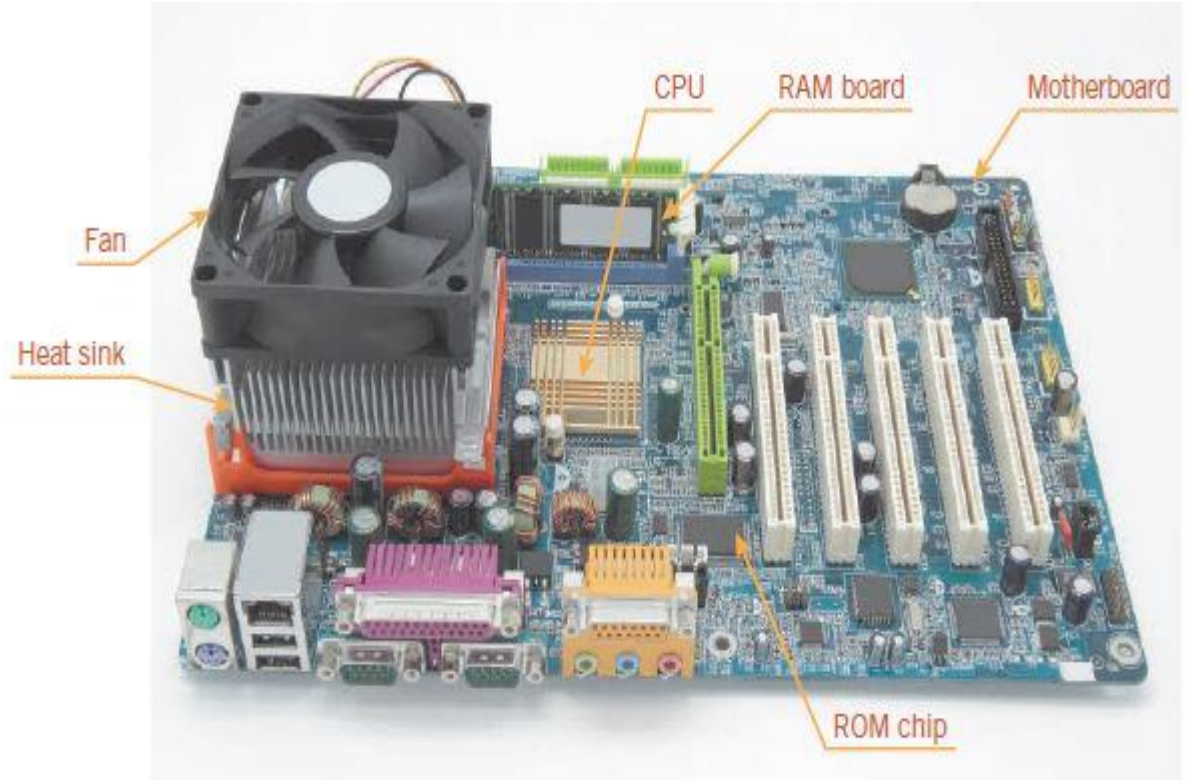
- control processing unit (CPU)

  - Parts of a CPU
  - Types of CPU

Control processing unit (CPU)

(CPU) is the central processing unit of a computer that performs most of the processing of data. It is responsible for executing instructions of a computer program and controlling the other parts of the computer.

The CPU is sometimes referred to as the "brain" of the computer, as it performs the majority of the computation and decision-making processes.



Control processing unit (CPU)

It consists of one or more microprocessors, which are integrated circuits that contain millions of tiny transistors that perform calculations and logical operations.

Control processing unit (CPU)

The CPU fetches instructions from memory, decodes them, and then executes them.

It also controls the flow of data to and from other parts of the computer, such as memory, input/output devices, and other peripherals.

Parts of a CPU

1- Control unit

This part of the CPU decodes and executes instructions. It retrieves instructions from memory and decodes them into a series of steps that the computer can understand and execute.

Parts of a CPU

2- Arithmetic logic unit (ALU)

This part of the CPU performs mathematical and logical operations. It can add, subtract, multiply, and divide numbers, as well as perform logical operations such as AND, OR, and NOT.

Parts of a CPU

3- Registers

These are high-speed memory locations within the CPU that are used to store data and instructions temporarily.

Parts of a CPU

4- Cache memory

This is a small, fast memory location that is used to store frequently accessed data and instructions.

Parts of a CPU

5- Bus

This is a set of wires that connect the different parts of the CPU to each other and to other parts of the computer.

Parts of a CPU

6- Clock

This is a timing device that sends synchronizing signals to the different parts of the CPU to coordinate their activities.

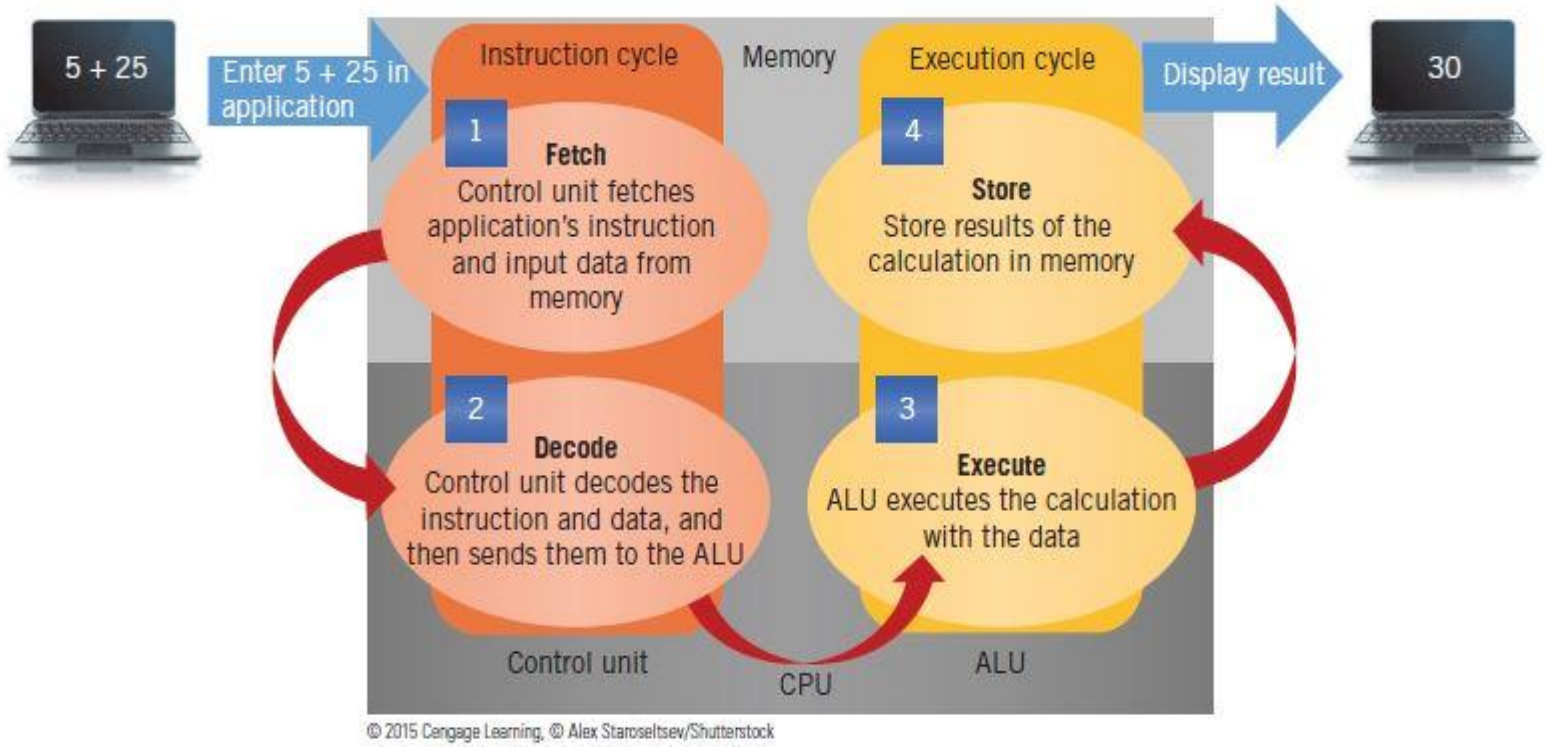
Parts of a CPU

7- Microprocessor

This is the main processing chip of the CPU, and it contains millions of tiny transistors that perform calculations and logical operations.

Machine Cycle

When software sends an instruction to the CPU, the CPU carries out the instruction by repeating four basic operations in the machine cycle: (1) fetching, (2) decoding, (3) executing, and (4) storing.

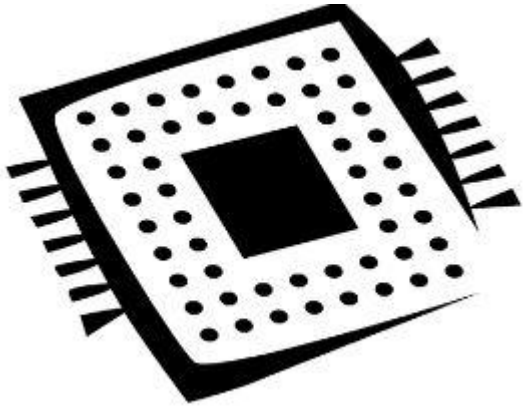


Types of CPU

➢ single-core processor

Also known as a single-core CPU, is a type of computer processor that has only one core, or a single processing unit.

This means that the processor can only execute one instruction at a time, and it can only work on one task at a time.

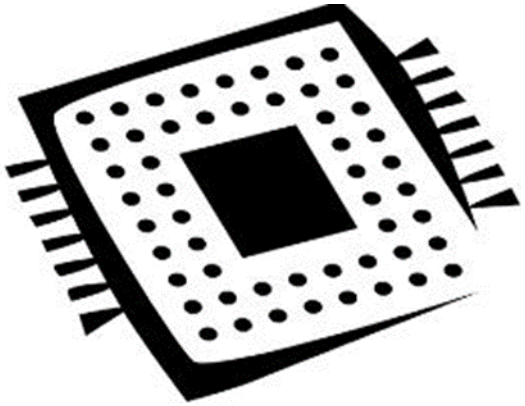


Types of CPU

➢ single-core processor

Single-core processors are mostly found in low-end devices like embedded systems, and simple laptops.

Single core processors are generally slower at multitasking and handling multiple program at a time, but excels in single-threaded performance. Therefore, they are suitable for devices that runs a single application at a time and do not require much multitasking capabilities.

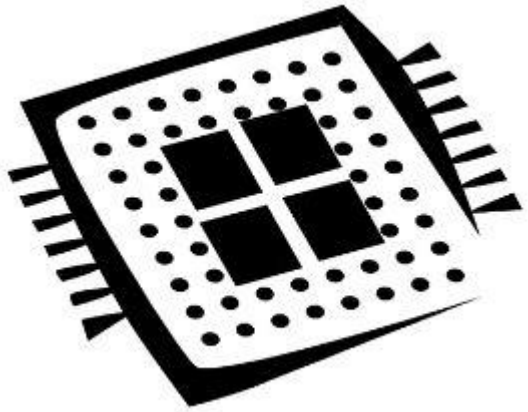


Types of CPU

➢ multi-core processor

Also known as a multi-core CPU, is a type of computer processor that has more than one core, or multiple processing units.

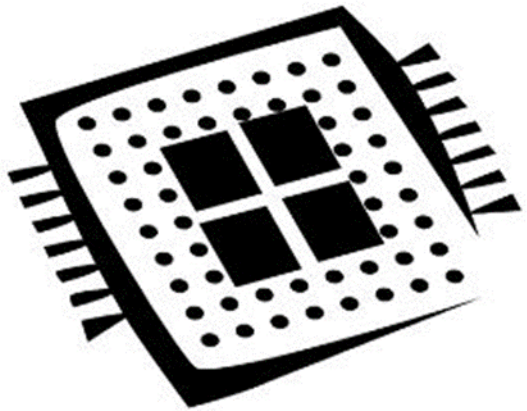
This means that the processor can execute multiple instructions simultaneously, and it can work on multiple tasks at the same time.



Types of CPU

➢ multi-core processor

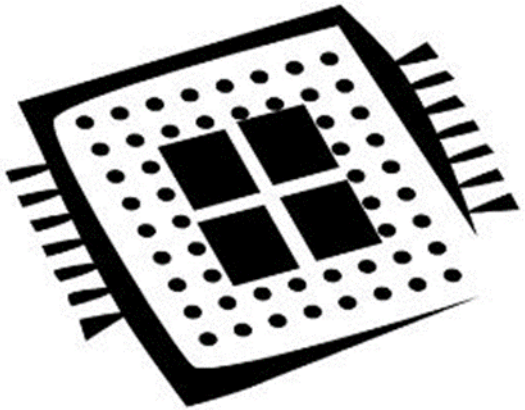
A multi-core processor is more complex and more expensive to manufacture than a single-core processor, but it provides several advantages over a single-core processor. One of the main advantages is that a multi-core processor can significantly improve the performance of a computer by allowing it to handle multiple tasks simultaneously.



Types of CPU

➢ multi-core processor

When a computer runs multiple programs or processes at the same time, a multi-core processor can divide the workload among its multiple cores, thereby improving the overall performance of the computer. This makes multi-core processors well suited for tasks such as gaming, video rendering and other demanding application.

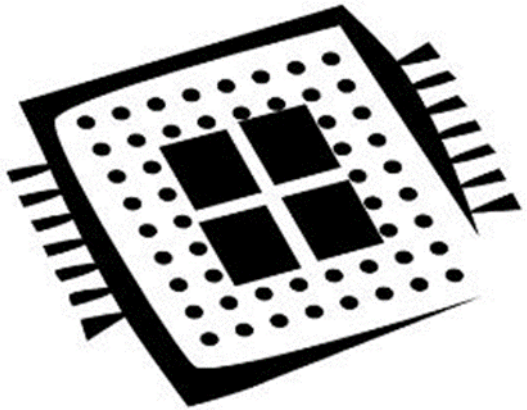


Types of CPU

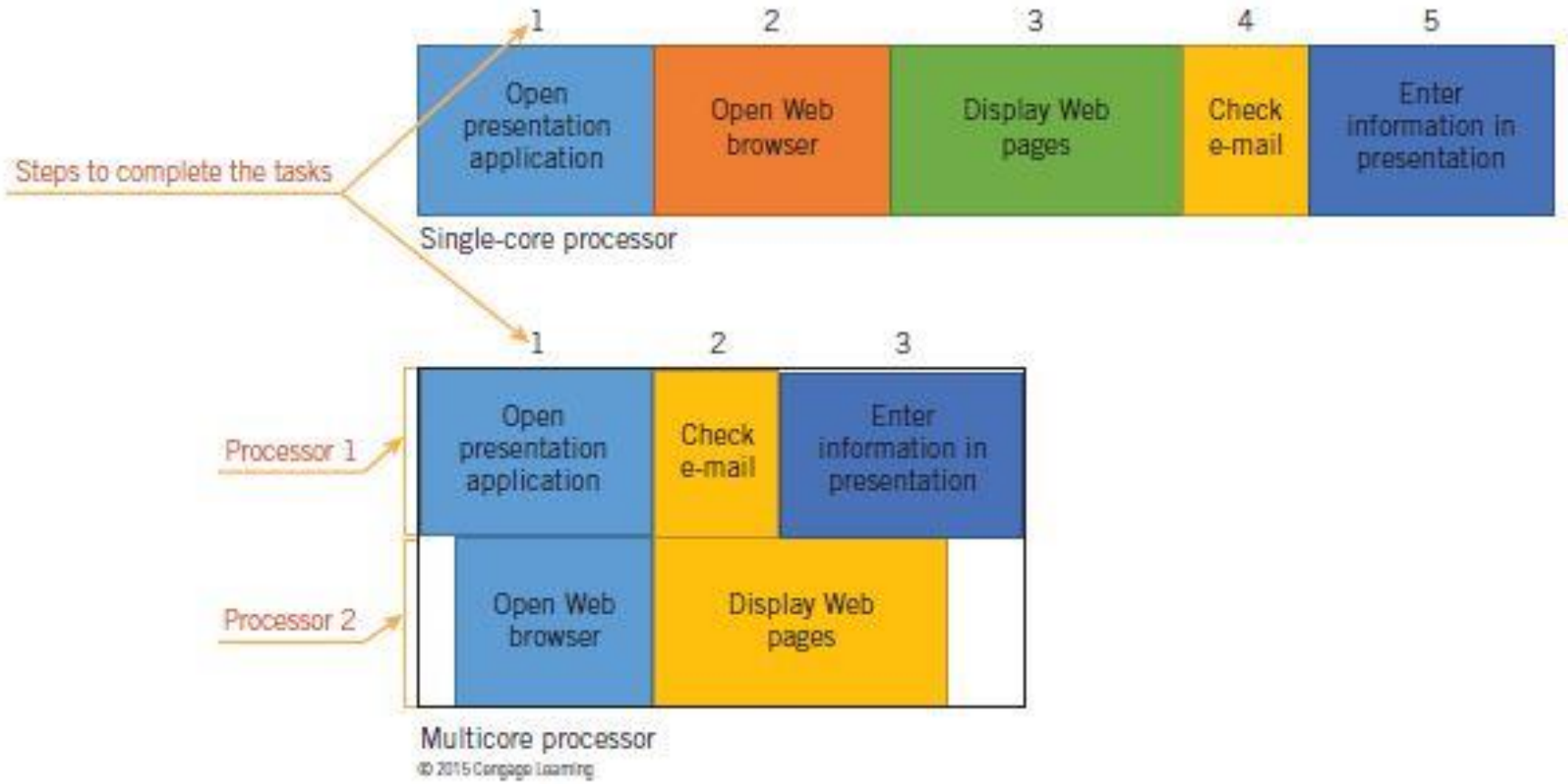
➢ multi-core processor

Multi-core processors are now the norm in most computers, with two, four, six, eight or more cores in a single processor package.

In general, the more cores a processor has, the more powerful it is, and the better it is able to handle multiple tasks and applications at the same time.



Types of CPU


Steps to complete the tasks
1
2
3
4
5
Open presentation application
Open Web browser
Display Web pages
Check e-mail
Enter information in presentation
Single-core processor
1
2
3
Processor 1
Open presentation application
Check e-mail
Enter information in presentation
Processor 2
Open Web browser
Display Web pages
Multicore processor
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Thank you