Cours N° 01

Présentation d'un Micro-Ordinateur

Objective of the chapter

This chapter includes an introduction to the different concepts used in computer science domain, such as : information, computer, hardware, software, etc.

Computer Science?

- Computer science
- Computer engineering
- Information technology
- Informatique (Fr)
- المعلوماتية (Arb)
- علم االحاسوب

Definition of computer science

Computer science is a scientific and technological field that deals with the **automatic processing** of **information** using **machines**.

Information ?

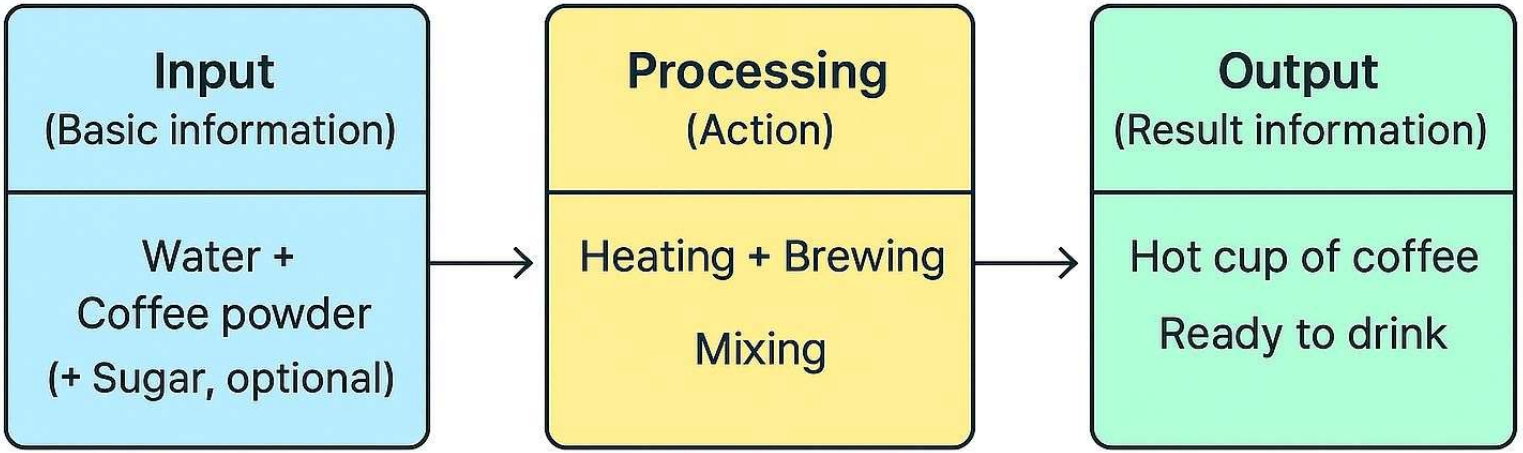
There are three (03) different types of information :

- **Basic information (input)**
- **Processing information (action)**
- **Result information (output)**

Information ?

Information ?

Example :



Computer ?

A computer is an electronic machine that can carry out a limited set of operations on data stored in binary format (a sequence of zeros (0) and ones (1)).

The machine is like a child; we teach it basic things, and when we ask it to repeat, it repeats.

Computer’s resources

Computer contains two types of resources :

1. **Material resources :**
   Hardware

2. Software resources :
Software

Hardware : Von Neumann architecture

1

Central Processing Unit (CPU) or Processor

The processor is the brain of the computer; it processes and transmits information. It is composed of:

Arithmetic Logic Unit (ALU)

Allows the execution of arithmetic operations (+, *, /, -) and logical operations (AND, OR).

Control Unit (CU)

Allows the control, management, and organization of the tasks carried out by the CPU

Hardware : Von Neumann architecture

2

Central Memory

The main storage unit of the computer that keeps and provides information.

RAM (Random Access Memory)

Temporary memory used by the computer while it is running; it loses its content when the power is off

ROM (Read-Only Memory)

Permanent memory that stores essential programs for the computer. It keeps data even when the power is off.

Hardware : Von Neumann architecture

RAM (Random Access Memory)

ROM (Read-Only

Hardware : Von Neumann architecture

3

Devices

Input Devices

These are devices that allow data or commands to be entered into the computer.

Output Devices

These are devices that allow the computer to give the results of data processing.

Input/Output

These are devices that can both send and receive data to/from the computer.

Hardware : Von Neumann architecture

The measurement unit in computing (in terms of storage): is the bit (Binary Digit): A bit can have only two values: 0 or 1.

All data used by computer is represented by a sequence of bits (ex : 1001111001110011……)

1 **Byte** (Octet) is a set of 8 bits.

1 Octet = 8 bits.
1 Kilo-Byte (Ko) = 1024 Bytes
1 Mega-Byte (Mo) = 1024 Kilo-Bytes.
1 Giga-Byte (Go) = 1024 Méga-Bytes
1 Tera-Byte (To) = 1024 Giga-Bytes.
1 Peta-Byte (Po) = 1024 Téra-Bytes.

Exercise:

3.4 Gb= ??? Kb

12.9 Kb=??? Tb