

BITS AND BYTES

PROCESSING

- The processor (CPU) is the brain of your computer.
- It consists of three main parts:
 - The **control unit**
 - The **arithmetic and logic unit (ALU)**
 - The **registers**

THE CONTROL UNIT

- It examines **instructions** from memory and executes them. It acts as a kind of “bridge” between the computer’s various components.

THE ARITHMETIC AND LOGIC UNIT

- It performs arithmetic and logical operations

Registers

- They are high speed units of memory used to store and control data.
- Each register can store and process one binary word of a fixed length (8 or 16 bits)

THE MAIN MEMORY

- The information and data used by the CPU are stored in the **MAIN MEMORY** of the computer. This memory may be, according to its functions, **ROM or RAM**.

ROM (Read Only Memory)

- It is a non-volatile memory: all data stored in it are permanent and non-erasable
- It contains instruction needed by the CPU, in other words, it contains the OPERATING SYSTEM of the computer.

RAM (Random Access Memory)

- When you run a program, the CPU looks for it on the hard disk and transfers a copy into the RAM.
- RAM is temporary.
- The amount of RAM determines the number of programs you can run simultaneously and how fast they operate.
- RAM can be expanded

BITS

- All data is expressed in BINARY CODE.
The electronic circuits in computers detect the difference between two states: ON (the current passes through) and OFF (the current doesn't).
- These states are represented as 1 or 0.
- Each 1 or 0 is called a **binary digit or BIT**

BYTES

- A pattern of eight bits makes up a BYTE.
- A byte represents characters (letters, numbers and symbols):
01000001 is used for the character A

Kilobytes, megabytes, gigabytes and terabytes

- 1024 bytes are 1 **kilobyte**
- 1024 kilobytes are 1 **megabyte**
- 1024 megabytes are 1 **gigabyte**
- 1024 gigabytes are 1 **terabyte**

SOLUZIONI ESERCITAZIONE

- | | |
|-----------------------|---------|
| • EX. 1 | • EX. 2 |
| 1. Are called | 1. E |
| 2. Are given | 2. C |
| 3. Is processed | 3. F |
| 4. Is expressed | 4. A |
| 5. Are not understood | 5. D |
| | 6. B |

SOLUZIONI ESERCITAZIONE

- EX. 3

1. It runs at 2,4 GHz
2. Front Side Bus (a bus is path that carry electronic signals; the front side bus carries all data that passes from the CPU to other devices)
3. 1,024 MB
4. Yes; RAM can be expanded up to 4 GB

- EX. 4

1. Byte
2. Kilobyte
3. Megabyte
4. Gigabyte
5. Terabyte