

Data Representation in a Computer

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*** * Computers operate on electrical energy as it receives electrical signals to translate them into a language he can Understand.**

- The language that a computer uses is completely different from the human language in that it converts electrical signals into symbols known as the “binary system”**

- **The binary system is defined as a digital system consisting of two digits (0,1) and each digit is called a bit. It is used in computers to store data and translate commands.**
- **There are different forms of data that a computer deals with, and these data are:**

* - **The Words:**

Words consist of letters in human language, so how can a computer understand them? The computer does not understand the symbols and letters that humans understand, so it relies on the system (ASCII)

**“ American Standard code for information interchange “. It is a system that puts for each letter a specific number in the hexadecimal system, and then converts it in the binary system inside the computer
Thus, each symbol on the keyboard corresponds to a number in the ASCLL system that it deals with inside the computer.**

*** * The sound :**

Audio files are represented as an "analog signal" and then converted to digital data using the technology "audio coding format" and may be compressed to reduce their size.

• The image :

The images were represented in the computer by small squares "pixels" as a matrix and the number of rows and columns determines the accuracy of the image, for example (256 * 256) and the amount of each pixel determines the intensity of lighting



* **The video :**

Videos are animated images with a specific frequency and are compressed to reduce the file size and number of pixels. This is known as "video compression" depending on certain algorithms.