

## Comparison between Binary and Decimal systems and how some basic data is stored in modern computers using numbers

Humans and Computers communicate with each other through numerical systems. Over human history, many systems were used to quantify things, but the two most consistent are Decimal and Binary (Ram, 2007). The purpose of this essay is to explain how the two systems differ and how they are the base of computers from two different centuries.

The decimal system is based on 10 symbols. Each symbol has a value 10 times higher than the symbol to its right. Based on (Ledin, 2020), the Analytical Engine by Charles Babbage, the first potential computer, was designed to function on a base 10 system. This is because at that time the binary system was not even known by most humans. This implies that if this engine was ever built, it would have had ten states rather than two as in a modern computer.

Binary is an essential foundation of every modern computer (Yadin, 2016). This numerical system contains just two symbols (0 and 1), but, as per (Limor, 2018), any type of information can be represented using binary. Each symbol in this system has a value two times more than the value of the symbol to its right. The two numbers of the binary, represent the two states of a computer, on and off. It is impossible to build a modern computer using decimal because it would have ten states that require a huge amount of energy.

Every piece of information in a modern computer is stored as a combination of 1s and 0s. Limor F. (2018) states that basic data, such as texts and images, are both stored in a similar fashion. Texts are made of letters and an image is a combination of tiny pixels (squares with a different colour); every letter and pixel colour are assigned a combination of many ones and zeros. This is an indication that one image or a short essay is held by the computer storage as a combination of millions of binary numbers.

In conclusion, the technology relies on numbers. Ledin J. (2020) affirms that the decimal system is the most human-adaptable numerical system and Charles Babbage was the first person to introduce humans to an artificial brain. However, binary is the most obvious choice for modern computers because it gives simple on and off states to windows and stores data in a much-simplified version. Overall, when it comes to any computer everything somehow comes down to some numeral base system.

## Bibliography:

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