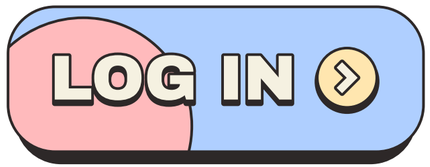

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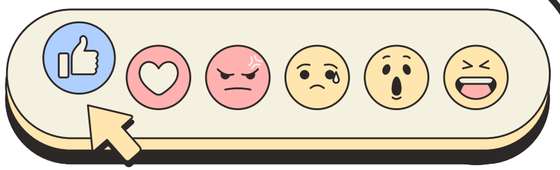
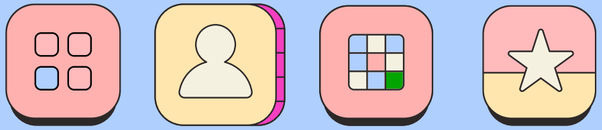
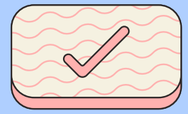


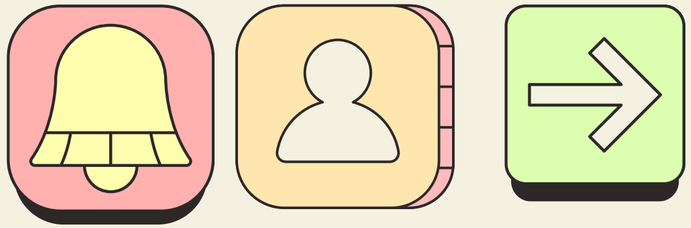
NUMBER SYSTEMS

BY GABRIEL CASTRO

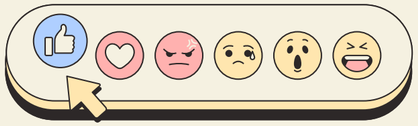




WHAT ARE NUMBER SYSTEMS?



NUMBER SYSTEMS

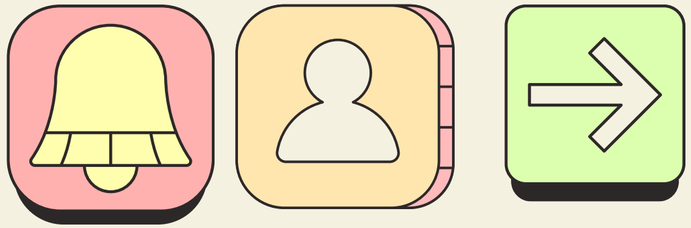


Number systems are systems in mathematics that are used to express numbers in various forms and are understood by computers. A number is a mathematical value used for counting and measuring objects, and for performing arithmetic calculations. There are various types of number systems that have different properties, like the binary number system, the octal number system, the decimal number system, and the hexadecimal number system.

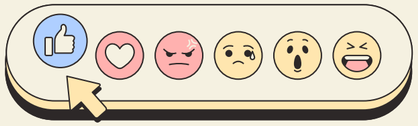
A number system is a system representing numbers. It is also called the system of numeration and it defines a set of values to represent a quantity. These numbers are used as digits and the most common ones are 0 and 1, that are used to represent binary numbers.

https://www.cuemath.com/numbers/number-systems/

TYPES OF NUMBER SYSTEMS



TYPES

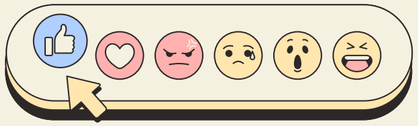


Decimal Number System

The decimal number system has a base of 10 because it uses ten digits from 0 to 9. In the decimal number system, the positions successive to the left of the decimal point represent units, tens, hundreds, thousands and so on. This system is expressed in decimal numbers. Every position shows a particular power of the base (10).

https://byjus.com/maths/number-system/

TYPES

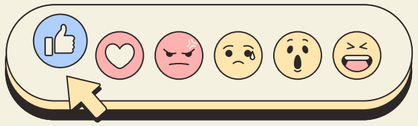


Binary Number System

Binary number system is used to define a number in binary system. Binary system is used to represent a number in terms of two numbers only, 0 and 1. As the computer only understands binary language that is 0 or 1, all inputs given to a computer are decoded by it into series of 0's or 1's to process it further. A binary number is represented with a base of 2.

https://www.cuemath.com/numbers/binary-number-system/

TYPES

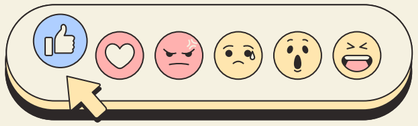


Octal Number System

A number system with base 8 is called an octal number system. The position of every digit has a value which is a power of 8. A number in the octal number system is represented with the number 8 at the base, like 512_8, 56_8, etc.

https://www.splashlearn.com/math-vocabulary/octal-number-system

TYPES

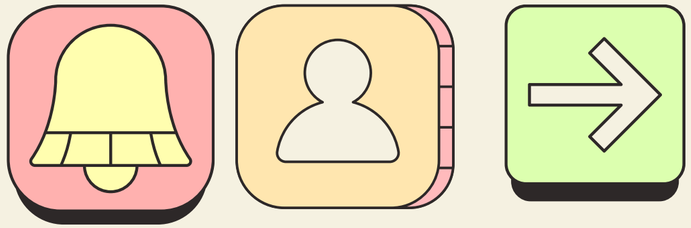


Hexadecimal Number System

Hexadecimal Number System is a base-16 numeral system used in diverse fields, especially in computing and digital electronics. It consists of 16 symbols, including numbers 0 to 9 and letters A to F, offering a compact way to represent binary-coded values. The hexadecimal number system is sometimes also represented as, ‘hex’.

https://www.geeksforgeeks.org/hexadecimal-number-system/

WHAT ARE THE USES/SIGNIFICANCE OF EACH NUMBER SYSTEM?



USES OR SIGNIFICANCE OF EACH NUMBER SYSTEM

The number system is used in the computer system for better communication and representation.

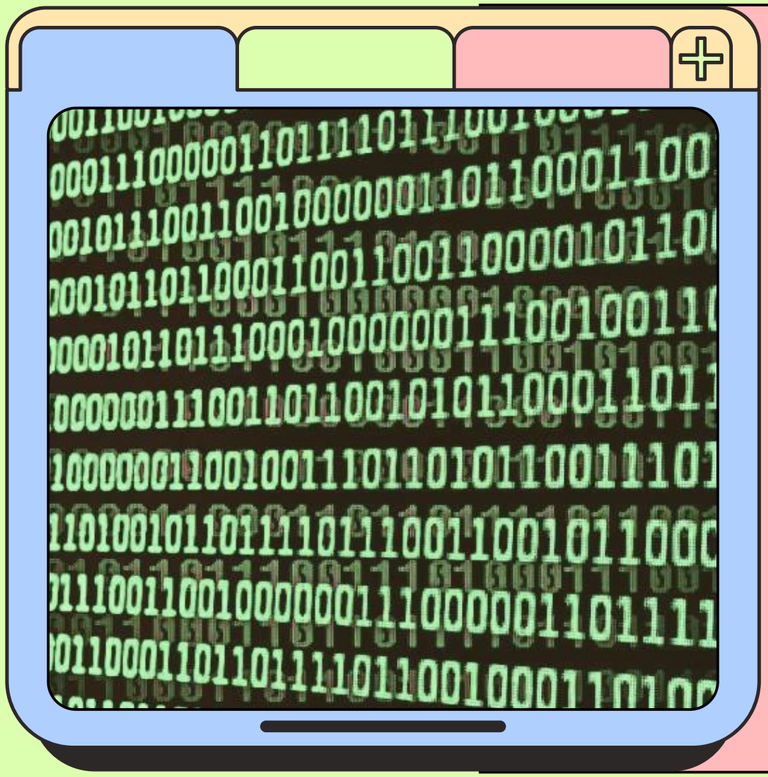
Computers can only understand numbers; therefore, it converts every letter and word into numbers for better understanding and processing.

The Digital computer converts or translates all data and information like audio, video, graphics, and text into binary form, i.e., 0s and 1s, which is easily read and understood by computers for better functionality and proper outputs.

These numbers can efficiently perform mathematical operations like addition, subtraction, multiplication, and division.

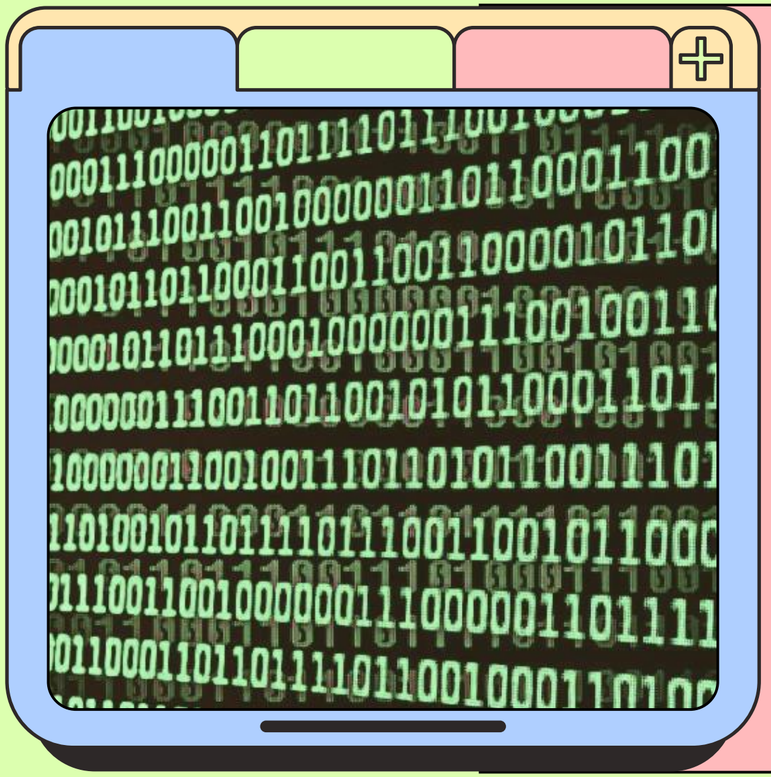
https://www.chtips.com/computer-fundamentals/importance-of-number-system-in-computer/

USES OR SIGNIFICANCE OF EACH NUMBER SYSTEM



Binary is used because to a computer a switch is either on or off, and the options are coded 0 and 1 respectively. This system also allows all kind of data be they numbers, text, images or sound data to be put into a format that a machine can work on.

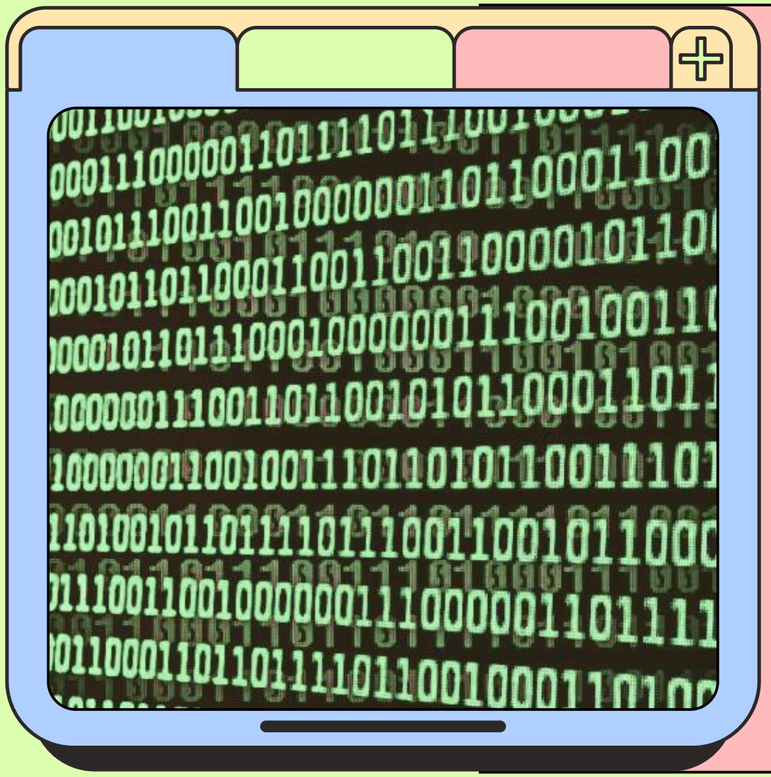
USES OR SIGNIFICANCE OF EACH NUMBER SYSTEM



Decimal is a numbering system that uses a base-10 representation for numeric values. The system is used extensively in everyday life to carry out routine tasks such as buying groceries, trading stocks, tracking football scores or scrolling through cable channels.

https://www.techtarget.com/whatis/definition/decimal#:~:text=Decimal%20is%20a%20numbering%20system,or%20scrolling%20through%20cable%20channels.

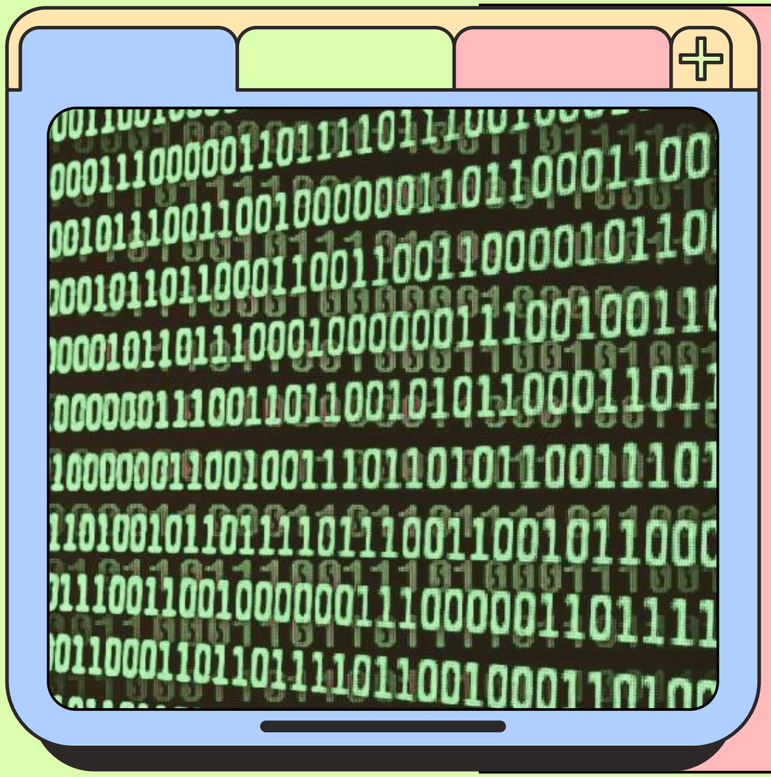
USES OR SIGNIFICANCE OF EACH NUMBER SYSTEM



The **Octal Number system** is widely used in computer application sectors and digital numbering systems. The computing systems use 16-bit, 32-bit or 64-bit word which is further divided into 8-bits words.

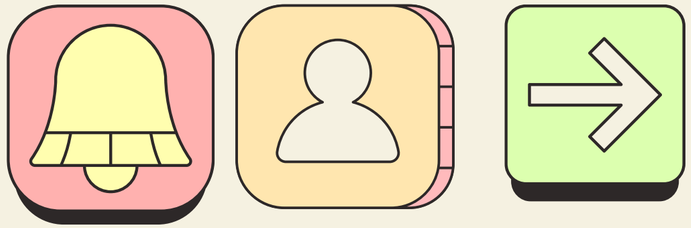
https://www.cuemath.com/numbers/octal-number-system/#:~:text=What%20are%20the%20Uses%20of,the%20form%20of%20a%20code.

USES OR SIGNIFICANCE OF EACH NUMBER SYSTEM

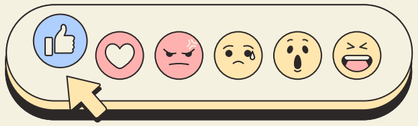


Hexadecimal is a 16 base number system that makes it easier to read long binary strings of bits 0s and 1s. For instance, it is used in the memory addresses, the machine codes and in design of web colors such as #FF5733.

ANALYSIS/REACTION

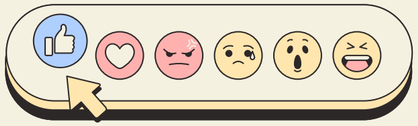


REACTION



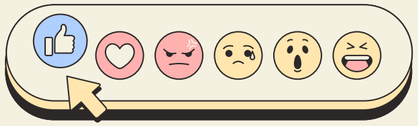
Learning numbers and obtained the knowledge about different number systems which are used in computing, such as binary system, hexadecimal system, octal system and decimal system has been interesting and made me realize how computers operate internally. Looking at these number systems, one can imagine that they are just conceptual constructs with no connection to real life, but in fact, these number systems are the foundation of the entire modern technologies. It is hard to imagine, but this system with only two digits can depict all the endless functionalities of devices as if it is copying the on/off switches of electrical circuits.

REACTION



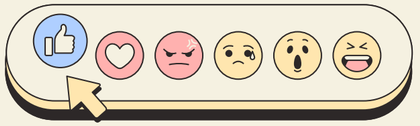
The thing that I find more interesting is how with binary language, it has some issues with readability for man and those issues are solved with hexadecimal language. It makes one to imagine how these programmers and developers use hexadecimal to join fairly long strings of binary in a limited space. While this efficiency means time saving, it also means reduction of errors to the need of interaction since number systems offers us many levels of interaction with machines.

REACTION



I also feel amazed by the relations between these number systems and users' experience. Although the computer has binary thoughts, a man has decimal thoughts. This is the flexibility of the two systems that makes technology to be usable by novices like us. Thus, I'm now more knowledgeable that when we type something as general as a number in a computer, it is processing the signal and converts the number into another format understandable to the system due to the shifting between varying number systems.

REACTION



Overall, number systems revealed to me the positive aspects of making the computer efficient. Every system has its function in the overall contribution toward the proper functioning of technology without necessarily being recognized. It has helped me further appreciate the relationship that is between Mathematics and technology and the way that these systems open up the digital world.

THANK YOU

LOG OUT