

Introduction to Number System

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Commentary

A number framework is characterized as an arrangement of writing to communicate numbers. It is the numerical documentation for addressing quantities of a given set by utilizing digits or different images in a predictable way. It gives a one-of-a-kind portrayal of each number and addresses the number-crunching and logarithmic design of the figures. It additionally permits us to work on math tasks like option, deduction, and division.

The estimation of any digit in a number can be dictated by:

- The digit
- Its position in the number
- The base of the number framework

Sorts of Number System

There are different sorts of number frameworks in math. The four most regular number framework types are:

1. Decimal number framework (Base-10)
2. Binary number framework (Base-2)
3. Octal number framework (Base-8)
4. Hexadecimal number framework (Base-16)

1. Decimal Number System

Number framework with a base worth 10 is named as a Decimal number framework. It utilizes 10 digits for example 0-9 for the production of numbers. Here, every digit in the number is at a particular spot with place esteem a result of various forces of 10. Here, the spot esteem is named from option to left as the lead position esteem called units, second to one side as Tens, so on Hundreds, Thousands, and so on Here, units has the spot an incentive as 100, tens have the spot an incentive as 101, hundreds as 102, thousands as 103, etc.

For instance: 10285 have place esteems as
 $(1 \times 10^4) + (0 \times 10^3) + (2 \times 10^2) + (8 \times 10^1) + (5 \times 10^0)$
 $1 \times 10000 + 0 \times 1000 + 2 \times 100 + 8 \times 10 + 5 \times 1$
 $10000 + 0 + 200 + 80 + 5$
10285

2. Paired Number System

Number System with base worth 2 is named as Binary number framework. It utilizes 2 digits for example 0 and 1 for the production of numbers. The numbers framed utilizing these two digits are named Binary Numbers. Paired number framework is exceptionally valuable in electronic gadgets and PC frameworks since it very well may be effectively performed utilizing only two states ON and OFF for example 0 and 1.

Decimal Numbers 0-9 are addressed in parallel as: 0, 1, 10, 11, 100, 101, 110, 111, 1000, and 1001.

Models:

14 can be composed as 1110
19 can be composed as 10011
50 can be composed as 110010

3. Octal Number System

Octal Number System is one in which the base worth is 8. It utilizes 8 digits for example 0-7 for the formation of Octal Numbers. Octal Numbers can be changed over to a Decimal incentive by duplicating every digit with the spot worth and afterward adding the outcome. Here the spot esteems are 80, 81, and 82. Octal Numbers are valuable for the portrayal of UTF8 Numbers.

Model:

(135)₁₀ can be composed as (207)₈
(215)₁₀ can be composed as (327)₈

4. Hexadecimal Number System

Number System with base worth 16 is named as Hexadecimal Number System. It utilizes 16 digits for the production of its numbers. Digits from 0-9 are taken like the digits in the decimal number framework yet the digits from 10-15 are addressed as A-F for example 10 is addressed as A, 11 as B, 12 as C, 13 as D, 14 as E, and 15 as F. Hexadecimal Numbers are valuable for dealing with memory address areas.

Models:

(255)₁₀ can be composed as (FF)₁₆
(1096)₁₀ can be composed as (448)₁₆
(4090)₁₀ can be composed as (FFA)₁₆

The most generally utilized numeral framework is the decimal positional numeral framework, the decimal alluding to the utilization of 10 images—0, 1, 2, 3, 4, 5, 6, 7, 8, 9—to build all numbers. This was an innovation of the Indians, consummated by middle age, Islam.

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