



Number System-

A processor understands information composed of zeros and ones only. We are familiar with the **decimal number system** in which digits are 0,1,2,3,4,5,6,7,8, and 9. However, the processor uses **binary digits(0s and 1s)** for its operation.

In this course, we will deal with **decimal, binary, hexadecimal,** and **BCD** number systems.

Before getting into the details of each one of them, it's important to know the basic terminology.

Numerical Digit/Face Value of the Number-

A numerical digit/face value is nothing but a figure or a combination of figures used to denote a number. Ex. 0,1,2,999, 33, etc. It can be a letter as well.

Place Value/Positional Value of a Digit-

It is the **value** of a digit in a number **based on its position** and the **number system**. Ex. The place value of **3** in **350**(in the Decimal Number System) is **300**.

Base or Radix of a Number System-

It is the **total number of unique digits/figures** in a number system. Ex. The base of the Decimal Number System is 10 (0-9) and of Binary is 2 (0 and 1).

Now that we are aware of the basic terms that are used in Number Systems, we will now study some of the frequently used Number Systems and their conversion.



To understand the Number Systems and the conversion of a number from one Number System to another, a list of tutorials(text and video resources) is given below –

Text Resources

- ✓ **The Decimal, Binary, and Hexadecimal Number System-**

https://www.tutorialspoint.com/computer_fundamentals/computer_number_system.htm

Credits- **Tutorialspoint**

- ✓ **Number System Conversion-**

https://www.tutorialspoint.com/computer_fundamentals/computer_number_conversion.htm

Credits- **Tutorialspoint**

- ✓ **The BCD Number System-**

<https://www.geeksforgeeks.org/bcd-or-binary-coded-decimal/>

Credits- **Geeksforgeeks**

Video Resources

- ✓ **Introduction to Number Systems-**

<https://www.youtube.com/watch?v=crSGS1uBSNQ>

Credits- **Neso Academy**

The tutorials provided in this section belong to the respective sources/publishers/authors. We do not claim ownership of any of the resources provided.

References

'Fundamentals of Microprocessors and Microcontrollers', 8th Revised Edition, by B.RAM and SANJAY KUMAR, Dhanpat Rai Publications (P) LTD.