

Chapter 3 [Data representation] begins now.

Number system: For every mathematic to be implemented, a full-fledged number system is needed. A computer performs a variety of tasks that include Text, Image, Audio or Video Processing. All these tasks ultimately are processed in terms of the number systems. The best feasible number system for a computer is Binary Number System. Following is a list of the most common number systems used so far:

- Decimal Number System
- Binary Number System
- Octal Number System
- Hexadecimal Number System

Every valid number system possesses a well defined RANGE of discrete values and a BASE which is normally the total count of values defined in the range. The following table best describes the common number systems:

S. N.	Number System	Range	Base
1.	Decimal	0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9	10
2.	Binary	0 , 1	2
3.	Octal	0 , 1 , 2 , 3 , 4 , 5 , 6 , 7	8
4.	Hexadecimal	0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , A , B , C , D , E , F	16

NOTE: Since every data being processed by the computer gets converted first to Binary Number System, computer needs different techniques to convert different number systems into Binary Number System. Following are the principal techniques:

- 1.** Binary Coded Octal
- 2.** Binary Coded Hexadecimal
- 3.** Binary Coded Decimal

Assignments:

- 1.** Briefly discuss about Number System.
- 2.** What is 'Range' and 'Base' in context of a number system?