



## NUMBER SYSTEM

**Number systems** are the technique to represent numbers in the computer system architecture, every value that you are saving or getting into/from computer memory has a defined number system.

Computer architecture supports following number systems.

- **Binary number system**
- **Octal number system**
- **Decimal number system**
- **Hexadecimal (hex) number system**

### **BINARY NUMBER SYSTEM**

A Binary number system has only two digits that are **0 and 1**. Every number (value) represents with 0 and 1 in this number system. The base of binary number system is 2, because it has only two digits.

### **OCTAL NUMBER SYSTEM**

Octal number system has only eight (8) digits from **0 to 7**. Every number (value) represents with 0,1,2,3,4,5,6 and 7 in this number system. The base of octal number system is 8, because it has only 8 digits.

### **DECIMAL NUMBER SYSTEM**

Decimal number system has only ten (10) digits from **0 to 9**. Every number (value) represents with 0,1,2,3,4,5,6, 7,8 and 9 in this number system. The base of decimal number system is 10, because it has only 10 digits.

### **HEXADECIMAL NUMBER SYSTEM**

A Hexadecimal number system has sixteen (16) alphanumeric values from **0 to 9 and A to F**. Every number (value) represents with 0,1,2,3,4,5,6, 7,8,9,A,B,C,D,E and F in this number system. The base of hexadecimal number system is 16, because it has 16 alphanumeric values. Here A is 10, B is 11, C is 12, D is 14, E is 15 and F is 16.

Number system	(Radix)	Allowed digits	Example
Binary	2	0,1	(10000) <sub>2</sub>
Octal	8	0,1,2,3,4,5,6,7	(10000) <sub>8</sub>
Decimal	10	0,1,2,3,4,5,6,7,8,9	(10000) <sub>10</sub>
Hexadecimal	16	0,1,2,3,4,5,6,7,8,9, C,D,E,F	(10000) <sub>16</sub>

## INTRODUCTION-NUMBER SYSTEM