

Binary Digits

All the computer systems communicate and operate with the binary numbers which use only the digits 0 and 1. The devices which are having two possible states will only be adopted. The following are some of the examples of these devices:

- A transistor is allowed to operate at cutoff or in saturation but not in its active region.
- A switch may be opened or closed.
- A statement may be characterized as True or False.

A BIT is a simple way to express Binary digit. It is a unit of information expressed as a choice between two possibilities. Here there are two possibilities of information which are either Zero or One. In this binary language the first (or OFF) state is called '0', and the second (or ON) state is called '1'.

Then the conversion from one number system to another is very important with the four main forms of arithmetic being.

- **Decimal** – The decimal numbering system has a base of 10 (MOD-10) and uses the digits from 0 through 9 to represent a decimal number value.
- **Binary** – The binary numbering system has a base of 2 (MOD-2) and uses only two digits a "0" and a "1" to represent a binary number value.
- **Octal** – The octal numbering system has a base of 8 (MOD-8) and uses 8 digits between 0 and 7 to represent an octal number value.
- **Hexadecimal** – The Hexadecimal numbering system has a base of 16 (MOD-16) and uses a total of 16 numeric and alphabetic characters to represent a number value. Hexadecimal numbers consist of digits 0 through 9 and letters A to F.

Hexadecimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

decimal	hexadecimal	binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111