NUMBER SYSTEM

- NUMBER SYSTEM

- TYPES OF NUMBER SYSTEM

- CONVERSION OF NUMBER SYSYEM.

- DIFFERENT TYPES OF CODE.

- BINARY ARITHMETIC

- COMPLIMENT

Number system

- A digital system can understand positional number system only where there are a few symbols called digits and these symbols represent different values depending on the position they occupy in the number.
- A value of each digit in a number can be determined using
A. The digit
B. The position of the digit in the number
C. The base of the number system (where base is defined as the total number of digits available in the number system).

Types of Number Systems

▸ There are different types of number systems in which the four main types are:

▸ Decimal number system

▸ Binary number system

▸ Octal number system

▸ Hexadecimal number system

Decimal Number System

▸ The decimal number system uses ten digits: 0,1,2,3,4,5,6,7,8 and 9 with the base number of 10. The decimal number system is the system that we generally use to represent numbers in real life. If any number is represented without a base, it means that its base is 10. For example: $(723)_{10}$, $(32)_{10}$, $(4257)_{10}$ are some examples of numbers in the decimal number system

Binary Number System

▸ The binary number system uses only two digits: 0 and 1. The numbers in this system have a base of 2. Digits 0 and 1 are called bits and 8 bits together make a byte. The data in computers is stored in terms of bits and bytes. The binary number system does not deal with other numbers such as 2,3,4,5 and so on. For example: $(10001)_2$, $(111101)_2$ & $(1010101)_2$ are some examples of numbers in the binary number system.

Octal Number System

▸ The Octal number system uses eight digits: 0,1,2,3,4,5,6 and 7 with the base of 8. The advantage of this system is that it has lesser digits when compared to several other systems. Hence, there would be fewer computational errors. Digits like 8 and 9 are not included in the octal number system. Just as the binary, the octal number system is used in minicomputers but with digits from 0 to 7. For example: $(35)_8$, $(23)_8$, $(141)_8$ are some examples of numbers in the octal number system.

Hexadecimal Number System

▶ The hexadecimal number system uses sixteen digits/alphabets: 0,1,2,3,4,5,6,7,8,9 and A,B,C,D,E,F with the base number of 16. Here, A-F of the hexadecimal system means the numbers 10-15 of the decimal number system respectively. This system is used in computers to reduce the large-sized strings of the binary system. For example: $(7B3)_{16}$, $(6F)_{16}$, $(4B2A)_{16}$ are some examples of numbers in the hexadecimal number system.