COMPLEMENT ARITHMETIC

Complements are used in the digital computers in order to simplify the subtraction operation and for the logical manipulations. For each radix-r system *radixrrepresentsbaseofnumbersystem* there are two types of complements.

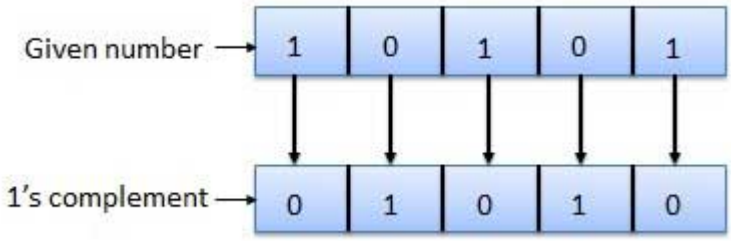
S.N.	Complement	Description
1	Radix Complement	The radix complement is referred to as the r's complement
2	Diminished Radix Complement	The diminished radix complement is referred to as the $r-1$'s complement

Binary system complements

As the binary system has base r = 2. So the two types of complements for the binary system are 2's complement and 1's complement.

1's complement

The 1's complement of a number is found by changing all 1's to 0's and all 0's to 1's. This is called as taking complement or 1's complement. Example of 1's Complement is as follows.



2's complement

The 2's complement of binary number is obtained by adding 1 to the Least Significant Bit *LSB* of 1's complement of the number.

2's complement = 1's complement + 1

Example of 2's Complement is as follows.