**BIT MANIPULATION**

**Left Shift**

If we left shift a number ‘n’ by ‘i’ times. Then, ( n<<i ) result will be “ n\*2^i “.

For Ex : 8 << 1 => 16.

11 << 2 => 44.

**Right Shift**

If we right shift a number ‘n’ by ‘i’ times. Then, ( n>>i ) result will be “ floor( n/2^i ) “.

For Ex : 8 >> 1 => 4.

9 >> 2 => 2.

Note : In right shifting a number, we append ‘0’ if number is positive else ‘1’ if number is negative.

**& operator**

x & 1 => x

x & 0 => 0.

**| operator**

x | 1 => 1

x | 0 => x.

**~ operator**

~x

**^ operator**

x ^ 1 => ~x

x ^ 0 => x.