Algorithms on Bitwise Operator

By Prince Agarwal

[“ Hello World ”]

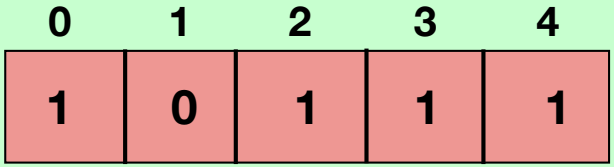
Count the number of ones in binary representation of The given number

Let, N = 23

Binary representation : 10111

Number of one's = 4

2	23	
2	11	1
2	5	1
2	2	1
	1	0



Let, n = 23 Initially, count = 0

Step =1 : n = n & (n-1)

$n = 23 = \{10111\}_2$

$(n-1) = 22 = \{10110\}_2$

10110 ⟶ 22 Count = 1

(It is Non- zero value)

Step =2 : n = n & (n-1)

n=22

$n = 22 = \{10110\}_2$

$(n-1) = 21 = \{10101\}_2$

10100 ⟶ 20 Count = 2

(It is Non- zero value)

Step =3 : n = n & (n-1)

n=20

$n = 20 = \{10100\}_2$

$(n-1) = 19 = \{10011\}_2$

10000 ⟶ 16 Count = 3

(It is Non- zero value)

Step =4 : n = n & (n-1)

n=16

$n = 16 = \{10000\}_2$

$(n-1) = 15 = \{01111\}_2$

00000 ⟶ 0 Count = 4

(It is NULL value)

When the value of n = 0, then we
At that time, the value of count denotes the number of one's

Complexity ,

O (k) , Where k is the number of one's in the Binary format

It is more easier than , old methods …

Let number n = ?

Binary representation : 10101110101010101010000011111

Number of one's = 17

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“ If you feel any problem then comments in my video
I will reply as soon as possible “

- Prince Agarwal