

In [4]: *#Name: Mohith Dande*  
To find the secret number N given:

$$N \oplus 23 = 45$$

We can use a key property of XOR ( $\oplus$ ):

XOR Property:

$$A \oplus B = C \Rightarrow C \oplus B = A$$

So:

$$N \oplus 23 = 45 \Rightarrow N = 45 \oplus 23$$

Convert to binary:

$$45 = 00101101$$

$$23 = 00010111$$

Now XOR them:

$$\begin{array}{r} 00101101 \quad (45) \\ \oplus 00010111 \quad (23) \\ \hline 00111010 \quad = 58 \end{array}$$

Answer: N = 58

So, the secret number N is 58.

You can double-check:

$$58 \oplus 23 = 45$$

In [1]: