

2997. Minimum Number of Operations to Make Array XOR Equal 0

Input: $arr = [2, 1, 3, 4]$, $k = 1$

$$\begin{array}{r}
 \downarrow \\
 \text{Flip } \left[\begin{array}{ccc} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 1 \end{array} \right] \text{ Flip} \\
 \text{Flip } \left[\begin{array}{ccc} 1 & 0 & 0 \end{array} \right] \text{ Flip} \\
 \hline
 001
 \end{array}$$

$$2 \wedge 1 \wedge 3 \wedge 4 \text{ should } == 1$$

3rd row:

$$\text{count} = 1$$

$$k \wedge 3 = 0$$

count must be even

$$+1$$

1st row:

$$\text{count} = 2$$

$$k \wedge 2 = 0$$

count must be even

$$+0$$

1st row:

$$\text{count} = 2$$

$$k \wedge 1 = 1$$

count must be odd

$$+1$$

$$\text{Total \# Flips: } 1 + 0 + 1 = 2$$



$$O(32) \rightarrow O(1)$$

$$\text{Time: } O(1)$$

$$\text{Space: } O(1)$$

0 1 0
 0 0 1
 0 1 1
 1 0 0
 XOR

$r = 100$

$k = 001$

+1 +0 +1

1 0 0

0 0 1

2

result = 0

$r = 0$



for num in nums:

$r = r \wedge \text{num}$

for $i = 0 \Rightarrow (32)$

$b1 = r \{i+1\}$

$b2 = k \{i+1\}$

result += $b1 \neq b2$

return result