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Non Zero Xor

Problem Code: **NZXOR**

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An array A of size N is called *good* if the following conditions hold:

- For every pair (l, r) ($1 \leq l \leq r \leq N$), $A_l \oplus A_{l+1} \oplus \dots \oplus A_r \neq 0$. (where \oplus denotes the [bitwise XOR operation](https://en.wikipedia.org/wiki/Bitwise_operation#XOR) (https://en.wikipedia.org/wiki/Bitwise_operation#XOR).)

JJ has an array A of size N . He wants to convert the array to a good array. To do so he can perform the following operation multiple times:

- Pick an index i such that $(1 \leq i \leq N)$ and set $A_i := X$ where $0 \leq X < 10^{10}$.

Find the **minimum** number of operations required to convert A into a *good* array.

Input Format

- The first line contains T - the number of test cases. Then the test cases follow.
- The first line of each test case contains an integer N - the size of the array A .
- The second line of each test case contains N space-separated integers A_1, A_2, \dots, A_N denoting the array A .

Output Format

For each test case, output the **minimum** number of operations required to convert the array A into a good array.

Constraints

- $1 \leq T \leq 10^5$
- $1 \leq N \leq 10^5$
- $0 \leq A_i < 2^{30}$
- Sum of N over all test cases does not exceed $3 \cdot 10^5$.

Sample Input 1

```
3
5
1 2 3 4 4
3
0 0 0
6
2 3 5 7 11 13
```

Sample Output 1

Submission Ends In

1 15 33
Hrs Min Sec

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2
3
0

Explanation

Test Case 1: We can set $A_2 = 4$ and $A_4 = 5$. Thereby A will become $[1, 4, 3, 5, 4]$ which is *good*. We can prove that we can not make A good in < 2 operations.

Test Case 2: We can set $A_1 = 1$, $A_2 = 10$ and $A_3 = 100$. Thereby A will become $[1, 10, 100]$ which is *good*. We can prove that we can not make A good in < 3 operations.

Test Case 3: The given array A is already *good*.

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Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: CPP17, CPP14, PYTH 3, C, JAVA, PYP3, PYTH, CS2, NODEJS, GO, JS, TEXT, PHP, kotlin, RUBY, rust, PYPY, PAS fpc, HASK, SCALA, swift, PERL, SQLQ, D, LUA, BASH, LISP sbcl, ADA, R, TCL, SQL, PRLG, FORT, PAS gpc, FS, SCM qobi, CLPS, NICE, CLOJ, PERL6, CAML, SCM chicken, ICON, ICK, ST, WSPC, NEM, LISP clisp, COB, ERL, BF, ASM, PIKE, SCM guile

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