

A. Non-zero

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Guy-Manuel and Thomas have an array a of n integers $[a_1, a_2, \dots, a_n]$. In one step they can add 1 to any element of the array. Formally, in one step they can choose any integer index i ($1 \leq i \leq n$) and do $a_i := a_i + 1$.

If either the sum or the product of all elements in the array is equal to zero, Guy-Manuel and Thomas do not mind to do this operation one more time.

What is the minimum number of steps they need to do to make both the sum and the product of all elements in the array **different from zero**? Formally, find the minimum number of steps to make $a_1 + a_2 + \dots + a_n \neq 0$ and $a_1 \cdot a_2 \cdot \dots \cdot a_n \neq 0$.

Input

Each test contains multiple test cases.

The first line contains the number of test cases t ($1 \leq t \leq 10^3$). The description of the test cases follows.

The first line of each test case contains an integer n ($1 \leq n \leq 100$) — the size of the array.

The second line of each test case contains n integers a_1, a_2, \dots, a_n ($-100 \leq a_i \leq 100$) — elements of the array.

Output

For each test case, output the minimum number of steps required to make both sum and product of all elements in the array different from zero.

Example

input

Copy

```
4
3
2 -1 -1
4
-1 0 0 1
2
-1 2
3
0 -2 1
```

output

Copy

```
1
2
0
2
```

Note

In the first test case, the sum is 0. If we add 1 to the first element, the array will be $[3, -1, -1]$, the sum will be equal to 1 and the product will be equal to 3.

In the second test case, both product and sum are 0. If we add 1 to the second and the third element, the array will be $[-1, 1, 1]$, the sum will be equal to 2 and the product will be equal to -1 . It can be shown that fewer steps can't be enough.

Codeforces Round #618 (Div. 2)

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In the third test case, both sum and product are non-zero, we don't need to do anything.

In the fourth test case, after adding 1 twice to the first element the array will be $[2, -2, 1]$, the sum will be 1 and the product will be -4 .

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