A. Be Positive

time limit per test: 1 second
memory limit per test: 256 megabytes

Given an array a of n elements, where each element is equal to -1, 0, or 1. In one operation, you can choose an index i and increase a_i by 1 (that is, assign $a_i := a_i + 1$). Operations can be performed any number of times, choosing any indices.

The goal is to make the product of all elements in the array strictly positive with the minimum number of operations, that is, $a_1 \cdot a_2 \cdot a_3 \cdot \ldots \cdot a_n > 0$. Find the minimum number of operations.

It is guaranteed that this is always possible.

Input

Each test consists of several test cases.

The first line contains one integer t ($1 \le t \le 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains one integer n ($1 \le n \le 8$) — the length of the array a.

The second line contains n integers $a_1, a_2, \ldots, a_n$, where $-1 \le a_i \le 1$ — the elements of the array a.

Output

For each test case, output one integer — the minimum number of operations required to make the product of the elements in the array strictly positive.

Example

input Copy

```
3
3
-1 0 1
4
-1 -1 0 1
5
-1 -1 -1 0 0
```

output Copy

```
3
1
4
```

Note

In the first test case: from $[-1, 0, 1]$, you can obtain $[1, 1, 1]$ in 3 operations.

In the second test case: it is enough to perform $0 \to 1$ (1 operation). In the resulting array $a = [-1, -1, 1, 1]$, the product of all elements is 1.

In the third test case: turning two zeros into ones (2 operations), and one -1 into 1 (another 2 operations), for a total of 4.

Codeforces Round 1054 (Div. 3)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++17 7.3.0

Choose file: Escolher Arquivo Nenhu...colhido

Submit

→ Last submissions

Submission	Time	Verdict
340479689	Sep/25/2025 19:06	Accepted
340477798	Sep/25/2025 19:03	Wrong answer on test 1

→ Problem tags

math *800

No tag edit access

→ Contest materials

- Announcement
- Tutorial (en)

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