

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS STANDINGS CUSTOM INVOCATION

D. Maximum Product Strikes Back

time limit per test: 2 seconds
memory limit per test: 256 megabytes

You are given an array a consisting of n integers. For each i ($1 \leq i \leq n$) the following inequality is true:
 $-2 \leq a_i \leq 2$.

You can remove any number (possibly 0) of elements from the beginning of the array and any number (possibly 0) of elements from the end of the array. You are allowed to delete the whole array.

You need to answer the question: how many elements should be removed from the beginning of the array, and how many elements should be removed from the end of the array, so that the result will be an array whose product (multiplication) of elements is **maximal**. If there is more than one way to get an array with the maximum product of elements on it, you are allowed to output **any** of them.

The product of elements of an **empty** array (array of length 0) should be assumed to be 1.

Input

The first line of input data contains an integer t ($1 \leq t \leq 10^4$) —the number of test cases in the test.

Then the descriptions of the input test cases follow.

The first line of each test case description contains an integer n ($1 \leq n \leq 2 \cdot 10^5$) —the length of array a .

The next line contains n integers a_1, a_2, \dots, a_n ($|a_i| \leq 2$) — elements of array a .

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output two non-negative numbers x and y ($0 \leq x + y \leq n$) — such that the product (multiplication) of the array numbers, after removing x elements from the beginning and y elements from the end, is maximal.

If there is more than one way to get the maximal product, it is allowed to output **any** of them. Consider the product of numbers on **empty** array to be 1.

Example

input	Copy
5 4 1 2 -1 2 3 1 1 -2 5 2 0 -2 2 -1 3 -2 -1 -1 3 -1 -2 -2	
output	Copy
0 2 3 0 2 0 0 1 1 0	

Note

In the first case, the maximal value of the product is 2. Thus, we can either delete the first three elements (obtain array [2]), or the last two and one first element (also obtain array [2]), or the last two elements (obtain array [1, 2]). Thus, in the first case, the answers fit: "3 0", or "1 2", or "0 2".

In the second case, the maximum value of the product is 1. Then we can remove all elements from the array because the value of the product on the empty array will be 1. So the answer is "3 0", but there are other possible answers.

In the third case, we can remove the first two elements of the array. Then we get the array: [-2, 2, -1]. The product of the elements of the resulting array is $(-2) \cdot 2 \cdot (-1) = 4$. This value is the maximum possible value that can be obtained. Thus, for this case the answer is: "2 0".

Codeforces Round 780 (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++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
266682757	Jun/21/2024 12:20	Accepted
266638128	Jun/21/2024 02:06	Wrong answer on test 1

→ Problem tags

brute force implementation math

two pointers *1600

No tag edit access

→ Contest materials

Announcement

Tutorial