C. Min Max Sort

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

You are given a permutation p of length n (a permutation of length n is an array of length n in which each integer from 1 to n occurs exactly once).

You can perform the following operation any number of times (possibly zero):

1. choose two different elements x and y and erase them from the permutation;
2. insert the minimum of x and y into the permutation in such a way that it becomes the first element;
3. insert the maximum of x and y into the permutation in such a way that it becomes the last element.

For example, if $p = [1, 5, 4, 2, 3]$ and we want to apply the operation to the elements 3 and 5, then after the first step of the operation, the permutation becomes $p = [1, 4, 2]$; and after we insert the elements, it becomes $p = [3, 1, 4, 2, 5]$.

Your task is to calculate the minimum number of operations described above to sort the permutation p in ascending order (i. e. transform p so that $p_1 < p_2 < \cdots < p_n$).

Input

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

The first line of the test case contains a single integer n ($1 \le n \le 2 \cdot 10^5$) — the number of elements in the permutation.

The second line of the test case contains n distinct integers from 1 to n — the given permutation p.

The sum of n over all test cases doesn't exceed $2 \cdot 10^5$.

Output

For each test case, output a single integer — the minimum number of operations described above to sort the array p in ascending order.

Example

input Copy

```
4
5
1 5 4 2 3
3
1 2 3
4
2 1 4 3
6
5 2 4 1 6 3
```

output Copy

```
2
0
1
3
```

Note

In the first example, you can proceed as follows:

1. in the permutation $p = [1, 5, 4, 2, 3]$, let's choose the elements 4 and 2, then, after applying the operation, the permutation becomes $p = [2, 1, 5, 3, 4]$;
2. in the permutation $p = [2, 1, 5, 3, 4]$, let's choose the elements 1 and 5, then, after applying operation, the permutation becomes $p = [1, 2, 3, 4, 5]$.

Educational Codeforces Round 142 (Rated for Div. 2)

Finished

Practice

→ Virtual participation

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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
315212429	Apr/12/2025 23:25	Accepted
315147971	Apr/12/2025 16:11	Wrong answer on test 2

→ Problem tags

binary search, brute force, greedy, math, two pointers, *1500

No tag edit access

→ Contest materials

- Announcement
- Tutorial