Difference One Swaps

You are given an array of size N containing the integers $1, 2, \ldots, N$ in some order.

A *move* consists of swapping the integers k and $k+1$ for some $1 \le k \lt N$. In other words, you may swap any pair of integers that has a difference of one.

Find the minimum number of moves required to sort the given array in ascending order.

Input

The first line contains T ($1 \le T \le 1000$), the number of test cases.

Each test case contains N ($2 \le N \le 10^5$) followed by N distinct integers ($1 \le x_i \le N$).

The sum of N over all test cases will not exceed 10^5.

Output

For each test case, output the number of moves required to sort the array.

Example

Input:
5
2 1 2
2 2 1
3 3 2 1
4 4 2 3 1
6 2 1 4 3 6 5

Output:
0
1
3
5
3

Note

Below is one optimal sequence of moves that sorts [4,2,3,1].

- Swap 1 and 2: [4,**2**,3,**1**] → [4,**1**,3,**2**].
- Swap 2 and 3: [4,1,**3**,**2**] → [4,1,**2**,**3**].
- Swap 3 and 4: [**4**,1,2,**3**] → [**3**,1,2,**4**].
- Swap 2 and 3: [**3**,1,**2**,4] → [**2**,1,**3**,4].
- Swap 1 and 2: [**2**,**1**,3,4] → [**1**,**2**,3,4].