

## Problem B

### Ants to Their Nests

Input file: *testdata.in*

Time limit: 1 second

### Problem Description

On the north side of a river bank, there are  $N$  ants wishing going back to their  $N$  home nests. They are standing in different positions of the river bank, numbered as 1 to  $N$  from the west to the east. In the front of each ant there is a wooden *pile* crossing the river in north-south direction to one of the ant nests. Every ant has its distinctive home nest, and no two ants belong to a same nest. However, the ant nest in front of an ant may not be its home nest.

To make ants go to their nests correctly, we can put some east-west direction *sticks* in two adjacent piles. Ants will walk on to a stick whenever they encounter it on their way to south, pass through the stick, and continue going south along current pile. Two ants will not interfere with each other. As we can see in Figure 1, leading an ant of left pile to the right pile by placing a stick also makes the other ant, which originally on the right pile, go to the left pile.

Now given the list of positions the  $N$  ants wishes to go, please find out the minimum number of sticks you have to place, so that once the placement is done, every ant goes to its correct home nest.

For example, if there are 4 ants and the list of positions is (4, 1, 3, 2), this implies ant 1 should go to 4<sup>th</sup> nest from the west, ant 2 should go to 1<sup>st</sup> nest from the west, and so on. There is one placement with minimum number of sticks showed as Figure 2 to make all ants go to their home nests correctly.

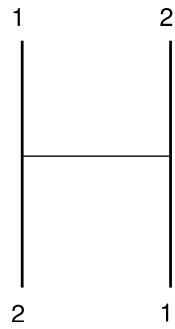


Figure 1: Example of two piles.

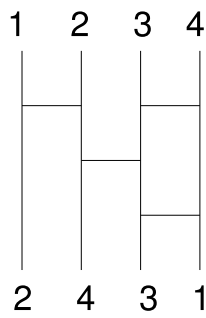


Figure 2: One placement of minimum number of sticks

## Technical Specification

- $1 \leq T \leq 50$
- $1 \leq N \leq 100000$
- You cannot place a stick on where one of its end point is also another stick's endpoint.
- Sticks can only connect two adjacent piles.
- The given list of positions is guaranteed to be one permutation of the sequence  $1, 2, \dots, N$

## Input Format

In the first line of the input file there is an integer  $T$ , indicating the number of distinct test cases to be followed. Each of the next  $T$  lines stands for a test cases. For each test case, there is an integer  $N$ , followed by  $N$  integers as the list of positions. The  $i^{th}$  integer in the list indicates the position counting from west that the  $i^{th}$  ant wishes to go.

## Output Format

Output should be  $T$  lines of integers. The integer in  $i^{th}$  line represents the minimum number of sticks to be placed in the  $i^{th}$  case.

## Sample Input

```
3
4 4 1 3 2
7 5 6 3 1 7 4 2
9 3 2 1 6 5 4 9 8 7
```

## Sample Output

```
4
13
9
```