Simple Subarrays

Description

An array $a_1, a_2, \ldots, a_m$ is *simple* if a can be transformed into an increasing array by removing a decreasing ***sub-sequence*** from it. Note that removing an empty decreasing sub-sequence is also allowed. For example: $4, 5, 2, 6, 1$ is simple since we can transform it into $4, 6$ by removing $5, 2, 1$ from it.

Given a permutation π of numbers from 1 to n, you are asked to find the number of pairs l, r $(1 \leq l \leq r \leq n)$ such that $\pi_l, \ldots, \pi_r$ is simple.

Input

Each test contains multiple test cases. The first line contains the number of test cases T. The description of the test cases follows.

Each test case starts with one integer n indicating the number of integers. The next line contains n integers which is a permutation of $1, 2, \ldots, n$.

Output

For each test case, print an integer m.

Sample Input/Output

input

```
3
3
2 3 1
6
4 5 2 6 1 3
10
7 10 1 8 3 9 2 4 6 5
```

output

```
6
19
39
```

Constraints and Note

$$1 \leq T \leq 10^2, 2 \leq n \leq 2 \cdot 10^5.$$