Problem F. Dot Product

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

This is another story about Kevin, a friend of Little Cyan Fish.

Kevin is the chief judge of the International Convex Polygon Championship (ICPC). He proposed a geometry task for the contest. However, since he is inexperienced in computational geometry, he couldn't generate a correct convex polygon for the tests of the task.

Now, Little Cyan Fish is teaching Kevin about how to use the cross product to check if a given polygon is convex. Kevin learned it so well. After that, Kevin decided to learn more knowledge about other forms of the product, especially the dot product.

Please note that the definition of the dot product in this problem is nonstandard: Consider two arrays of length n, denoted by $a_1, a_2, \cdots, a_n$ and $b_1, b_2, \cdots, b_n$. The dot product $c = a \cdot b$ results in a new array of length n, where each element $c_i = a_i \cdot b_i$. For instance, $[0, 8] \cdot [1, 5] = [0, 40]$ and $[2, 3] \cdot [4, 5] = [8, 15]$.

Little Cyan Fish gives Kevin a permutation $a_1, a_2, \cdots, a_n$ of the integers $1, 2, \cdots, n$ and another permutation defined by $b_i = i$. The challenge is to modify the permutation a by swapping adjacent elements so that the sequence resulting from $a \cdot b$ is monotonically non-decreasing. For example, the permutation $a = [2, 1, 3]$ satisfies this condition since $a \cdot b = [2, 2, 9]$. However, the permutation $[3, 2, 1]$ does not meet the criteria, as $a \cdot b = [3, 4, 3]$ is not monotonically non-decreasing.

You are given the permutation a. Can you help Kevin calculate the minimum number of swap operations required to achieve the goal set by Little Cyan Fish?

Input

There are multiple test cases in a single test file. The first line of the input contains a single integer T ($1 \le T \le 10^5$), indicating the number of test cases.

For each test case, the first line of the input contains one positive integer n ($1 \le n \le 5 \times 10^5$).

The next line of the input contains n integers $a_1, \cdots, a_n$ ($1 \le a_i \le n$) denoting the permutation a. It is guaranteed that $a_1, \ldots, a_n$ form a permutation, i.e., $a_i \ne a_j$ for $i \ne j$.

It is guaranteed that the sum of n over all test cases does not exceed 5×10^5.

Output

Output a single line containing a single integer, indicating the answer.

Example

standard input	standard output
4 3 3 1 2 4 4 3 2 1 5 2 1 5 4 3 1 1	1 4 2 0