The problem statement has recently been changed.

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D. Locked Out

time limit per test

2 seconds

memory limit per test

512 megabytes

input

standard input

output

standard output

Who's a good array? You're a good array! (c)

An array b is good if there do not exist indices $1 \le i < j \le |b|$ such that $b_j - b_i = 1$.

You are given an integer array $a_1, a_2, ..., a_n$. Determine the minimum number of elements that need to be removed from the given array so that it becomes a good array.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 6 \cdot 10^4$). The description of the test cases follows.

The first line of each test case contains an integer n ($1 \le n \le 3 \cdot 10^5$) — the number of elements in the array.

The second line of each test case contains n integers $a_1, a_2, ..., a_n$ ($1 \le a_i \le n$) — the elements of the array.

It is guaranteed that the sum of n over all test cases does not exceed $3 \cdot 10^5$.

Output

For each test case, print a single integer — the minimum number of elements that need to be removed from the array to make it a good array.

Example

Input

Copy

61151 2 3 4 555 4 3 2 155 5 5 4 471 7 1 2 5 7 161 2 5 6 5 5

Output

Copy

020012

Note

In the first test case, the array is good from the very beginning, so nothing needs to be removed from it.

In the second test case, the optimal solution is to remove the second and fourth elements of the array, which will result in 111, 333, 555 array.

In the third test case, the array is good from the very beginning.

In the fourth test case, the array is good from the very beginning.

In the fifth test case, the optimal solution is to remove the fourth element of the array, which will result in 111, 777, 111, 555, 777, 111 array.

In the sixth test case, one of the optimal solutions is to remove the first and fourth elements of the array, which will result in 222, 555, 555, 555 array.