

Longest Non-Decreasing Subsequence

Time Limit: 2 seconds

Problem Description

Given an integral sequence a_1, \dots, a_n . A sequence a_{i_1}, \dots, a_{i_k} is a subsequence of a_1, \dots, a_n if $1 \leq i_1 < \dots < i_k \leq n$. Find the length of the longest subsequence a_{i_1}, \dots, a_{i_k} such that $a_{i_1} \leq \dots \leq a_{i_k}$.

Technical Specifications

1. The number of test cases is no more than 20.
2. $n \leq 20000$.
3. $-2^{31} \leq a_i < 2^{31}$ for every $i \in \{1, \dots, n\}$,

Input Format

The first line of the input file contains an integer indicating the number of test cases. The first line of each test case contains an integer n which denotes the length of the sequence. The second line contains the n -integer sequence a_1, \dots, a_n separated by blanks.

Output Format

For each test case, output the length k of the longest increasing subsequence a_{i_1}, \dots, a_{i_k} of a_1, \dots, a_n .

Sample Input

```
3
2
1 1
11
10 8 6 3 1 9 15 13 11 19 17
11
11 1 2 3 10 9 8 7 4 6 5
```

Sample Output

```
2
4
5
```