Longest Increasing Subsequence (LIS)

Given an integer array a, return the length of the longest **strictly increasing subsequence**.

A subsequence is a sequence that can be derived from an array by deleting some or no elements without changing the order of the remaining elements. For example, [3,6,2,7] is a subsequence of the array [0,3,1,6,2,2,7].

Input:

- First line contains a single integer n $(1 <= n <= 2500)$, the size of input array;
- Second line contains n integers a_i $(1 <= nums_i <= 10^4)$, the array to be analysed.

Output:

- Output a single integer containing the *LIS* of the given array.

Samples:

Input	**Output**
6 1 2 1 4 3 4	4
5 1 2 3 4 5	5
4 8 8 8 8	1

Explanation:

Subsequence of first sample can be: *1 2 3 4* (indices 0, 1, 4, 5);

The array given in the second sample is already strictly increasing;

Third array does not contain a strictly increasing subsequence of size greater than 1.