Longest Increasing Subsequence

Time limit: 1.0s **Memory limit:** 16M

Given an array of integers, find the longest increasing subsequence.
A subsequence is just a collection of numbers from the array - however, they must be in order.

For example:
Array: $1, 2, 5, 4, 3, 6$
The longest increasing subsequence here is $1, 2, 5, 6$ (or $1, 2, 4, 6$, or $1, 2, 3, 6$).
The numbers must be strictly increasing - no two numbers can be equal.

Input Specification

$N \leq 5\,000$, the number of integers.
N lines, each with a value in the array.

Output Specification

The length of the longest increasing subsequence of the array.