Problem F. Find The Length

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

You are given an integer sequence $A = (a_1, a_2, \ldots, a_N)$. Find the length of the longest sequence $B = (b_1, b_2, \ldots, b_M)$ which satisfies the following two conditions:

- B is a subsequence of A
- $b_i < b_{i+2}$ for all i $(1 \le i \le M - 2)$

A subsequence of a sequence is a sequence obtained by removing zero or more elements from the original sequence and then concatenating the remaining elements without changing the order.

Input

The first line contains an integer N, the number of elements in A $(1 \le N \le 5000)$.

The second line consists of N integers between 1 and N, inclusive. For each i $(1 \le i \le N)$, a_i represents the i-th element of A $(1 \le a_i \le N)$.

Output

Print one integer: the answer to the problem.

Examples

standard input	*standard output*
8 1 5 7 8 6 3 4 2	4
8 1 4 2 8 5 7 1 4	5
2 1 2	2
6 2 2 3 3 5 5	6