Longest Permutation

You are given a sequence A of n integer numbers ($1<=A_i<=n$). A subsequence of A has the form $A_u, A_{u+1} ... , A_v$ ($1<=u<=v<=n$). We are interested in subsequences that are permutations of 1, 2, .., k (k is the length of the subsequence).

Your task is to find the longest subsequence of this type.

Input

- Line 1: n ($1<=n<=100000$)
- Line 2: n numbers $A_1, A_2, ... ,A_n$ ($1<=A_i<=n$)

Output

A single integer that is the length of the longest permutation

Example

Input:
5
4 1 3 1 2

Output:
3