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

41312

Output:

3