


Greedily Increasing Subsequence

Problem ID: greedilyincreasi**CPU Time limit:** 5 seconds**Memory limit:** 1024 MB**Difficulty:** 2.0**Author:** Johan Sannemo**Source:** HiQ Challenge 2017**License:** 

Given a permutation $A = (a_1, a_2, \dots, a_N)$ of the integers $1, 2, \dots, N$, we define the *greedily increasing subsequence* (GIS) in the following way.

Let $g_1 = a_1$. For every $i > 1$, let g_i be the leftmost integer in A that is strictly larger than g_{i-1} . If there for a given i is no such integer, we say that the GIS of the sequence is the sequence $(g_1, g_2, \dots, g_{i-1})$.

Your task is to, given a permutation A , compute the GIS of A .

Input

The first line of input contains an integer $1 \leq N \leq 10^6$, the number of elements of the permutation A . The next line contains N distinct integers between 1 and N , the elements a_1, \dots, a_N of the permutation A .

Output

First, output a line containing the length l of the GIS of A . Then, output l integers, containing (in order) the elements of the GIS.

Explanation of sample 1

In this case, we have the permutation 2, 3, 1, 5, 4, 7, 6. First, we have $g_1 = 2$. The leftmost integer larger than 2 is 3, so $g_2 = 3$. The leftmost integer larger than 3 is 5 (1 is too small), so $g_3 = 5$. The leftmost integer larger than 5 is 7, so $g_4 = 7$. Finally, there is no integer larger than 7. Thus, the GIS of 2, 3, 1, 5, 4, 7, 6 is 2, 3, 5, 7.

Sample Input 1

```
7
2 3 1 5 4 7 6
```

Sample Output 1

```
4
2 3 5 7
```

Sample Input 2

```
5
1 2 3 4 5
```

Sample Output 2

```
5
1 2 3 4 5
```

Sample Input 3

```
5
5 4 3 2 1
```

Sample Output 3

```
1
5
```