3_你太矮了我看不到 (Too Short to Be Seen)

(10分)

時間限制: 1 second
記憶體限制: 256 MB

題目敘述

有 N 個人在排隊，這些人的身高互不相同，且它們被依照身高由小到大編號為 $1, 2, \ldots, N$（也就是說編號 1 的人最矮、編號 N 的人最高）。李老闆叫他的記錄員記錄隊伍中第一個人到最後一個人的編號依序為何。

記錄員站在第 1 個人前面，因為他懶得移動，所以如果某一個人前面有人身高比他高，記錄員就會看不到這個人。記錄員很懶惰，所以他會把所有他看不見的人的編號，記錄為前一個他看得見的人（也就是前面最高的人）的編號。記錄員可以知道每一個他看得到的人是排在第幾個，所以他不會漏記錄任何一個人。正式地說，假設隊伍中第 i 個人的編號是 a_i，那麼記錄員記錄的第 i 個人的編號是 $b_i = \max_{1 \le k \le i}\{a_i\}$。

當記錄員將 $b_1, b_2, \ldots, b_N$ 這個序列交給李老闆後，李老闆很生氣地威脅要把他開除。為了避免增加失業人口，請你給記錄員任意一個可能的序列 $a_1, a_2, \ldots, a_N$。

輸入格式

第一行有一個整數 N，表示隊伍中的人數。

第二行有 N 個整數 $b_1, b_2, \ldots, b_N$，表示記錄員記錄下來的序列。

輸出格式

輸出一行，包含 N 個整數 $a_1, a_2, \ldots, a_N$，表示一個可能的排隊順序。

你的答案會被視為正確若且唯若以下條件全部滿足：

- $1 \le a_i \le N$
- $\forall i \ne j,\ a_i \ne a_j$
- $b_i = \max_{1 \le k \le i}\{a_i\}$

資料範圍

- $1 \le N \le 10^5$
- $1 \le b_i \le N$
- 保證記錄員沒有記錯，所以一定存在符合條件的答案，也就是說：
  - $\forall 1 \le i < N,\ b_i \le b_{i+1}$
  - $b_i \ge i$

測試範例

輸入範例 1

```
5
2 2 4 5 5
```

輸出範例 1

```
2 1 4 5 3
```

輸入範例 2

```
4
1 2 3 4
```

輸出範例 2

```
1 2 3 4
```

輸入範例 3

```
5
5 5 5 5 5
```

輸出範例 3

```
5 2 3 4 1
```

範例說明

在範例輸出 1 的序列 $2, 1, 4, 5, 3$ 中，對於每一個人：

- 2：他前面沒有任何人比他更高，所以記錄員記錄下來的編號是 2。
- 1：他前面最高的人是 2，且比他更高，所以記錄員記錄下來的編號是 2。
- 4：他前面沒有任何人比他更高，所以記錄員記錄下來的編號是 4。
- 5：他前面沒有任何人比他更高，所以記錄員記錄下來的編號是 5。
- 3：他前面最高的人是 5，且比他更高，所以記錄員記錄下來的編號是 5。

因此這是一個合法的答案。

在範例輸入 3 中，$5, 4, 3, 2, 1$、$5, 1, 2, 3, 4$ 等等都是合法的答案。

3_Too Short to Be Seen

(10 points)

Time Limit: 1 second
Memory Limit: 256 MB

Statement

There are N people in a queue, and their heights are pairwise distinct. They are numbered in $1, 2, \ldots, N$ according to their heights in ascending order (i.e. person 1 is the shortest and person N is the tallest). Mr. Lee, the boss, asked his recorder to record the sequence of the numbers from the first person to the last person in the queue.

The recorder stands in front of the first person. Because he is lazy to move, if there is someone taller in front of a person, the recorder cannot see that person. The recorder is very lazy, so he will record the number of all the people he cannot seen as the number of the last person he can see (i.e. the tallest person) in front of them. The recorder knows the position of each person he can see, so he won't miss anyone. Formally, assume that the number of the i-th person in the queue is a_i. Then the number recorded by the recorder for the i-th person is $b_i = \max_{1 \le k \le i}\{a_i\}$.

When the recorder gives the sequence $b_1, b_2, \ldots, b_N$ to Mr. Lee, he threatens to fire him angrily. To avoid increasing the unemployment rate, please provide the recorder with any possible sequence $a_1, a_2, \ldots, a_N$.

Input Format

The first line of input contains an integer N, representing the number of people in the queue.

The second line of input contains N integers $b_1, b_2, \ldots, b_N$, representing the recorded sequence.

Output Format

The output should consist of a single line containing N integers $a_1, a_2, \ldots, a_N$, representing a possible sequence $a_1, a_2, \ldots, a_N$.

Your answer is considered correct if and only if all conditions below are satisfied:

- $1 \le a_i \le N$
- $\forall i \ne j,\ a_i \ne a_j$
- $b_i = \max_{1 \le k \le i}\{a_i\}$

Constraints

- $1 \le N \le 10^5$
- $1 \le b_i \le N$
- It is guaranteed that the recorded sequence is correct, so there is an answer satisfying the conditions. In other words:
  - $\forall 1 \le i < N,\ b_i \le b_{i+1}$

- $b_i \geq i$

Test Cases

Input 1

```
5
2 2 4 5 5
```

Output 1

```
2 1 4 5 3
```

Input 2

```
4
1 2 3 4
```

Output 2

```
1 2 3 4
```

Input 3

```
5
5 5 5 5 5
```

Output 3

```
5 2 3 4 1
```

Illustrations

In the output of Example 1, for each person in the sequence $2, 1, 4, 5, 3$:

- 2: There is no person in front of him who is higher than him, so the recorder records 2 as his number.
- 1: The highest person in front of him is 2 and is higher than him, so the recorder records 2 as his number.
- 4: There is no person in front of him who is higher than him, so the recorder records 4 as his number.
- 5: There is no person in front of him who is higher than him, so the recorder records 5 as his number.
- 3: The highest person in front of him is 5 and is higher than him, so the recorder records 5 as his number.

Thus, this is a legal solution.

In Example 3, $5, 4, 3, 2, 1$, and $5, 1, 2, 3, 4$, etc., are also legal solutions.