

B. Inventory

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Companies always have a lot of equipment, furniture and other things. All of them should be tracked. To do this, there is an inventory number assigned with each item. It is much easier to create a database by using those numbers and keep the track of everything.

During an audit, you were surprised to find out that the items are not numbered sequentially, and some items even share the same inventory number! There is an urgent need to fix it.

You have chosen to make the numbers of the items sequential, starting with 1. Changing a number is quite a time-consuming process, and you would like to make maximum use of the current numbering.

You have been given information on current inventory numbers for n items in the company. Renumber items so that their inventory numbers form a *permutation* of numbers from 1 to n by changing the number of as few items as possible. Let us remind you that a set of n numbers forms a *permutation* if all the numbers are in the range from 1 to n , and no two numbers are equal.

Input

The first line contains a single integer n — the number of items ($1 \leq n \leq 10^5$).

The second line contains n numbers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^5$) — the initial inventory numbers of the items.

Output

Print n numbers — the final inventory numbers of the items in the order they occur in the input. If there are multiple possible answers, you may print any of them.

Examples

input
3 1 3 2
output
1 3 2
input
4 2 2 3 3
output
2 1 3 4
input
1 2
output
1

Note

In the first test the numeration is already a permutation, so there is no need to change anything.

In the second test there are two pairs of equal numbers, in each pair you need to replace one number.

Codeforces Round #315 (Div. 2)

Finished

→ Virtual participation

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Start virtual contest

→ Problem tags

greedy

No tag edit access

→ Contest materials

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In the third test you need to replace 2 by 1, as the numbering should start from one.

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