PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   STANDINGS   CUSTOM INVOCATION

A. Building Trees

time limit per test: 2 s.

memory limit per test: 256 MB

LetianPie just learned about binary search trees in CS225. In the programming assignment for this week, he was asked to build a BST from a sequence. However, LetianPie is new to BSTs and he doesn't know how to code it, so he asks you for help.

You are given a sequence a, consisting of n **distinct** integers, that is used to construct the binary search tree. Below is the formal description of the construction process.

1. First element a_1 becomes the root of the tree.
2. Elements $a_2, a_3, \ldots, a_n$ are added one by one. To add element a_i one needs to traverse the tree starting from the root and using the following rules:

    a. The pointer to the current node is set to the root.
    b. If a_i is greater than the value in the current node, then its right child becomes the current node. Otherwise, the left child of the current node becomes the new current node.
    c. If at some point there is no required child, the new node is created, it is assigned value a_i and becomes the corresponding child of the current node.

Hint: You shouldn't try to insert each element as described above. The tree is clearly unbalanced so each insertion could take $O(n)$ time in worst case. Try to come up with a smarter method that inserts each element in $O(\log n)$.

Input
The first line of the input contains a single integer n ($2 \le n \le 100\,000$) — the length of the sequence a.

The second line contains n distinct integers a_i ($1 \le a_i \le 10^9$) — the sequence a itself.

Output
Output $n - 1$ integers. For all $i > 1$ print the value written in the node that is the parent of the node with value a_i in it.

Examples

```
input
3
1 2 3
```
```
output
1 2
```

```
input
5
4 2 3 1 6
```
```
output
4 2 2 4
```