

Next Greater Element

time limit per test: 1 second (1 second for Python)

memory limit per test: 976.6 megabytes

input: standard input

output: standard output

points: 100 · problem code: nextgreaterelement

You are given an array of integers.

For each position i , find the first element to the right of i that is strictly greater than a_i . If no such element exists, output `-1` for that position.

Input

The first line contains an integer n , the size of the array.

The second line contains n integers: $a_1, a_2, \dots, a_n$.

Output

Print n integers, where the i -th integer is the next greater element to the right of a_i , or `-1` if none exists.

Constraints

- $1 \leq n \leq 2 \cdot 10^5$
- $-10^9 \leq a_i \leq 10^9$

Example 1

Input

```
5
4 5 2 10 8
```

Output

```
5 10 10 -1 -1
```

Example 2

Input

```
4
13 7 6 12
```

Output

```
-1 12 12 -1
```

Example 3

Input

```
4
3 3 3 3
```

Output

```
-1 -1 -1 -1
```