D. Mike and Feet

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Mike is the president of country What-The-Fatherland. There are n bears living in this country besides Mike. All of them are standing in a line and they are numbered from 1 to n from left to right. i-th bear is exactly a_i feet high.

A group of bears is a non-empty contiguous segment of the line. The *size* of a group is the number of bears in that group. The *strength* of a group is the minimum height of the bear in that group.

Mike is a curious to know for each x such that $1 \le x \le n$ the maximum strength among all groups of size x.

Input

The first line of input contains integer n ($1 \le n \le 2 \times 10^5$), the number of bears.

The second line contains n integers separated by space, $a_1, a_2, ..., a_n$ ($1 \le a_i \le 10^9$), heights of bears.

Output

Print n integers in one line. For each x from 1 to n, print the maximum strength among all groups of size x.

Examples

input
10 1 2 3 4 5 4 3 2 1 6

output
6 4 4 3 3 2 2 1 1 1