

Task 3. Chain

Given is a sequence of N integers a_1, a_2, \dots, a_n . For any element a_k ($k = 1, 2, \dots, n$) we find the first larger than a_k element, which is placed to the right of a_k (if such exists). Denote it by a_{k1} . Then do the same with a_{k1} and denote the found element by a_{k2} , and so on until we run out of the given sequence. Thus formed subsequence a_{k1}, a_{k2}, \dots , we call *chain* beginning at index k .

Write program **chain** that outputs for any index k the length of the corresponding chain that begins at index k .

Input

On the first line of the standard input, the value of N is written. On the second line, the elements of the given sequence are written, separated by spaces.

Output

On a line in the standard output, your program has to write the sequence of chain's lengths, corresponding to the element of the input data. Each two consecutive numbers in the output must be separated by a single space.

Constraints

$0 < N < 500\,000$; $0 < a_i < 1\,000\,000$, for each $i = 1, \dots, N$.

Example

Input

```
11  
3 2 4 2 11 2 7 5 8 10 6
```

Output

```
2 2 1 1 0 3 2 2 1 0 0
```