Problem D
Delta? Lambda!

Time limit: 2 seconds

Memory limit: 512 megabytes

Problem Description

The shape of Δ (Delta) is a triangle. What is the shape of Λ (Lambda)? In this problem, (x, y, z) is a Λ-shape triple if $x < y$ and $y > z$.

You are given a sequence $a_1, a_2, \ldots, a_n$ of n integers. You find that there are many its 3-element subsequences forming Λ-shape triples. For example, the 4-element sequence $a_1 = 1$, $a_2 = 2$, $a_3 = 3$, $a_4 = 0$ has 3 subsequences which form Λ-shape triples: $(a_1, a_2, a_4) = (1, 2, 0)$, $(a_1, a_3, a_4) = (1, 3, 0)$, and $a_2, a_3, a_4 = (2, 3, 0)$. Please note that we do not count $(a_1, a_3, a_2) = (1, 3, 2)$, since a_1, a_3, a_2 is not a subsequence. Let a subsequence a_i, a_j, a_k be a Λ-shape subsequence if $i < j < k$, $a_i < a_j$ and $a_j > a_k$.

Let f_i be the number of Λ-shape subsequences that contains a_i. Please write a program to compute the sequence $f_1, f_2, \ldots, f_n$. The sequence f_1, f_2, f_3, f_4 corresponding to the example above is $2, 2, 2, 3$.

Input Format

The first line contains a positive integer n indicating the number of elements of the sequence. Then the second line contains n integers $a_1, a_2, \ldots, a_n$ representing the given sequence.

Output Format

Print n numbers $f_1, f_2, \ldots, f_n$ separated by blanks on one line.

Note: exactly one space between f_i and f_{i+1} for $i \in [1, n)$.

Technical Specification

- $3 \leq n \leq 2 \times 10^5$
- $1 \leq a_i \leq 2 \times 10^5$ for $i \in [1, n]$

Sample Input 1

```
4
1 3 2 1
```

Sample Output 1

```
3 2 2 2
```

Sample Input 2

```
6
5 1 4 6 4 1
```

Sample Output 2

```
2 4 3 6 4 5
```

Hint

You might need to implement some data structures based on binary trees.