

Houses

You have won a marathon, and your prize is a large plot of land in WA! Since WA is very big and very flat, it can be represented as an infinite number line.

You would like to build n houses on your land, the i th of which is a_i metres long. Furthermore, you want the left wall of each house to be situated on a unique integer coordinate.

You would like it to be easy to travel between your houses. As such, you would like to maximise the number of pairs of houses which have overlapping positions (including endpoints).

However, you have forgotten your plans! You will recall your houses one by one, and each time you should calculate this value for the set of houses you remember so far.

Subtasks & Constraints

For all subtasks:

- $1 \leq n \leq 200\,000$.
- $1 \leq a_i \leq 10^9$ for all i .

Additionally:

- For Subtask 1 (13 points), $n \leq 2000$.
- For Subtask 2 (11 points), $a_i = a_j$ for all i, j .
- For Subtask 3 (23 points), $a_i \geq a_{i+1}$ for all $i < n$.
- For Subtask 4 (22 points), $a_i \leq 20$ for all i .
- For Subtask 5 (31 points), no additional constraints.

Input

- The first line contains an integer n .
- The next line contains n integers a_1, \dots, a_n : the lengths of the houses in the order that you recall them.

Output

Output n lines, each containing a single integer. The i th line should be the maximum number of pairs of houses which have overlapping positions if you only build the first i houses.

Sample Input 1

```
7
8 4 3 3 1 1 1
```

Sample Output 1

```
0
1
3
6
10
15
18
```

Sample Input 2

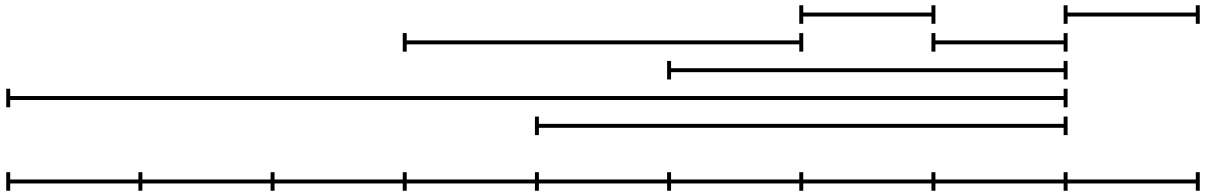
7
3 1 1 4 1 2 1

Sample Output 2

0
1
3
6
9
11
12

Explanation

In the first sample case, one possible arrangement of all of the houses is shown below, which has 18 pairs of overlapping houses. It can be shown that this is the maximum possible number of pairwise intersections.



In the second sample case, one possible arrangement of all of the houses is shown below, which has 12 pairs of overlapping houses. It can be shown that this is the maximum possible number of pairwise intersections.

