Building Tree

Description

Namron ★ is a student who loves plants, especially the binary search tree. In the Data Structure and Algorithm class, Namron ★ is taught about preorder traversal of a binary tree. Now Namron ★ is curious, if given the results of preorder traversal from a binary search tree, how was the tree structure initially? Furthermore, Namron ★ is also interested in the sum of each element's multiplication with the depth of the element in the tree.

Input

The first line contains an integer N, which is the binary search tree nodes in the beginning.
The second line contains an array of length N which is the result of preorder traversal of a binary search tree. Guaranteed elements in unique arrays.

Output

A number that is the sum of each element's multiplication with the depth of the element in the tree.

Limitation

$1 \leq \mathbf{N} \leq 1.000$
$1 \leq v_i \leq 10^9$ (v_i is the value of the element in the tree)
$v_i = v_j$ if and only if i = j

Hint:
The solution to this problem can be implemented with complexity O(N^2). To get a value of 100 in this WS, your solution must have an O(N) complexity

Input Example 1

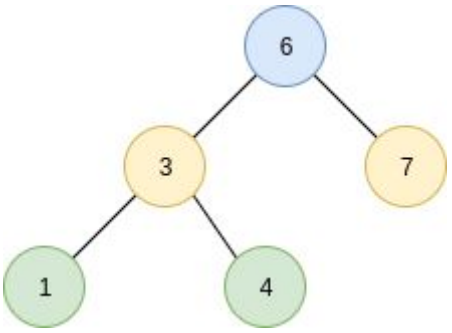
```
5
6 3 1 4 7
```

Output Example 1

```
20
```

Explanation

Tree on this problem shown below.



Thus, the requested number value is $\sum_{i=1}^{n}(depth_i \times value_i)$ = 0*6 + 1*3 + 1*7 + 2*1 + 2*4 = 20

Input Example 2

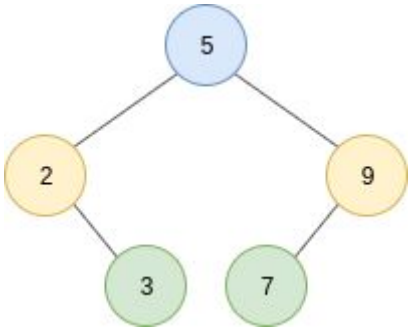
5 5 2 3 9 7

Output Example 2

31

Explanation

Tree on this problem shown below.



Thus, the requested number value is $\sum_{i=1}^{n}(depth_i \times value_i)$ = 0*5 + 1*2 + 1*9 + 2*3 + 2*7 = 31