

Submit a solution for H-111743. Greater Sum Tree

Time limit: 1 s
Real time limit: 5 s
Memory limit: 256M

Problem H: 111743, Greater Sum Tree

Given the root of a **binary search** tree with distinct keys. Replace the key of each node with the sum of the keys over the nodes that has greater than equal key. Print new keys in increasing order.

As a reminder, a binary search tree is a tree that satisfies these constraints:

- · The left subtree of a node contains only nodes with keys less than the node's key.
- The right subtree of a node contains only nodes with keys greater than the node's key.
- Both the left and right subtrees must also be binary search trees.

Input format

The number of nodes n in the tree is between 1 and 100. Each node will have value between 0 and 1000. The given tree is a binary search tree.

Output format

In a single line print the answer.

Examples

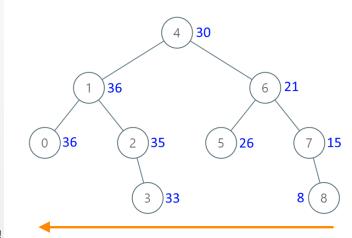
Input

4 1 6 0 2 3 5 7 8

Output

8 15 21 26 30 33 35 36 36

Notes



NOTE: Solve with BST!

