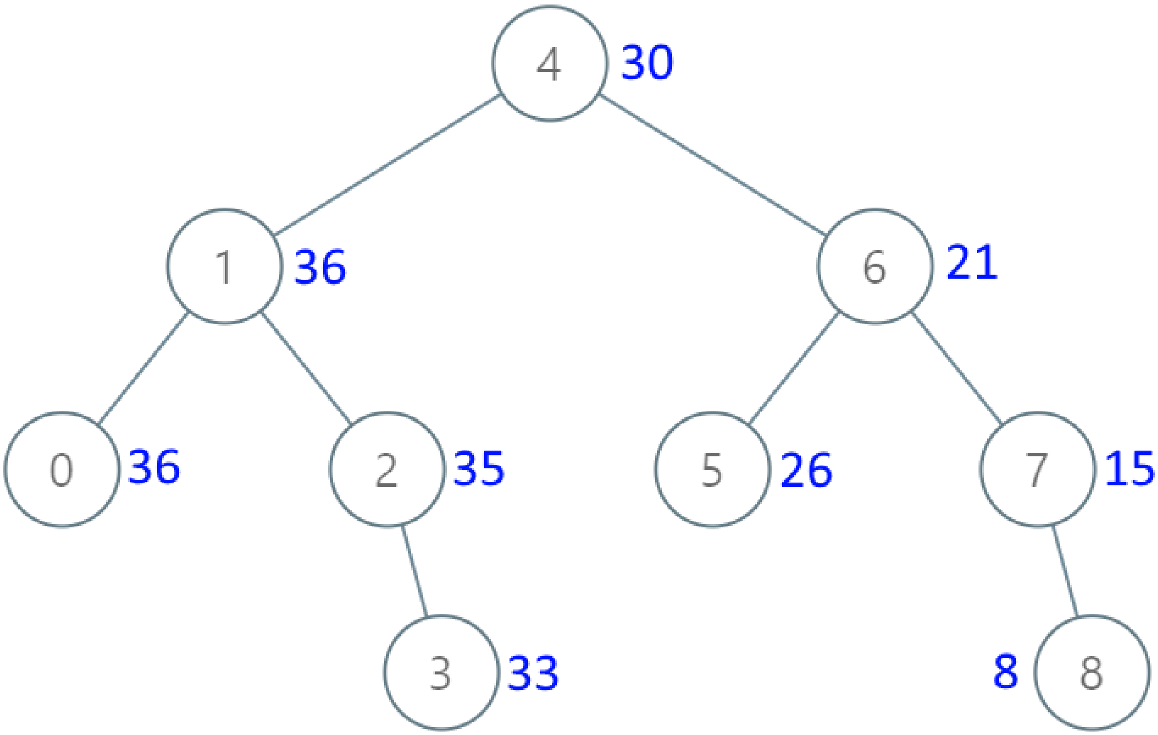
1038. Binary Search Tree to Greater Sum Tree

Given the `root` of a Binary Search Tree (BST), convert it to a Greater Tree such that every key of the original BST is changed to the original key plus the sum of all keys greater than the original key in BST.

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.

Example 1:



Input: root = [4,1,6,0,2,5,7,null,null,null,3,null,null,null,8]
Output: [30,36,21,36,35,26,15,null,null,null,33,null,null,null,8]

Example 2:

Input: root = [0,null,1]
Output: [1,null,1]

Constraints:

- The number of nodes in the tree is in the range `[1, 100]`.
- `0 ≤ Node.val ≤ 100`
- All the values in the tree are **unique**.

Solution:

```
/**

 * Definition for a binary tree node.

 * public class TreeNode {
 *     int val;
 *     TreeNode left;
 *     TreeNode right;
 *     TreeNode() {}
 *     TreeNode(int val) { this.val = val; }
 *     TreeNode(int val, TreeNode left, TreeNode right) {
 *         this.val = val;
 *         this.left = left;
 *         this.right = right;
 *     }
 * }
 */

class Solution {
    private int sum = 0;
    public TreeNode bstToGst(TreeNode root) {
        if (root ≠ null) {
            bstToGst(root.right);  // Traverse the right subtree
            sum += root.val;  // Update the sum
            root.val = sum;  // Update the current node's value
            bstToGst(root.left);  // Traverse the left subtree
        }
        return root;
    }
}
```