Binary Search Tree Level Sum (Quiz 4)

Problem Statement

Given the root node to a non-empty Binary Search Tree, write a function that returns a vector whose values are the sums of all the Treenode values in each level of the BST. There should be as many values in the vector as levels in the tree, with the first value in the vector corresponding to the topmost level in the tree.

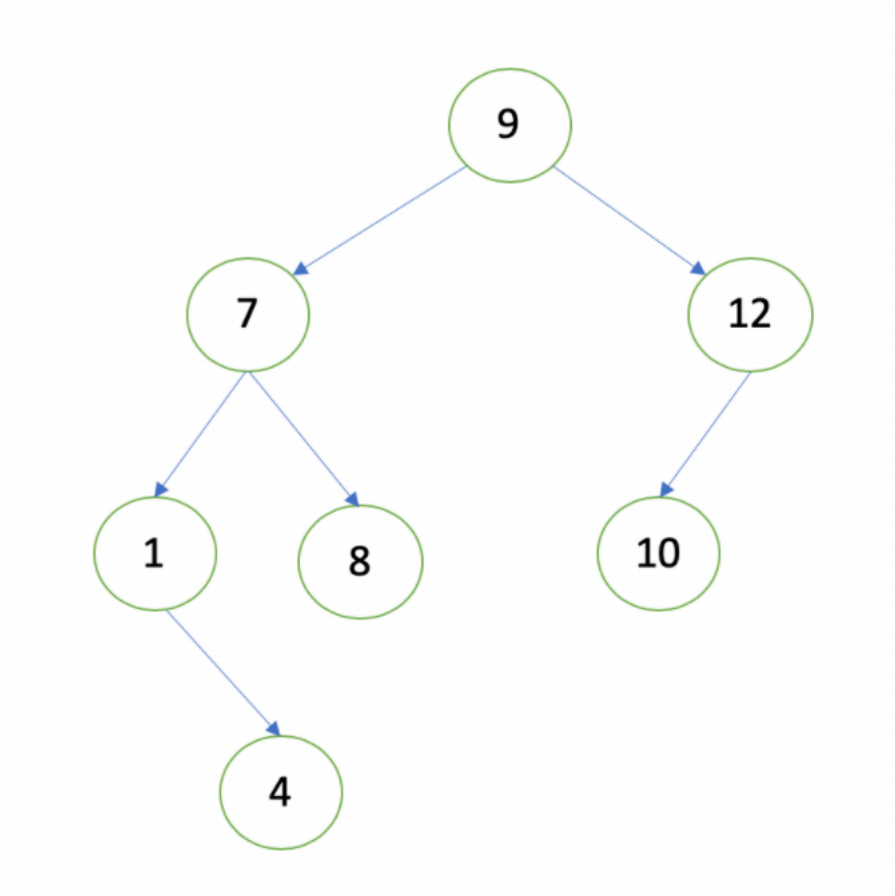
The function will have the following signature:

```
vector<int> levelOrder(TreeNode* root)
```

We have defined the following TreeNode C++ class for you:

```
class TreeNode {
 public:
   int val;
   TreeNode *left;
   TreeNode *right;
   TreeNode() : val(0), left(nullptr), right(nullptr)
{}
   TreeNode(int x) : val(x), left(nullptr),
right(nullptr) {}
   TreeNode(int x, TreeNode *left, TreeNode *right) :
val(x), left(left), right(right) {}
};
```

Example 1:




```
Input: [9,12,7,1,4,8,10]
Output: 9 19 19 4
```

Test Cases

- The items in the input are inserted into the Binary Search Tree from left to right.
- We will loop through the vector to print out the sum for each level in the main method.

Note

- You are only required to return a vector with the sums of each level's nodes. You should not print anything out in the *levelOrder* method. We will print out the items you store in the vector in the main method.
- **The last test case is fake.**

Difficulty

- Hard (20 - 25 mins)

```
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```

Sample Input:

```
[3,9,8,2,5,4,11]
```

Sample Output:

```
3 11 19 5 4
```