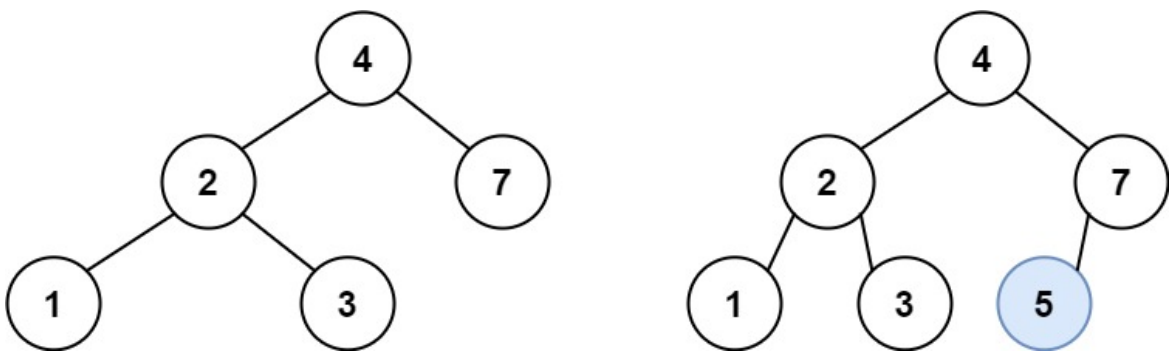
701. Insert into a Binary Search Tree

Medium 3665 146 Add to List Share

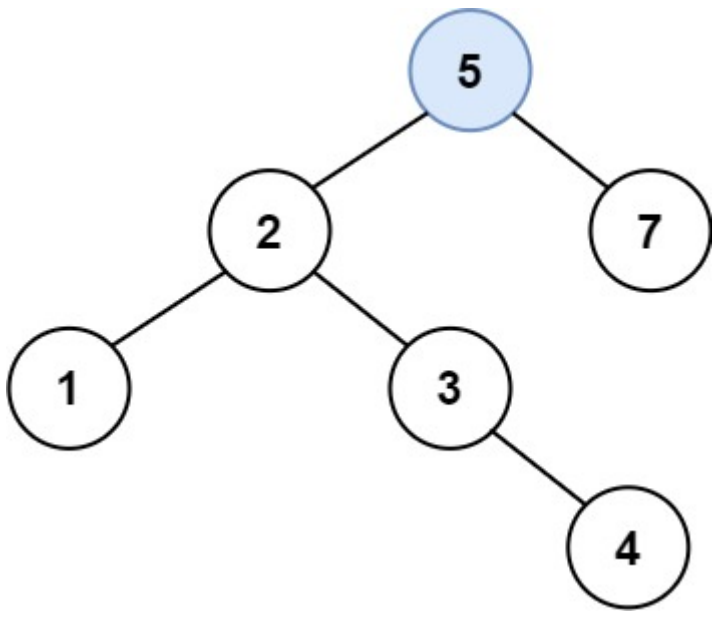
You are given the `root` node of a binary search tree (BST) and a `value` to insert into the tree. Return *the root node of the BST after the insertion*. It is **guaranteed** that the new value does not exist in the original BST.

Notice that there may exist multiple valid ways for the insertion, as long as the tree remains a BST after insertion. You can return **any of them**.

Example 1:




```
Input: root = [4,2,7,1,3], val = 5
Output: [4,2,7,1,3,5]
Explanation: Another accepted tree is:
```



Example 2:

```
Input: root = [40,20,60,10,30,50,70], val = 25
Output: [40,20,60,10,30,50,70,null,null,25]
```

Example 3:

```
Input: root = [4,2,7,1,3,null,null,null,null,null,null], val = 5
Output: [4,2,7,1,3,5]
```

Constraints:

- The number of nodes in the tree will be in the range `[0, 10^4]`.
- `-10^8 <= Node.val <= 10^8`
- All the values `Node.val` are **unique**.
- `-10^8 <= val <= 10^8`
- It's **guaranteed** that `val` does not exist in the original BST.

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Seen this question in a real interview before? Yes No

C++

Autocomplete

```cpp
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     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) {}
 * };
 */
class Solution {
public:
    TreeNode* insertIntoBST(TreeNode* root, int val) {
        if(root==NULL){
            return new TreeNode(val);
        }else if(val < root->val){
            root->left = insertIntoBST(root->left, val);
        }else if(val > root->val){
            root->right = insertIntoBST(root->right, val);
        }
        return root;
    }
};
```

Testcase Run Code Result Debugger

Accepted Runtime: 0 ms

Your input
```
[4,2,7,1,3]
5
```

Output `[4,2,7,1,3,5]` Diff

Expected `[4,2,7,1,3,5]`

Console Use Example Testcases