235. Lowest Common Ancestor of a Binary Search Tree

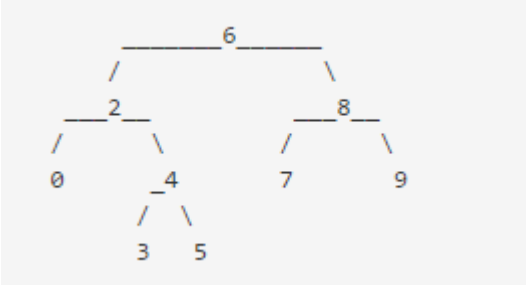
QuestionEditorial Solution

My Submissions

- Total Accepted: **92942**
- Total Submissions: **246456**
- Difficulty: **Easy**

Given a binary search tree (BST), find the lowest common ancestor (LCA) of two given nodes in the BST.

According to the definition of LCA on Wikipedia: “The lowest common ancestor is defined between two nodes v and w as the lowest node in T that has both v and w as descendants (where we allow **a node to be a descendant of itself**).”



For example, the lowest common ancestor (LCA) of nodes 2 and 8 is 6. Another example is LCA of nodes 2 and 4 is 2, since a node can be a descendant of itself according to the LCA definition.

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```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode(int x) : val(x), left(NULL), right(NULL) {}
 * };
 */
class Solution {
public:
    TreeNode* lowestCommonAncestor(TreeNode* root, TreeNode* p, TreeNode* q) {
        if(root==NULL) return NULL;
        int maxVal = max(p->val,q->val);
        int minVal = min(p->val,q->val);
        if(root->val>maxVal)
            // zzw in BST root->left < root
            return lowestCommonAncestor(root->left,p,q);
        else if(root->val<minVal)
             // zzw in BST root->right > root
            return lowestCommonAncestor(root->right,p,q);
```

```
        else return root;
    }
};
```

236. Lowest Common Ancestor of a Binary Tree

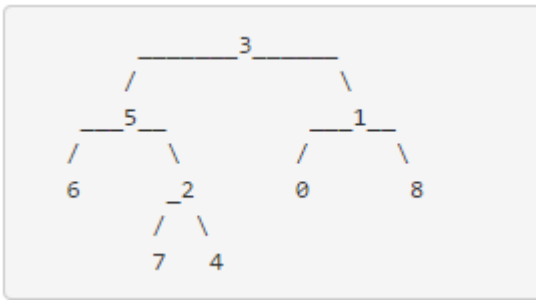
QuestionEditorial Solution

My Submissions

- Total Accepted: **59899**
- Total Submissions: **205153**
- Difficulty: **Medium**

Given a binary tree, find the lowest common ancestor (LCA) of two given nodes in the tree.

According to the definition of LCA on Wikipedia: “The lowest common ancestor is defined between two nodes v and w as the lowest node in T that has both v and w as descendants (where we allow **a node to be a descendant of itself**).”



For example, the lowest common ancestor (LCA) of nodes 5 and 1 is 3. Another example is LCA of nodes 5 and 4 is 5, since a node can be a descendant of itself according to the LCA definition.

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```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode(int x) : val(x), left(NULL), right(NULL) {}
 * };
 */
class Solution {
public:
    TreeNode* lowestCommonAncestor(TreeNode* root, TreeNode* p, TreeNode* q) {
```

```
        if(root==NULL || root==p || root==q) return root;
        TreeNode *left = lowestCommonAncestor(root->left,p,q);
        TreeNode *right = lowestCommonAncestor(root->right,p,q);
        if(left==NULL && right==NULL) return root;
        else return left==NULL?right:left;
    }
};
```