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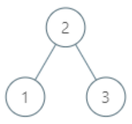
285. Inorder Successor in BST

Medium 1828 74 Add to List Share

Given the `root` of a binary search tree and a node `p` in it, return *the in-order successor of that node in the BST*. If the given node has no in-order successor in the tree, return `null`.

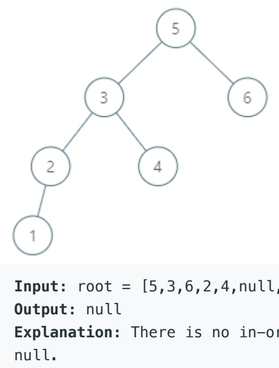
The successor of a node `p` is the node with the smallest key greater than `p.val`.

Example 1:




```
Input: root = [2,1,3], p = 1
Output: 2
Explanation: 1's in-order successor node is 2. Note that both p and the return value is of TreeNode type.
```

Example 2:




```
Input: root = [5,3,6,2,4,null,null,1], p = 6
Output: null
Explanation: There is no in-order successor of the current node, so the answer is null.
```

Constraints:

- The number of nodes in the tree is in the range `[1, 10^4]`.
- `-10^5 <= Node.val <= 10^5`
- All Nodes will have unique values.

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```java
class Solution {

    public TreeNode inorderSuccessor(TreeNode root, TreeNode p) {

        TreeNode successor = null;

        while (root != null) {

            if (p.val >= root.val) {
                root = root.right;
            } else {
                successor = root;
                root = root.left;
            }
        }

        return successor;
    }
}
```