

510. Inorder Successor in BST II

Medium 625 33 Add to List Share

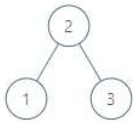
Given a `node` in a binary search tree, return *the in-order successor of that node in the BST*. If that node has no in-order successor, return `null`.

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

You will have direct access to the `node` but not to the root of the tree. Each node will have a reference to its parent node. Below is the definition for `Node`:

```
class Node {
    public int val;
    public Node left;
    public Node right;
    public Node parent;
}
```

Example 1:

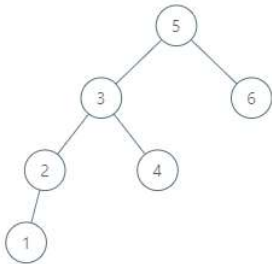


Input: `tree = [2,1,3]`, `node = 1`

Output: 2

Explanation: 1's in-order successor node is 2. Note that both the node and the return value is of `Node` type.

Example 2:



Input: `tree = [5,3,6,2,4,null,null,1]`, `node = 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 $[1, 10^4]$.
- $-10^5 \leq \text{Node.val} \leq 10^5$
- All Nodes will have unique values.

Follow up: Could you solve it without looking up any of the node's values?

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```
1  /*
2  // Definition for a Node.
3  class Node {
4      public int val;
5      public Node left;
6      public Node right;
7      public Node parent;
8  };
9  */
10
11 class Solution {
12     public Node inorderSuccessor(Node node) {
13
14     }
15 }
```