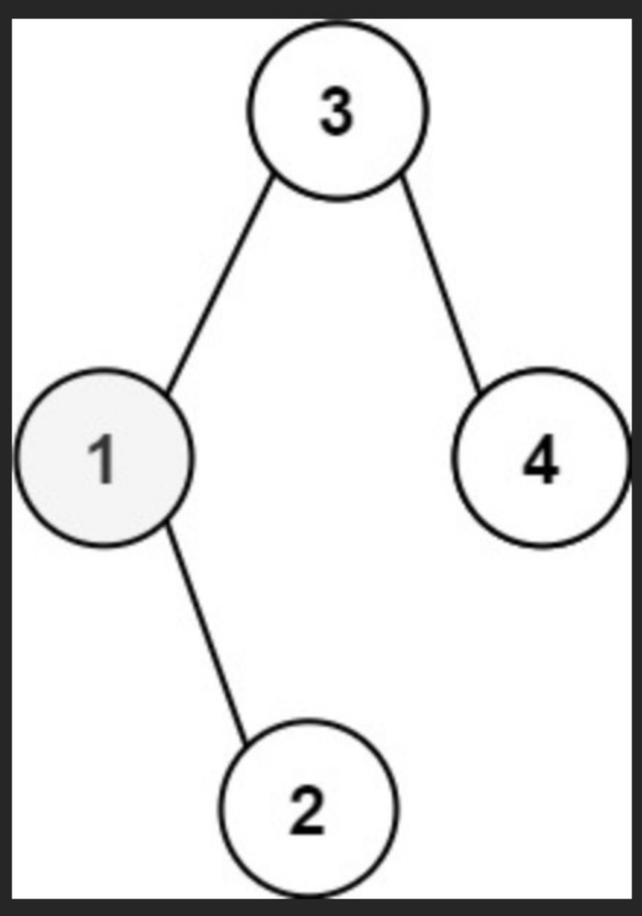
230. Kth Smallest Element in a BST

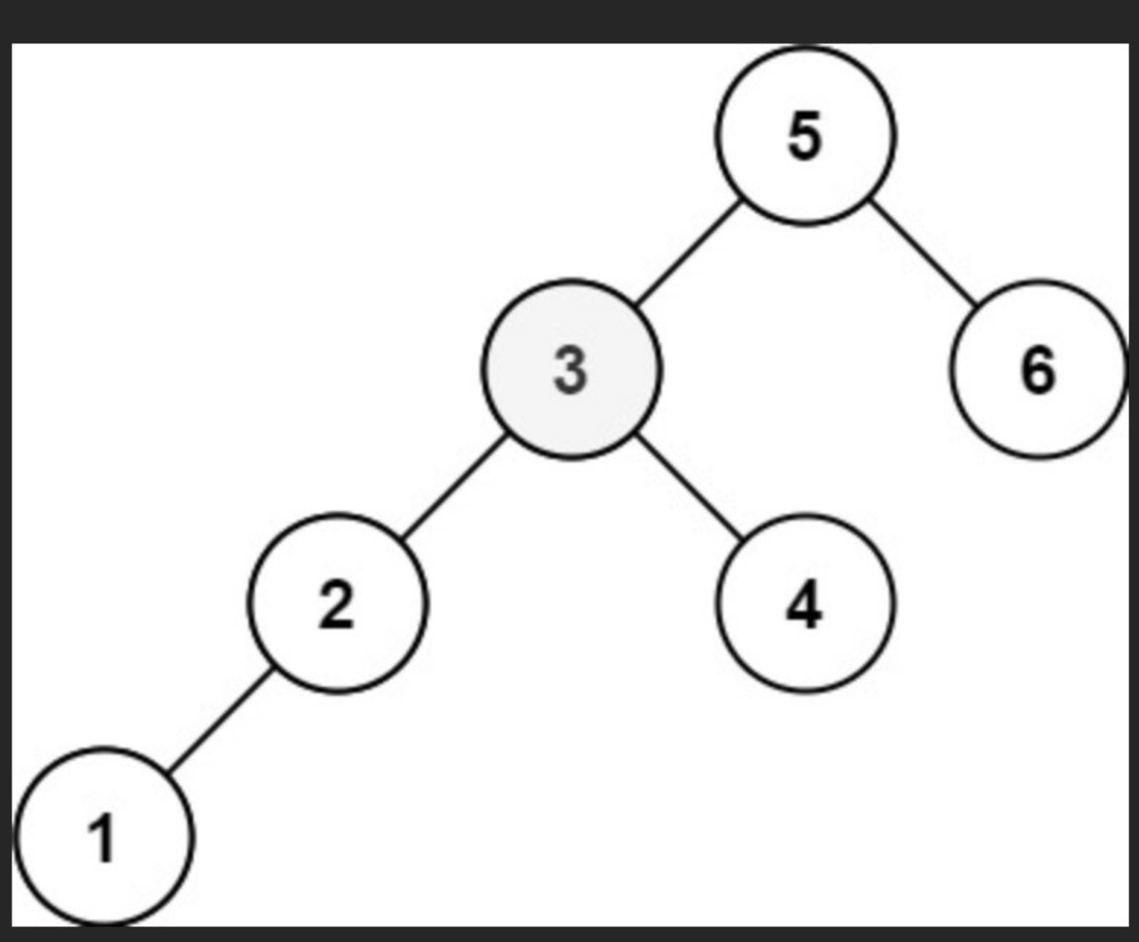
Given the `root` of a binary search tree, and an integer `k`, return *the* `k^th` *smallest value (**1-indexed**) of all the values of the nodes in the tree*.

Example 1:




```
Input: root = [3,1,4,null,2], k = 1
Output: 1
```

Example 2:




```
Input: root = [5,3,6,2,4,null,null,1], k = 3
Output: 3
```

Constraints:

- The number of nodes in the tree is `n`.
- `1 <= k <= n <= 10^4`
- `0 <= Node.val <= 10^4`

Follow up: If the BST is modified often (i.e., we can do insert and delete operations) and you need to find the kth smallest frequently, how would you optimize?

Accepted **1.4M** | Submissions **2M** | Acceptance Rate **72.7%**