671. Second Minimum Node In a Binary Tree

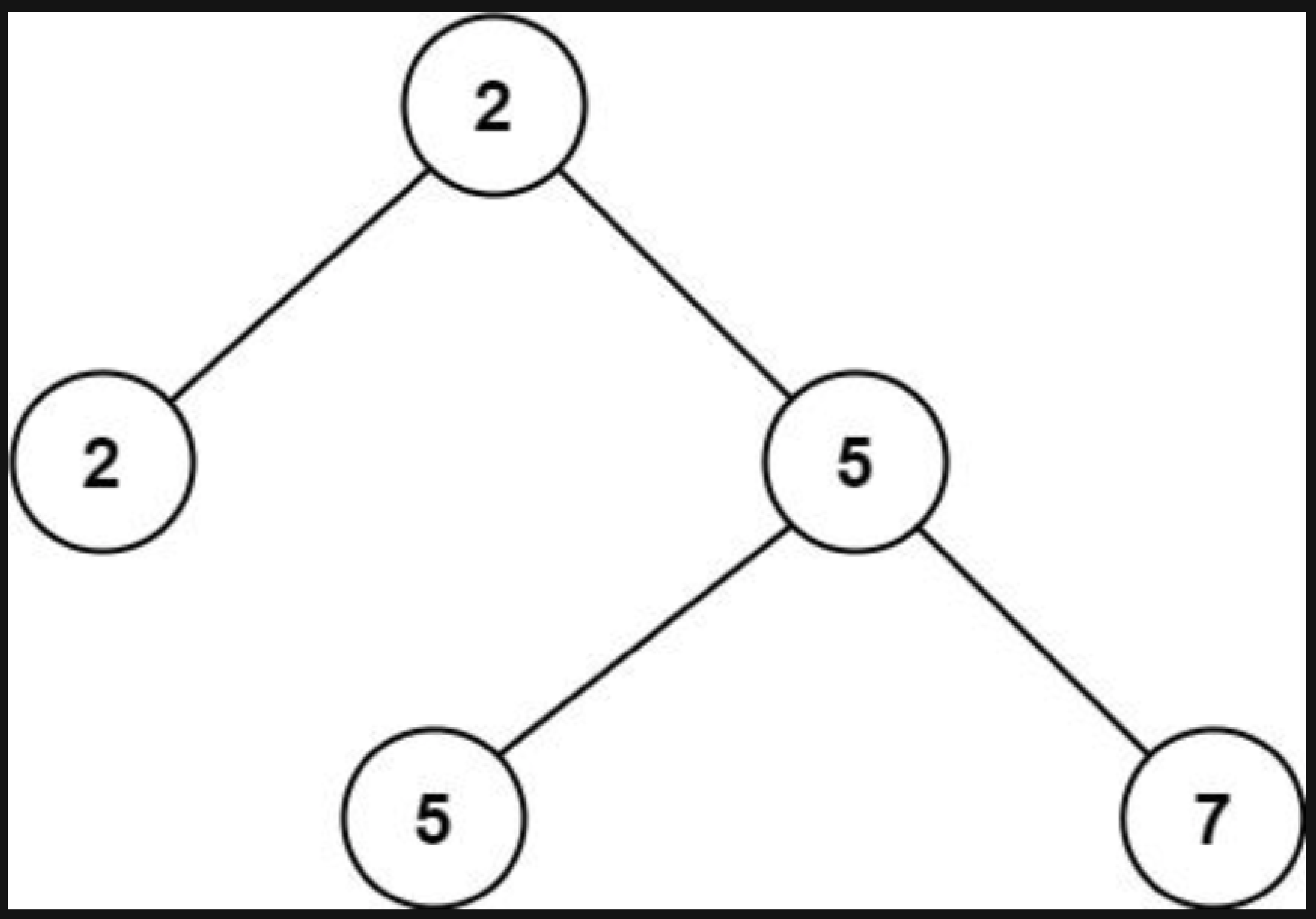
Description

Given a non-empty special binary tree consisting of nodes with the non-negative value, where each node in this tree has exactly `two` or `zero` sub-node. If the node has two sub-nodes, then this node's value is the smaller value among its two sub-nodes. More formally, the property `root.val = min(root.left.val, root.right.val)` always holds.

Given such a binary tree, you need to output the **second minimum** value in the set made of all the nodes' value in the whole tree.

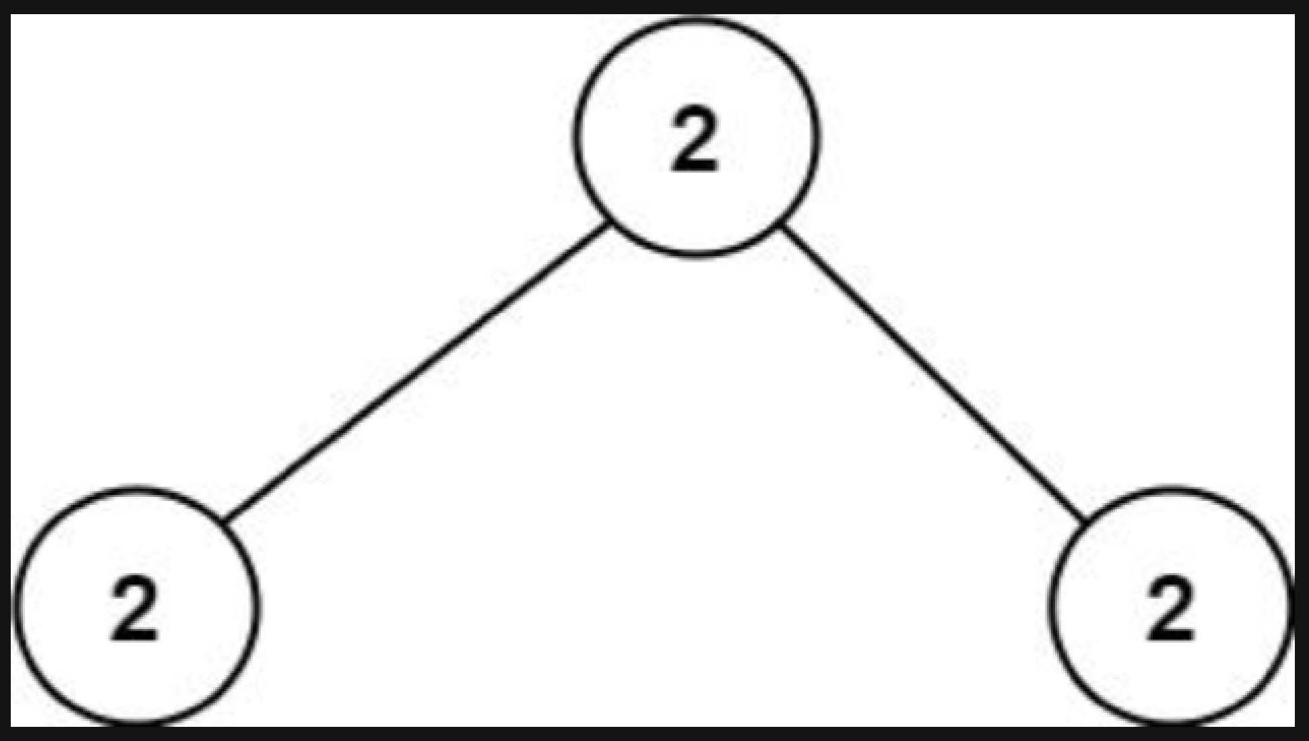
If no such second minimum value exists, output -1 instead.

Example 1:



```
Input: root = [2,2,5,null,null,5,7]
Output: 5
Explanation: The smallest value is 2, the second smallest value is 5.
```

Example 2:



```
Input: root = [2,2,2]
Output: -1
Explanation: The smallest value is 2, but there isn't any second smallest value.
```

Constraints:

- The number of nodes in the tree is in the range `[1, 25]`.
- $1 \le \text{Node.val} \le 2^{31} - 1$
- `root.val == min(root.left.val, root.right.val)` for each internal node of the tree.