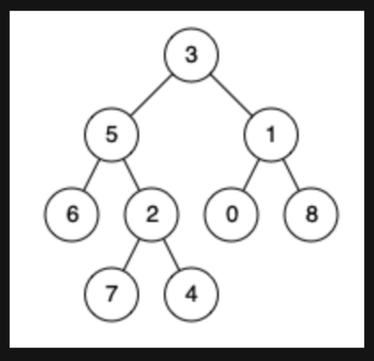
1676. Lowest Common Ancestor of a Binary Tree IV

Description

Given the `root` of a binary tree and an array of `TreeNode` objects `nodes`, return *the lowest common ancestor (LCA) of* ***all the nodes*** *in* `nodes`. All the nodes will exist in the tree, and all values of the tree's nodes are **unique**.

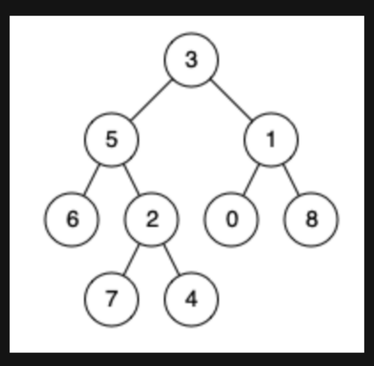
Extending the **definition of LCA on Wikipedia**: "The lowest common ancestor of `n` nodes `p_1`, `p_2`, ..., `p_n` in a binary tree `T` is the lowest node that has every `p_i` as a **descendant** (where we allow **a node to be a descendant of itself**) for every valid `i`". A **descendant** of a node `x` is a node `y` that is on the path from node `x` to some leaf node.

Example 1:



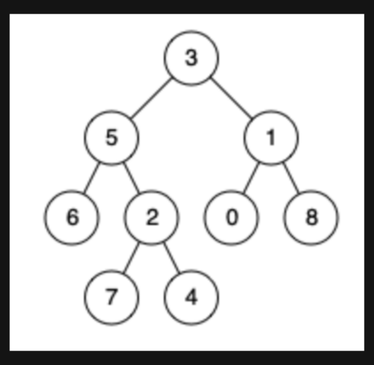

```
Input: root = [3,5,1,6,2,0,8,null,null,7,4], nodes = [4,7]
Output: 2
Explanation: The lowest common ancestor of nodes 4 and 7 is node 2.
```

Example 2:




```
Input: root = [3,5,1,6,2,0,8,null,null,7,4], nodes = [1]
Output: 1
Explanation: The lowest common ancestor of a single node is the node itself.
```

Example 3:




```
Input: root = [3,5,1,6,2,0,8,null,null,7,4], nodes = [7,6,2,4]
Output: 5
Explanation: The lowest common ancestor of the nodes 7, 6, 2, and 4 is node 5.
```

Constraints:

- The number of nodes in the tree is in the range `[1, 10^4]`.
- `-10^9 <= Node.val <= 10^9`
- All `Node.val` are **unique**.
- All `nodes[i]` will exist in the tree.
- All `nodes[i]` are distinct.