

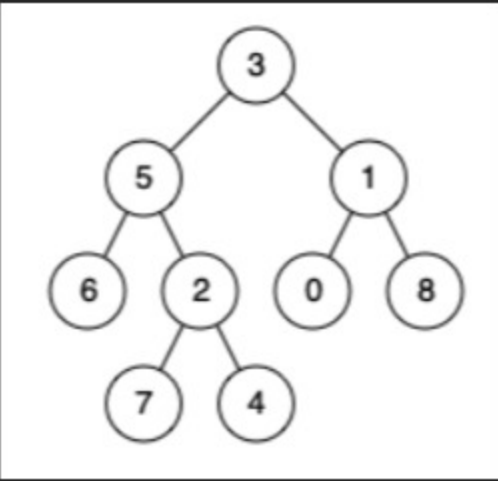
# 1644. Lowest Common Ancestor of a Binary Tree II Premium

Medium Topics Companies Hint

Given the `root` of a binary tree, return *the lowest common ancestor (LCA) of two given nodes, p and q*. If either node p or q **does not exist** in the tree, return `null`. All values of the nodes in the tree are **unique**.

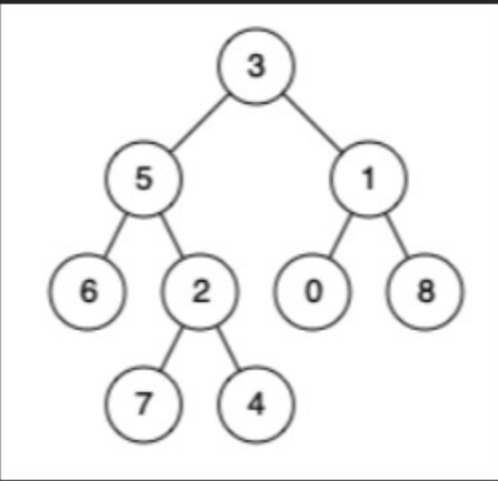
According to the [definition of LCA on Wikipedia](#): "The lowest common ancestor of two nodes p and q in a binary tree T is the lowest node that has both p and q as **descendants** (where we allow **a node to be a descendant of itself**)". A **descendant** of a node x is a node y that is on the path from node x to some leaf node.

Example 1:



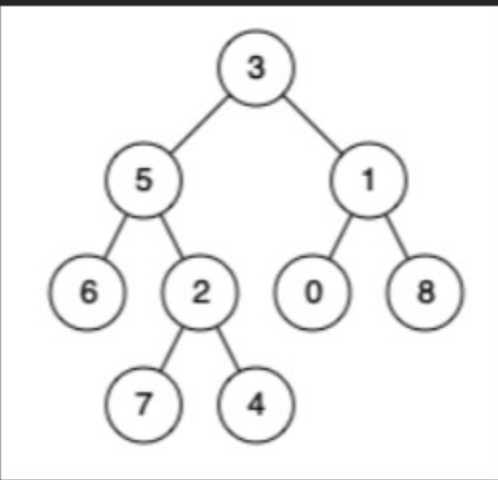
**Input:** root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 1  
**Output:** 3  
**Explanation:** The LCA of nodes 5 and 1 is 3.

Example 2:



**Input:** root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 4  
**Output:** 5  
**Explanation:** The LCA of nodes 5 and 4 is 5. A node can be a descendant of itself according to the definition of LCA.

Example 3:



**Input:** root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 10  
**Output:** null  
**Explanation:** Node 10 does not exist in the tree, so return null.

### Constraints:

- The number of nodes in the tree is in the range `[1, 104]`.
- `-109 <= Node.val <= 109`
- All `Node.val` are **unique**.
- `p != q`

**Follow up:** Can you find the LCA traversing the tree, without checking nodes existence?

Seen this question in a real interview before? 1/5

Yes No

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### Hint 1

Traverse the graph visiting root, left, root, right, root to make an Euler Path

### Hint 2

Return the node (LCA) that is at the lowest depth between p and q in the Euler Path

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