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**](https://en.wikipedia.org/wiki/Lowest_common_ancestor): "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?