Given a binary tree, find the lowest common ancestor (LCA) of two given nodes in the tree.

According to the [definition of LCA on Wikipedia](https://en.wikipedia.org/wiki/Lowest_common_ancestor): “The lowest common ancestor is defined between two nodes p and q as the lowest node in T that has both p and q as descendants (where we allow **a node to be a descendant of itself**).”

**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, since a node can be a descendant of itself according to the LCA definition.

**Example 3:**

Input: root = [1,2], p = 1, q = 2  
Output: 1

**Constraints:**

* The number of nodes in the tree is in the range [2, 105].
* -109 <= Node.val <= 109
* All Node.val are **unique**.
* p != q
* p and q will exist in the tree.