1026. Maximum Difference Between Node and Ancestor

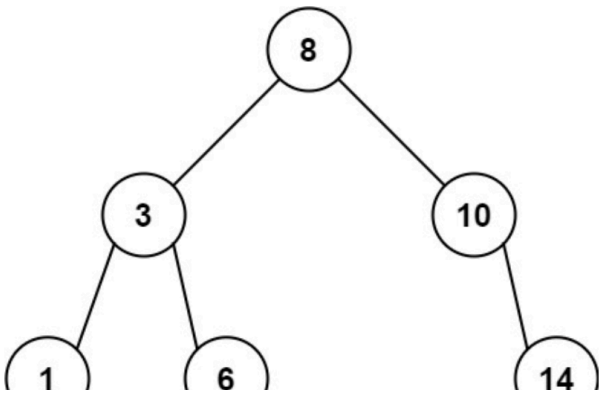
Solved

Medium | Topics | Companies | Hint

Given the `root` of a binary tree, find the maximum value `v` for which there exist **different** nodes `a` and `b` where `v = |a.val - b.val|` and `a` is an ancestor of `b`.

A node `a` is an ancestor of `b` if either: any child of `a` is equal to `b` or any child of `a` is an ancestor of `b`.

Example 1:




```
/**
* Definition for a binary tree node.
* public class TreeNode {
*     public var val: Int
*     public var left: TreeNode?
*     public var right: TreeNode?
*     public init() { self.val = 0; self.left = nil; self.right = nil; }
*     public init(_ val: Int) { self.val = val; self.left = nil; self.right = nil; }
*     public init(_ val: Int, _ left: TreeNode?, _ right: TreeNode?) {
*         self.val = val
*         self.left = left
*         self.right = right
*     }
* }
*/

class Solution {
```

```
    func maxAncestorDiff(_ root: TreeNode?) -> Int {
        return solve(root,root!.val,root!.val)
    }

    func solve(_ root: TreeNode?, _ minvalue: Int, _ maxvalue:Int)
-> Int {
        guard let root = root else {
            return maxvalue - minvalue
        }

        let newMinvalue = min(root.val, minvalue)
        let newmax  = max(root.val, maxvalue)

        let left = solve(root.left,newMinvalue,newmax)
        let right = solve(root.right,newMinvalue,newmax)

        return max(left,right)
    }
}
```