Experiment-2.1

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Subject Name: Competitive Coding II **Subject Code: 20CSP- 351**

Aim – To demonstrate the concept of Trees

Objective-

- The objective is to build problem solving capability and to learn the basic concepts of data structures.
- The implementation of balanced binary tree which shows and brushes up the concept of Trees and can be solved through various approaches.
- The implementation of path sum problem in C++.

1) Balanced Binary Tree
https://leetcode.com/problems/balanced-binary-tree/

Code –

```
class Solution {
  public boolean isBalanced(TreeNode root)
   {
     return height(root)!=-1;
   }
  public int height(TreeNode node){
   if(node==null)
    {
      return 0;
    }
   int leftHeight=height(node.left);
```

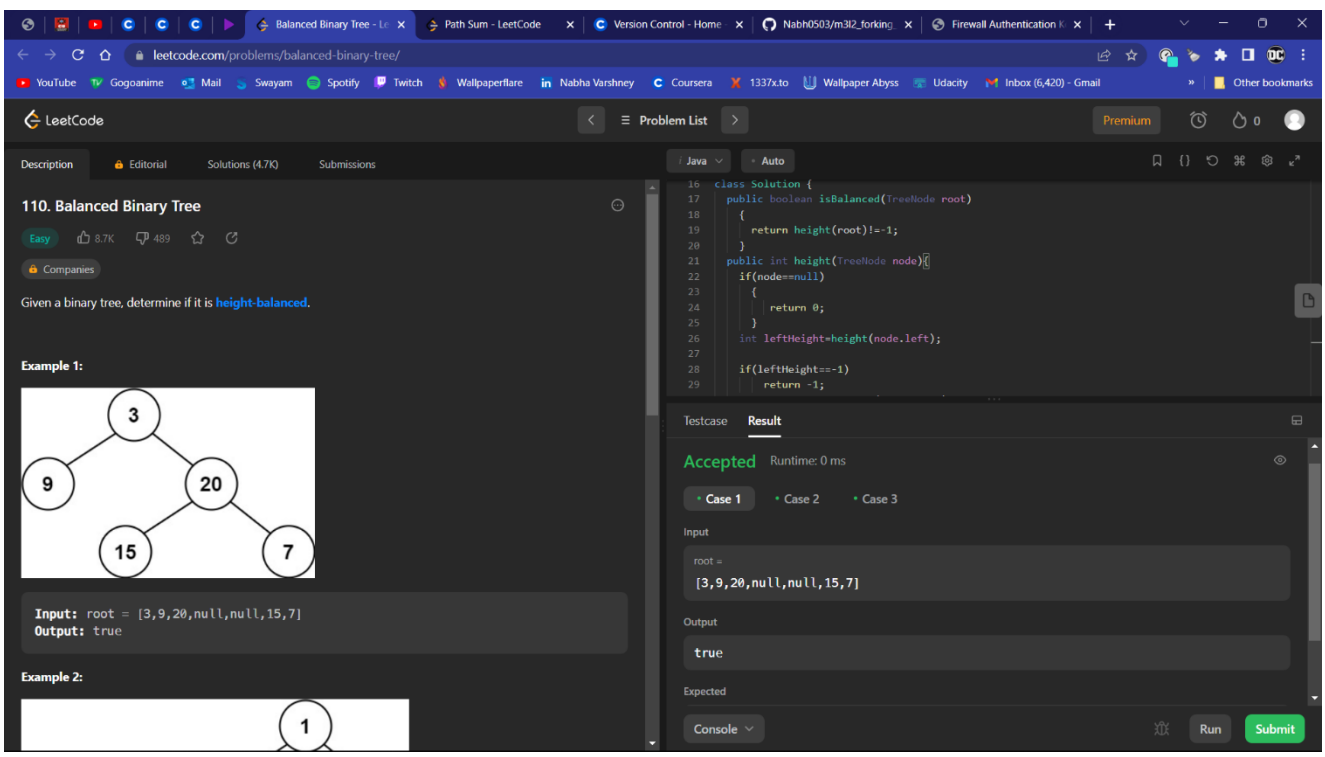
```
    if(leftHeight==-1)
        return -1;
    int rightHeight=height(node.right);

     if(rightHeight==-1)
        return -1;

     if(Math.abs(leftHeight-rightHeight)>1)
        return -1;

    return 1+Math.max(leftHeight,rightHeight);
  }
  }
```

Output -



2) Path Sum

https://leetcode.com/problems/path-sum/

Code -

```
class Solution {
 public boolean hasPathSum(TreeNode root, int targetSum) {
   if (root == null)
    {
      return false;
    }
   if (root.val == targetSum && root.left == null && root.right == null)
    {
     return true;
    }
 return hasPathSum(root.left, targetSum - root.val) ||
      hasPathSum(root.right,targetSum - root.val);
}
}
```

Output –