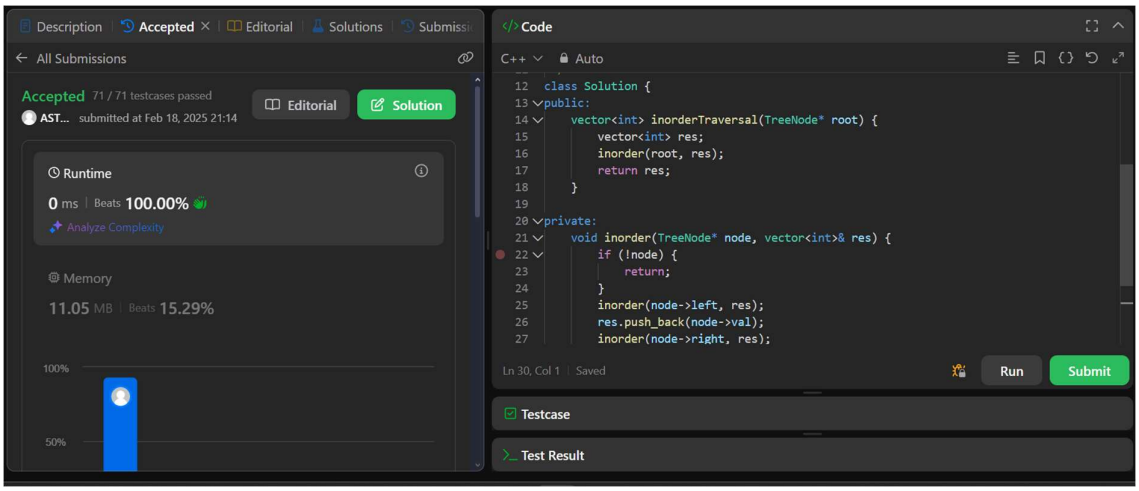
94.Binary Tree Inorder Traversal

- **Solution:**

```
class Solution {
public:
    vector<int> inorderTraversal(TreeNode* root) {
        vector<int> res;
        inorder(root, res);
        return res;
    }

private:
    void inorder(TreeNode* node, vector<int>& res) {
        if (!node) {
            return;
        }
        inorder(node->left, res);
        res.push_back(node->val);
        inorder(node->right, res);
    }
};
```

- **Screenshot:**



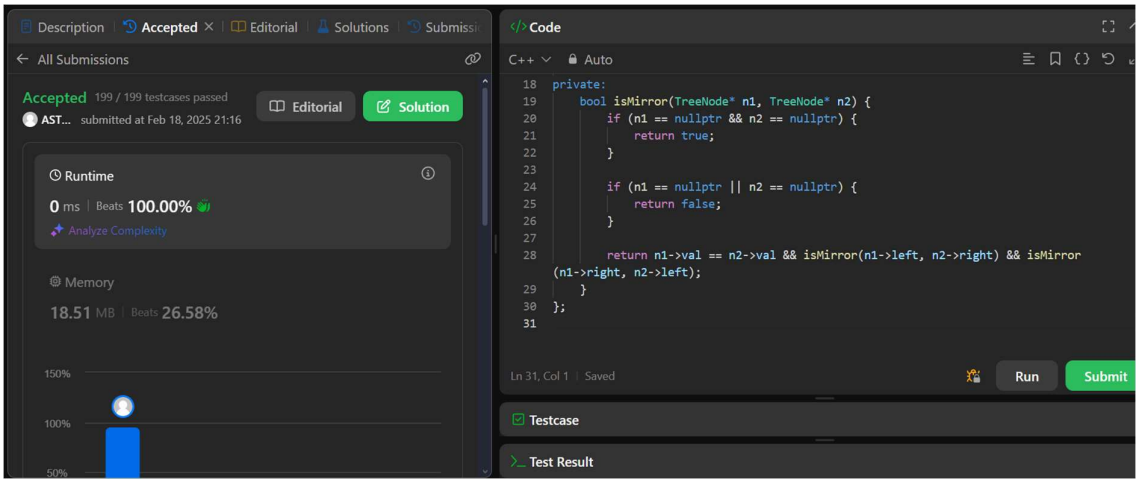
101.Symmetric Tree

- **Solution:**

```
class Solution {
public:
```

```
    bool isSymmetric(TreeNode* root) {
        return isMirror(root->left, root->right);
    }

private:
    bool isMirror(TreeNode* n1, TreeNode* n2) {
        if (n1 == nullptr && n2 == nullptr) {
            return true;
        }

        if (n1 == nullptr || n2 == nullptr) {
            return false;
        }

        return n1->val == n2->val && isMirror(n1->left, n2->right) && isMirror(n1->right, n2->left);
    }
};
```

- **Screenshot:**



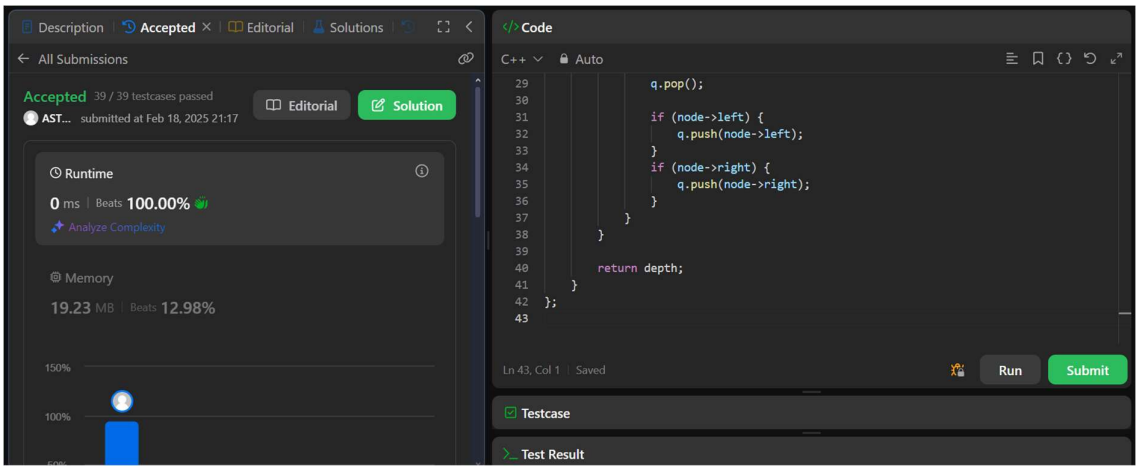
104. Maximum Depth of Binary Tree

- **Solution:**

```
class Solution {
public:
    int maxDepth(TreeNode* root) {
        if (!root) {
            return 0;
        }
```

```
        queue<TreeNode*> q;
        q.push(root);
        int depth = 0;

        while (!q.empty()) {
            depth++;
            int levelSize = q.size();

            for (int i = 0; i < levelSize; i++) {
                TreeNode* node = q.front();
                q.pop();

                if (node->left) {
                    q.push(node->left);
                }
                if (node->right) {
                    q.push(node->right);
                }
            }
        }

        return depth;
    }
};
```

- **Screenshot:**



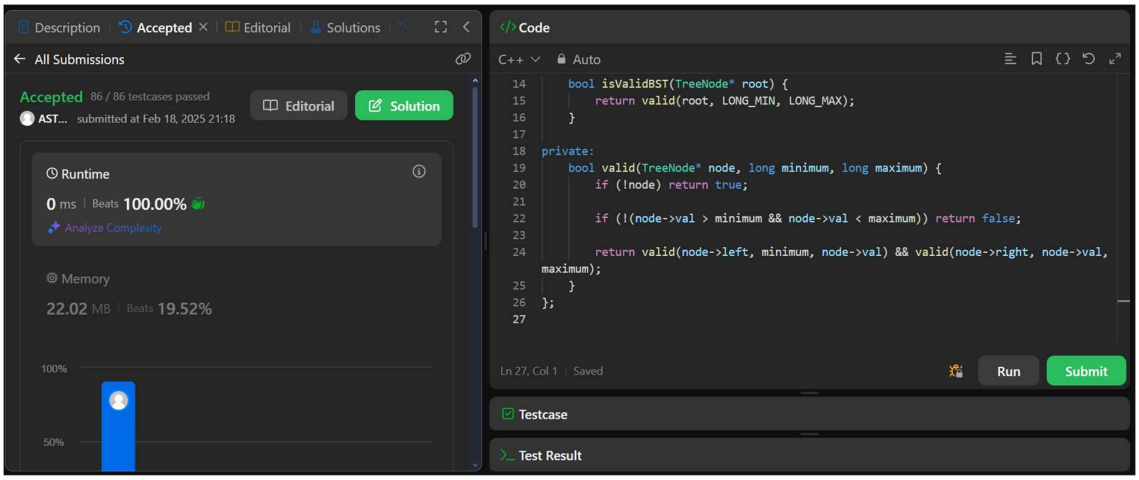
98. Validate Binary Search Tree

- **Solution:**

```
class Solution {
public:
    bool isValidBST(TreeNode* root) {
        return valid(root, LONG_MIN, LONG_MAX);
    }
```

```
private:
    bool valid(TreeNode* node, long minimum, long maximum) {
        if (!node) return true;

        if (!(node->val > minimum && node->val < maximum))
return false;

        return valid(node->left, minimum, node->val) &&
valid(node->right, node->val, maximum);
    }
};
```

- **Screenshot:**



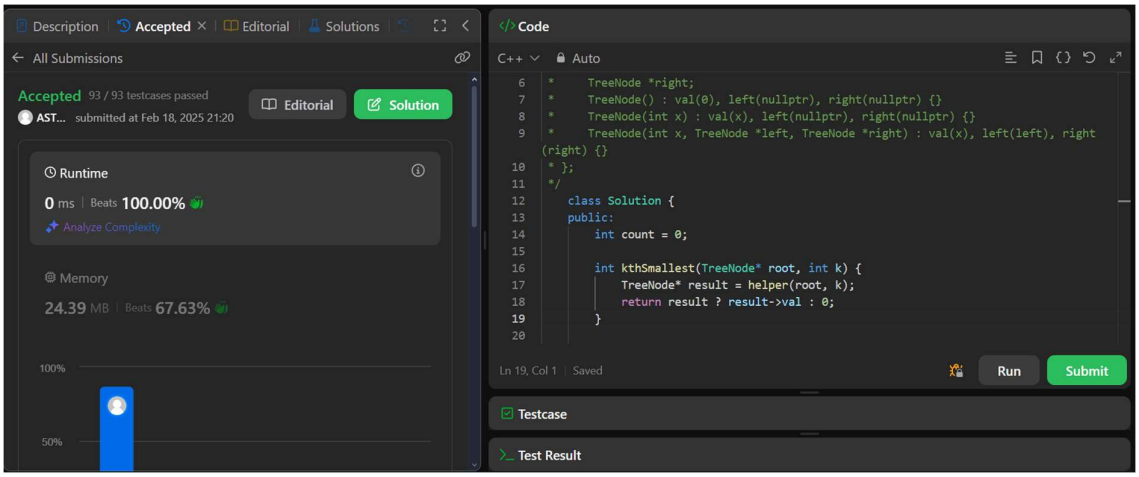
230.Kth Smallest Element in a BST

- **Solution:**

```
class Solution {
public:
    int count = 0;

    int kthSmallest(TreeNode* root, int k) {
        TreeNode* result = helper(root, k);
        return result ? result->val : 0;
    }

    TreeNode* helper(TreeNode* root, int k) {
        if (root == nullptr) return nullptr;


        TreeNode* left = helper(root->left, k);
        if (left != nullptr) return left;

```

```
            count++;
            if (count == k) return root;


            return helper(root->right, k);
        }
    };
```

- **Screenshot:**

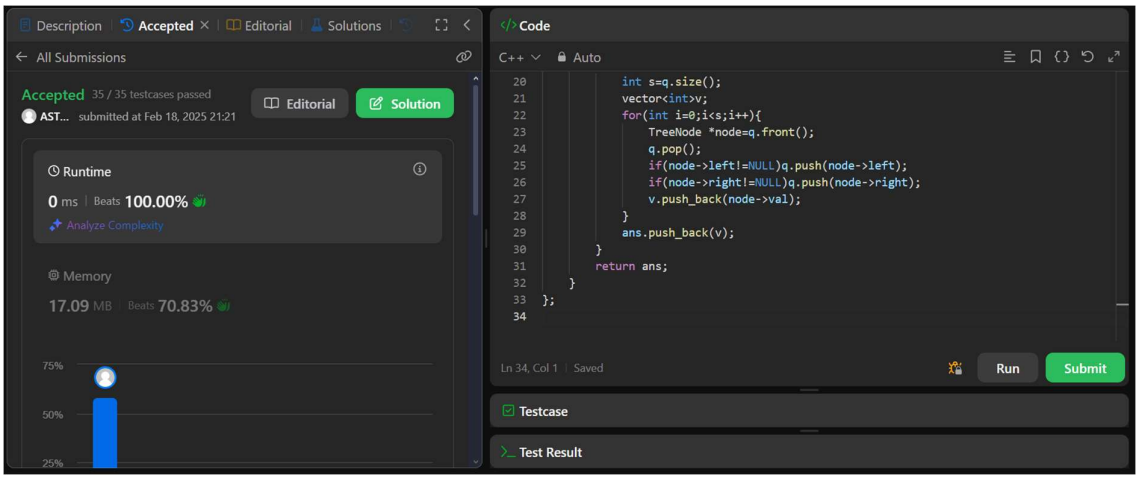


102. Binary Tree Level Order Traversal

- **Solution:**

```
class Solution {
public:
    vector<vector<int>> levelOrder(TreeNode* root) {
        vector<vector<int>>ans;
        if(root==NULL)return ans;
        queue<TreeNode*>q;
        q.push(root);
        while(!q.empty()){
            int s=q.size();
            vector<int>v;
            for(int i=0;i<s;i++){
                TreeNode *node=q.front();
                q.pop();
                if(node->left!=NULL)q.push(node->left);
                if(node->right!=NULL)q.push(node->right);
                v.push_back(node->val);
            }
            ans.push_back(v);
        }
        return ans;
    }
};
```

- **Screenshot:**

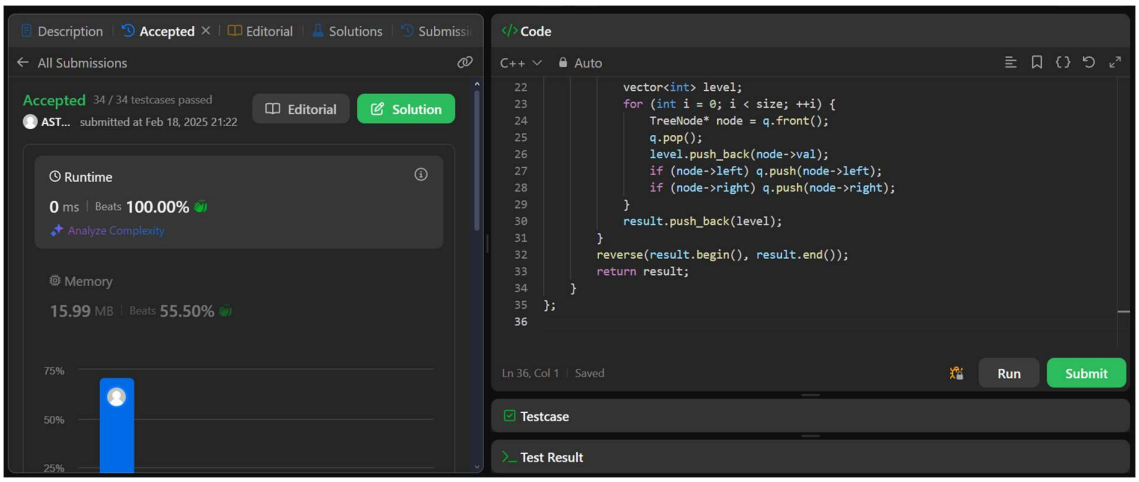


107. Binary Tree Level Order Traversal II

- **Solution:**

```
class Solution {
public:
    vector<vector<int>> levelOrderBottom(TreeNode* root) {
        if (!root) return {};
        vector<vector<int>> result;
        queue<TreeNode*> q;
        q.push(root);

        while (!q.empty()) {
            int size = q.size();
            vector<int> level;
            for (int i = 0; i < size; ++i) {
                TreeNode* node = q.front();
                q.pop();
                level.push_back(node->val);
                if (node->left) q.push(node->left);
                if (node->right) q.push(node->right);
            }
            result.push_back(level);
        }
        reverse(result.begin(), result.end());
        return result;
    }
};
```

- **Screenshot:**



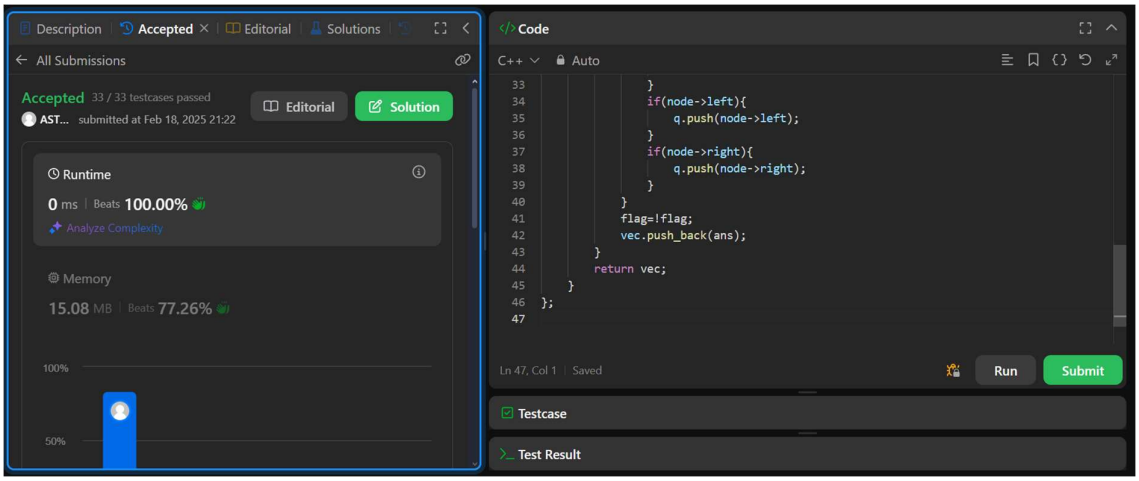
103. Binary Tree Zigzag Level Order Traversal

- **Solution:**

```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode() : val(0), left(nullptr), right(nullptr) {}
 *     TreeNode(int x) : val(x), left(nullptr), right(nullptr)
{}
 *     TreeNode(int x, TreeNode *left, TreeNode *right) :
val(x), left(left), right(right) {}
 * };
 */
class Solution {
public:
    vector<vector<int>> zigzagLevelOrder(TreeNode* root) {
        vector<vector<int>>vec;
        if(!root){
            return {};
        }
        queue<TreeNode*>q;
        q.push(root);
        bool flag=1;

        while(!q.empty()){
            int n=q.size();
            vector<int>ans(n);
            for(int i=0;i<n;i++){
                TreeNode* node=q.front();
                q.pop();
                if(flag){
```

```
                ans[i]=node->val;
            }else{
                ans[n-1-i]=node->val;
            }
            if(node->left){
                q.push(node->left);
            }
            if(node->right){
                q.push(node->right);
            }
        }
        flag=!flag;
        vec.push_back(ans);
    }
    return vec;
  }
};
```

- **Screenshot:**



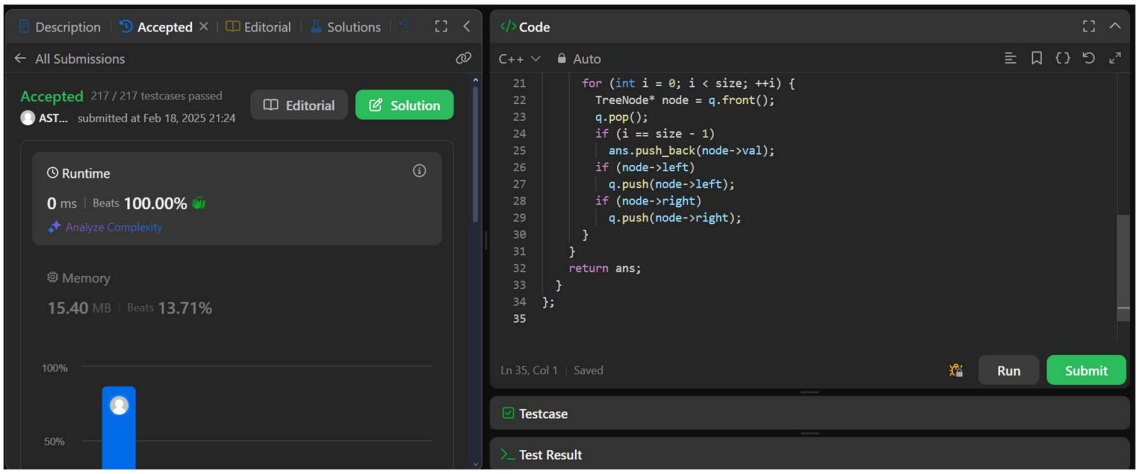
199. Binary Tree Right Side View

- **Solution:**

```
class Solution {
 public:
  vector<int> rightSideView(TreeNode* root) {
    if (root == nullptr)
      return {};
    vector<int> ans;
    queue<TreeNode*> q{{root}};
    while (!q.empty()) {
      const int size = q.size();
      for (int i = 0; i < size; ++i) {
```

```
            TreeNode* node = q.front();
            q.pop();
            if (i == size - 1)
              ans.push_back(node->val);
            if (node->left)
              q.push(node->left);
            if (node->right)
              q.push(node->right);
          }
        }
        return ans;
      }
};
```

- **Screenshot:**



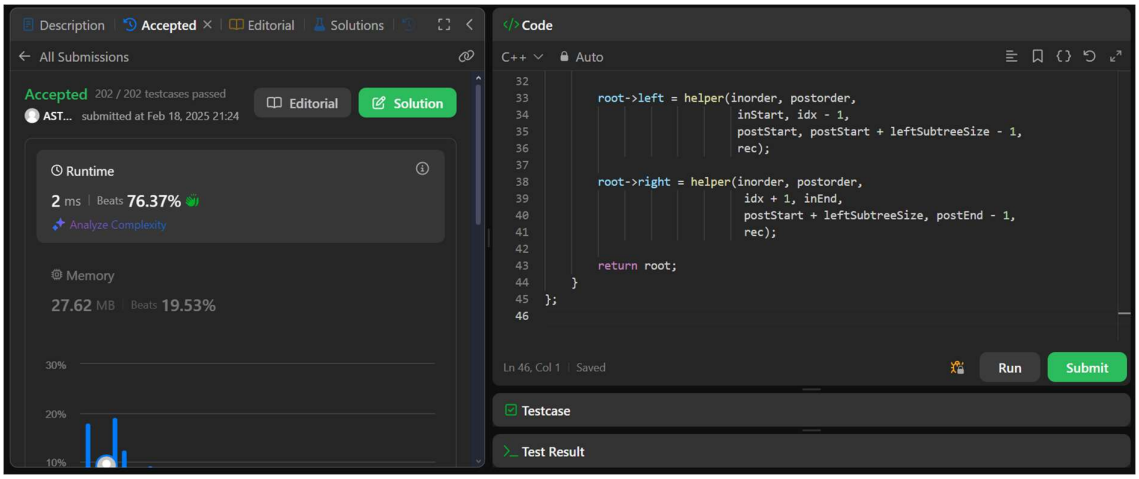
106. Construct Binary Tree from Inorder and Postorder Traversal

- **Solution:**

```
class Solution {
public:
    TreeNode* buildTree(vector<int>& inorder, vector<int>&
postorder) {
        unordered_map<int, int> rec;
        for (int i = 0; i < inorder.size(); i++) {
            rec[inorder[i]] = i;
        }
        return helper(inorder, postorder, 0, inorder.size() -
1, 0, postorder.size() - 1, rec);
    }

    TreeNode* helper(vector<int>& inorder, vector<int>&
postorder,
                     int inStart, int inEnd,
```

```
                        int postStart, int postEnd,
                        unordered_map<int, int>& rec) {
        if (inStart > inEnd || postStart > postEnd) return
nullptr;

        int val = postorder[postEnd];
        TreeNode* root = new TreeNode(val);
        int idx = rec[val];
        int leftSubtreeSize = idx - inStart;

        root->left = helper(inorder, postorder,
                            inStart, idx - 1,
                            postStart, postStart +
leftSubtreeSize - 1,
                            rec);

        root->right = helper(inorder, postorder,
                             idx + 1, inEnd,
                             postStart + leftSubtreeSize,
postEnd - 1,
                             rec);

        return root;
    }
};
```

- **Screenshot:**

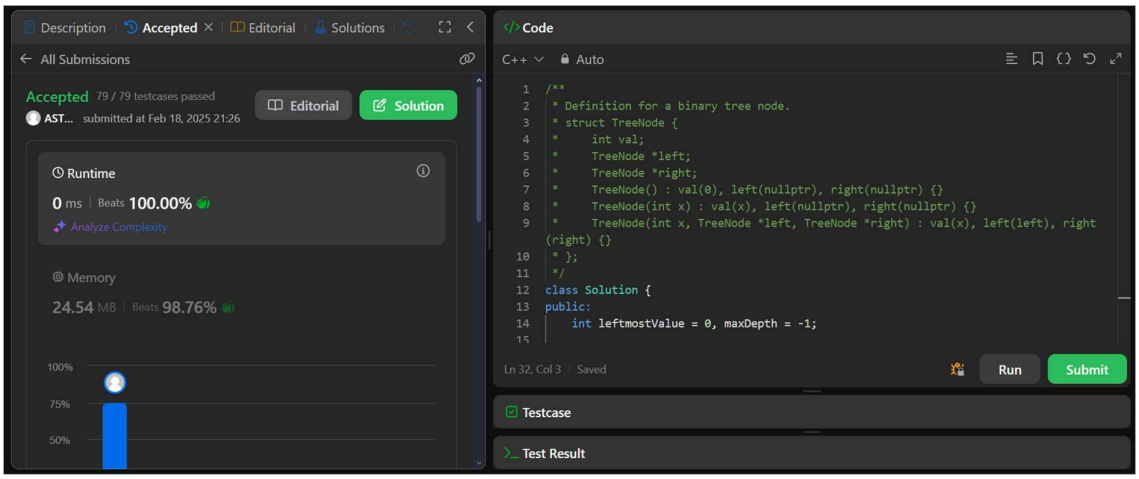


513. Find Bottom Left Tree Value

- **Solution:**

```
class Solution {
public:
    int findBottomLeftValue(TreeNode* root) {
        queue<TreeNode*> q;
        q.push(root);
        int leftmost_value;

        while (!q.empty()) {
            TreeNode* node = q.front();
            q.pop();

            leftmost_value = node->val;

            if (node->right) {
                q.push(node->right);
            }
            if (node->left) {
                q.push(node->left);
            }
        }

        return leftmost_value;
    }
};
```

- **Screenshot:**



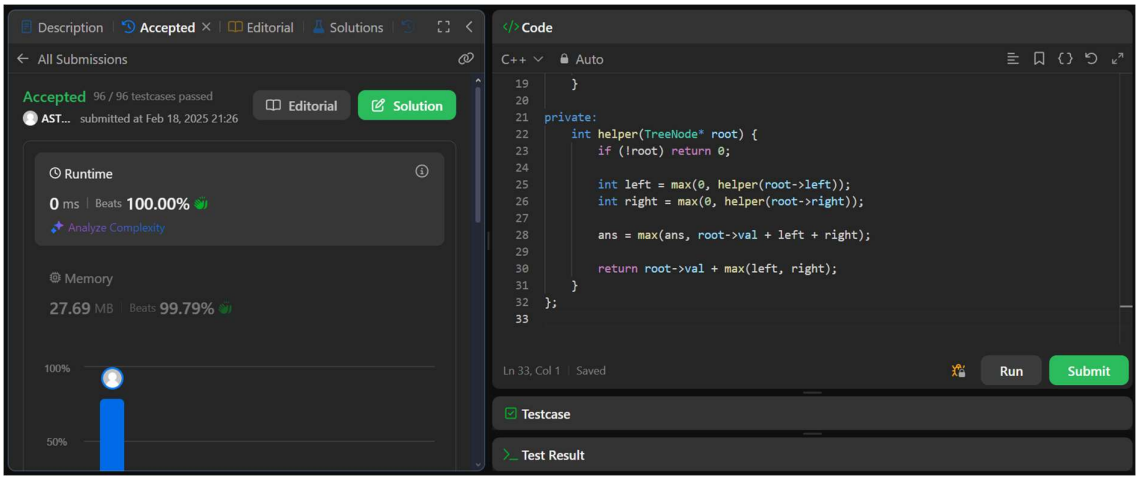
124. Binary Tree Maximum Path Sum

- **Solution:**

```
class Solution {
public:
    int ans = INT_MIN;
```

```
    int maxPathSum(TreeNode* root) {
        helper(root);
        return ans;
    }

private:
    int helper(TreeNode* root) {
        if (!root) return 0;

        int left = max(0, helper(root->left));
        int right = max(0, helper(root->right));

        ans = max(ans, root->val + left + right);

        return root->val + max(left, right);
    }
};
```

- **Screenshot:**



987. Vertical Order Traversal of a Binary Tree

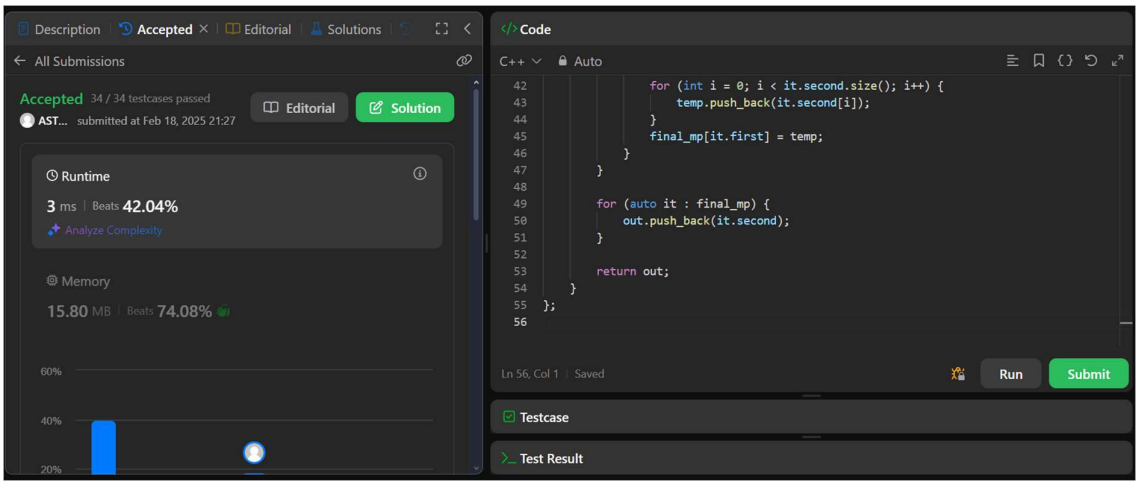
- **Solution:**

```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
```

```
 *     TreeNode() : val(0), left(nullptr), right(nullptr) {}
 *     TreeNode(int x) : val(x), left(nullptr), right(nullptr)
{}
 *     TreeNode(int x, TreeNode *left, TreeNode *right) :
val(x), left(left), right(right) {}
 * };
 */
class Solution {
public:
    vector<vector<int>> verticalTraversal(TreeNode* root) {
        vector<vector<int>> out;
        map<int, vector<int>> final_mp;
        queue<pair<int, TreeNode*>> q;
        q.push({0, root});

        while (!q.empty()) {
            int n = q.size();
            map<int, vector<int>> mp;

            for (int i = 0; i < n; i++) {
                auto it = q.front();
                int index = it.first;
                TreeNode* node = it.second;

                mp[index].push_back(node->val);
                q.pop();

                if (node->left != NULL)
                    q.push({index - 1, node->left});

                if (node->right != NULL)
                    q.push({index + 1, node->right});
            }

            for (auto it : mp) {
                sort(it.second.begin(), it.second.end());
                vector<int> temp = final_mp[it.first];
                for (int i = 0; i < it.second.size(); i++) {
                    temp.push_back(it.second[i]);
                }
                final_mp[it.first] = temp;
            }
        }

        for (auto it : final_mp) {
            out.push_back(it.second);
        }

        return out;
```

```
        }
    };
```

- **Screenshot:**


Description
Accepted
Editorial
Solutions
All Submissions
Accepted 34 / 34 testcases passed
AST... submitted at Feb 18, 2025 21:27
Editorial
Solution
Runtime
3 ms | Beats 42.04%
Analyze Complexity
Memory
15.80 MB | Beats 74.08%
60%
40%
20%
Code
C++
Auto
for (int i = 0; i < it.second.size(); i++) {
temp.push_back(it.second[i]);
}
final_mp[it.first] = temp;
}
}
for (auto it : final_mp) {
out.push_back(it.second);
}
return out;
}
};
Ln 56, Col 1 | Saved
Run
Submit
Testcase
Test Result