145. Binary Tree Postorder Traversal ★

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Total Accepted: **113924** Total Submissions: **305210** Difficulty: **Hard**

Notes

Given a binary tree, return the *postorder* traversal of its nodes' values.

For example:

Given binary tree `{1,#,2,3}`,

```
   1
    \
     2
    /
   3
```

return `[3,2,1]`.

Note: Recursive solution is trivial, could you do it iteratively?

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C++

```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode(int x) : val(x), left(NULL), right(NULL) {}
 * };
 */
class Solution {
public:
    vector<int> postorderTraversal(TreeNode* root) {
        vector<int> result;
        stack<TreeNode*> s;
```

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```
        TreeNode *p = root, *q = nullptr;
        do {
            while (p != nullptr) {
                s.push(p);
                p = p->left;
            }
            q = nullptr;
            while (!s.empty()) {
                p = s.top();
                s.pop();
                if (p->right == q) {
                    result.push_back(p->val);
                    q = p;
                }
                else {
                    s.push(p);
                    p = p->right;
                    break;
                }
            }
        } while (!s.empty());

        return result;
    }
};
```

Notes

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