Lab Assignment: Binary Tree Traversals

Objective

To implement recursive and iterative methods for inorder, preorder, and postorder traversals of a binary tree.

Problem Statement

Given a binary tree, perform traversals in the following orders:

- Inorder Traversal (Left, Root, Right)

- Preorder Traversal (Root, Left, Right)

- Postorder Traversal (Left, Right, Root)

  Implement both recursive and iterative methods for each traversal.

Structure Definition and Function Signatures

```
struct Node {
int data;
struct Node* left;
struct Node* right;
};

// Recursive traversals
void inorderRecursive(struct Node* root);
void preorderRecursive(struct Node* root);
void postorderRecursive(struct Node* root);

// Iterative traversals
void inorderIterative(struct Node* root);
void preorderIterative(struct Node* root);
void postorderIterative(struct Node* root);
```

Details

- Define the binary tree node structure using the `struct Node`.

- Write functions for each traversal method, both recursive and iterative.

- For iterative traversals, use an explicit stack or other suitable data structure.

- Ensure that the traversal functions correctly print or process all nodes in the required order.

Expected Output

The program should correctly traverse the binary tree in all three orders (inorder, preorder, postorder) using both recursive and iterative approaches.