EXERCISE -14

Write a C program to implement the Tree Traversals (Inorder, Preorder,Postorder)

AIM:

To write a C program to implement Tree Traversals:
Inorder, Preorder, and Postorder.

ALGORITHM:

1. Create a Binary Tree Node with data, left, and right child.
2. Inorder Traversal (LNR):
    - Traverse left subtree
    - Visit root
    - Traverse right subtree
3. Preorder Traversal (NLR):
    - Visit root
    - Traverse left subtree
    - Traverse right subtree
4. Postorder Traversal (LRN):
    - Traverse left subtree
    - Traverse right subtree
    - Visit root

PROGRAM:

```
#include <stdio.h>
#include <stdlib.h>
struct Node {
   int data;
   struct Node* left;
   struct Node* right;
```

```
};
struct Node* createNode(int value) {
    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
    newNode->data = value;
    newNode->left = newNode->right = NULL;
    return newNode;
}
void inorder(struct Node* root) {
    if (root != NULL) {
        inorder(root->left);
        printf("%d ", root->data);
        inorder(root->right);
    }
}
void preorder(struct Node* root) {
    if (root != NULL) {
        printf("%d ", root->data);
        preorder(root->left);
        preorder(root->right);
    }
}
void postorder(struct Node* root) {
    if (root != NULL) {
        postorder(root->left);
        postorder(root->right);
        printf("%d ", root->data);
```

```
    }
}
int main() {
    struct Node* root = createNode(1);
    root->left = createNode(2);
    root->right = createNode(3);
    root->left->left = createNode(4);
    root->left->right = createNode(5);
    printf("Inorder traversal: ");
    inorder(root);
    printf("\n");
    printf("Preorder traversal: ");
    preorder(root);
    printf("\n");
    printf("Postorder traversal: ");
    postorder(root);
    printf("\n");
    return 0;
}
```

Input and output:

```
Inorder traversal: 4 2 5 1 3
Preorder traversal: 1 2 4 5 3
Postorder traversal: 4 5 2 3 1


=== Code Execution Successful ===
```

RESULT:

The program implemented successfully using tree traversals