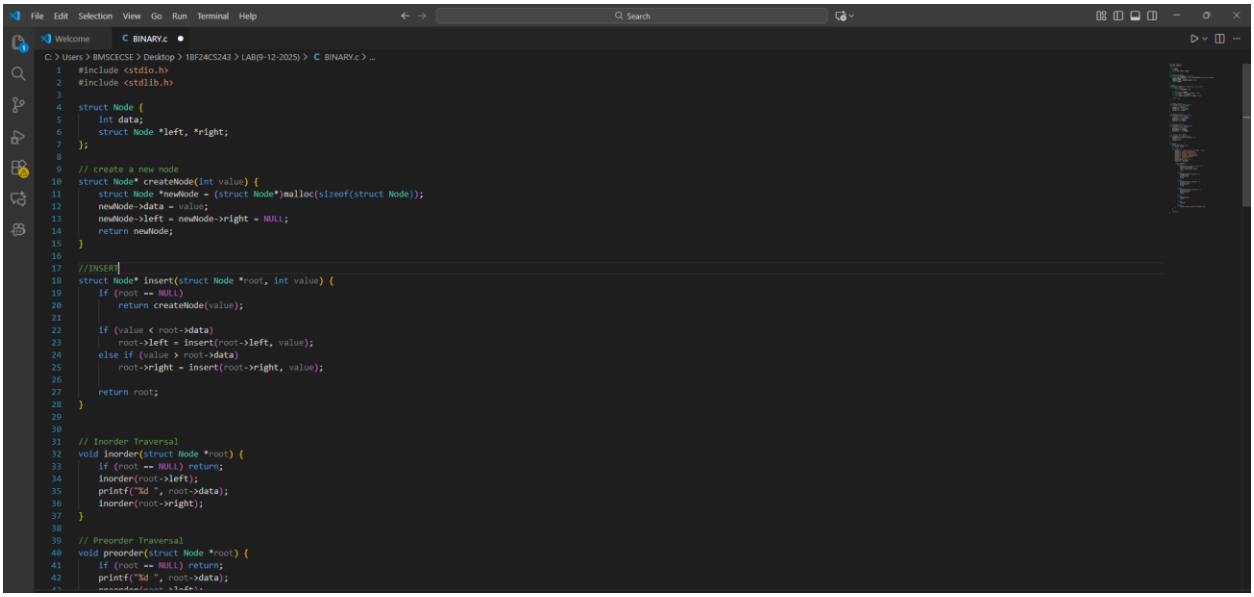
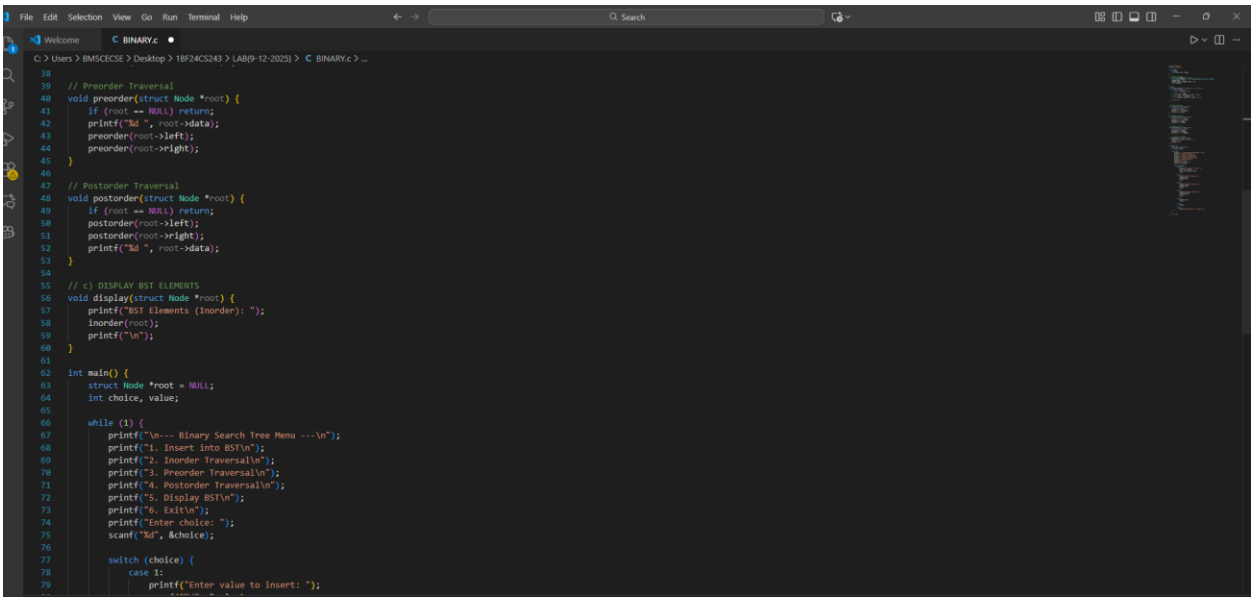
LAB(9-12-2025)

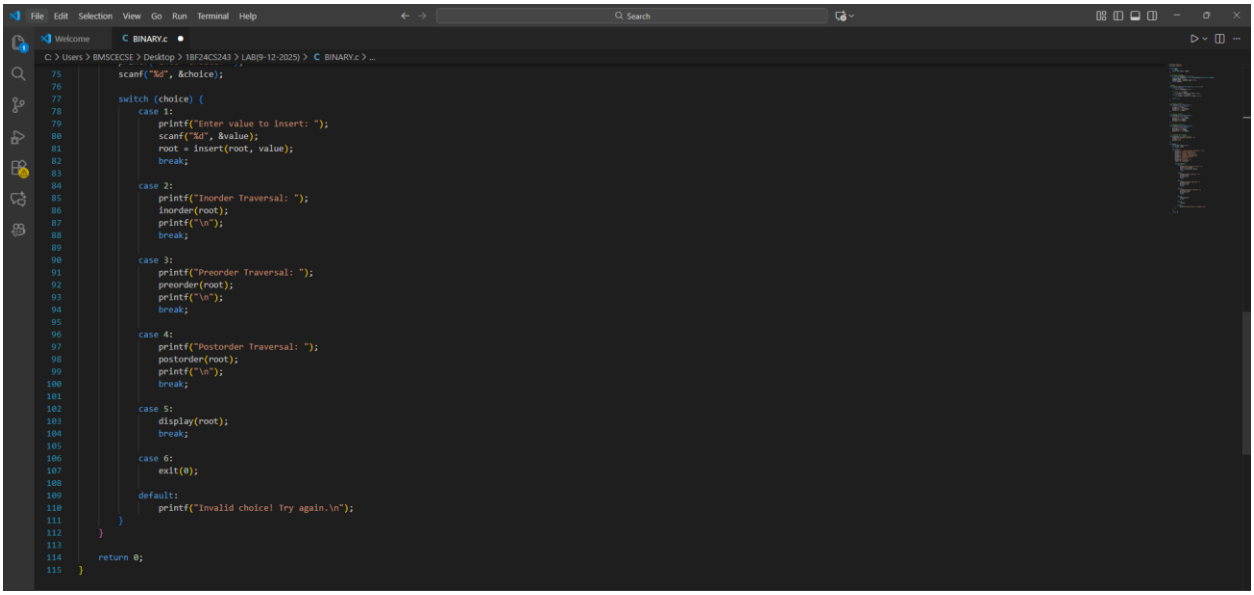
INPUT:



```c
#include <stdio.h>
#include <stdlib.h>

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

// create a new node
struct Node* createNode(int value) {
    struct Node *newNode = (struct Node*)malloc(sizeof(struct Node));
    newNode->data = value;
    newNode->left = newNode->right = NULL;
    return newNode;
}

//INSERT
struct Node* insert(struct Node *root, int value) {
    if (root == NULL)
        return createNode(value);

    if (value < root->data)
        root->left = insert(root->left, value);
    else if (value > root->data)
        root->right = insert(root->right, value);

    return root;
}


// Inorder Traversal
void inorder(struct Node *root) {
    if (root == NULL) return;
    inorder(root->left);
    printf("%d ", root->data);
    inorder(root->right);
}

// Preorder Traversal
void preorder(struct Node *root) {
    if (root == NULL) return;
    printf("%d ", root->data);
```

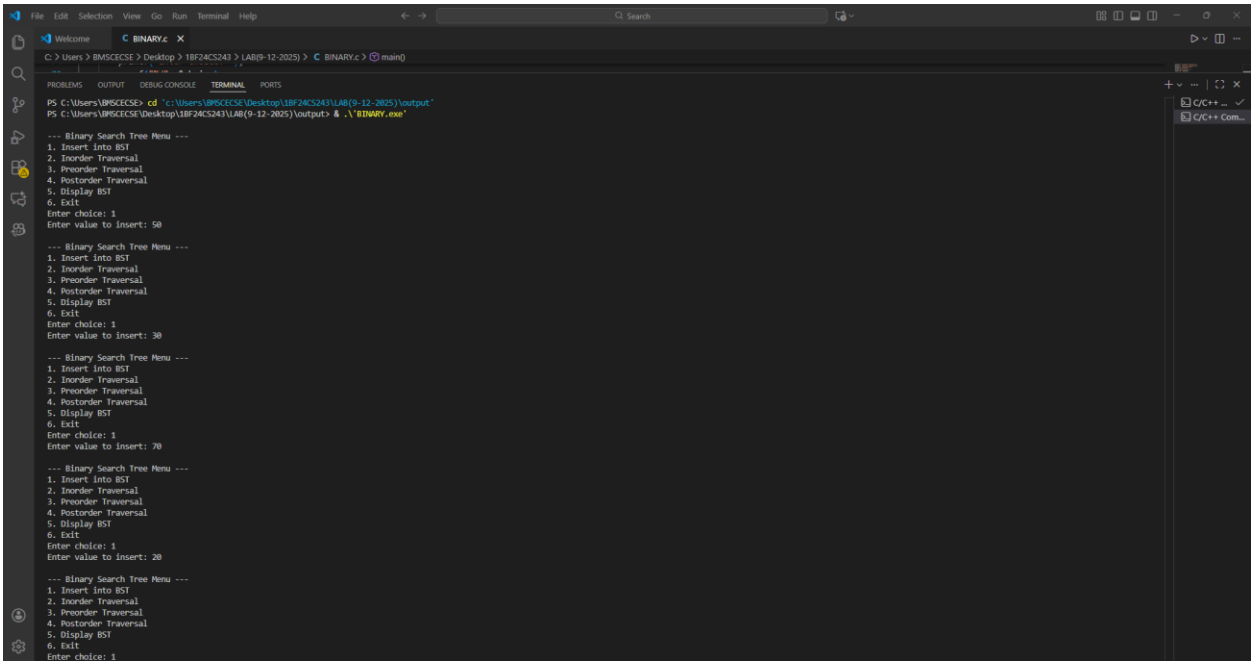


```c
// Preorder Traversal
void preorder(struct Node *root) {
    if (root == NULL) return;
    printf("%d ", root->data);
    preorder(root->left);
    preorder(root->right);
}

// Postorder Traversal
void postorder(struct Node *root) {
    if (root == NULL) return;
    postorder(root->left);
    postorder(root->right);
    printf("%d ", root->data);
}

// c) DISPLAY BST ELEMENTS
void display(struct Node *root) {
    printf("BST Elements (Inorder): ");
    inorder(root);
    printf("\n");
}

int main() {
    struct Node *root = NULL;
    int choice, value;

    while (1) {
        printf("\n--- Binary Search Tree Menu ---\n");
        printf("1. Insert into BST\n");
        printf("2. Inorder Traversal\n");
        printf("3. Preorder Traversal\n");
        printf("4. Postorder Traversal\n");
        printf("5. Display BST\n");
        printf("6. Exit\n");
        printf("Enter choice: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Enter value to insert: ");
```

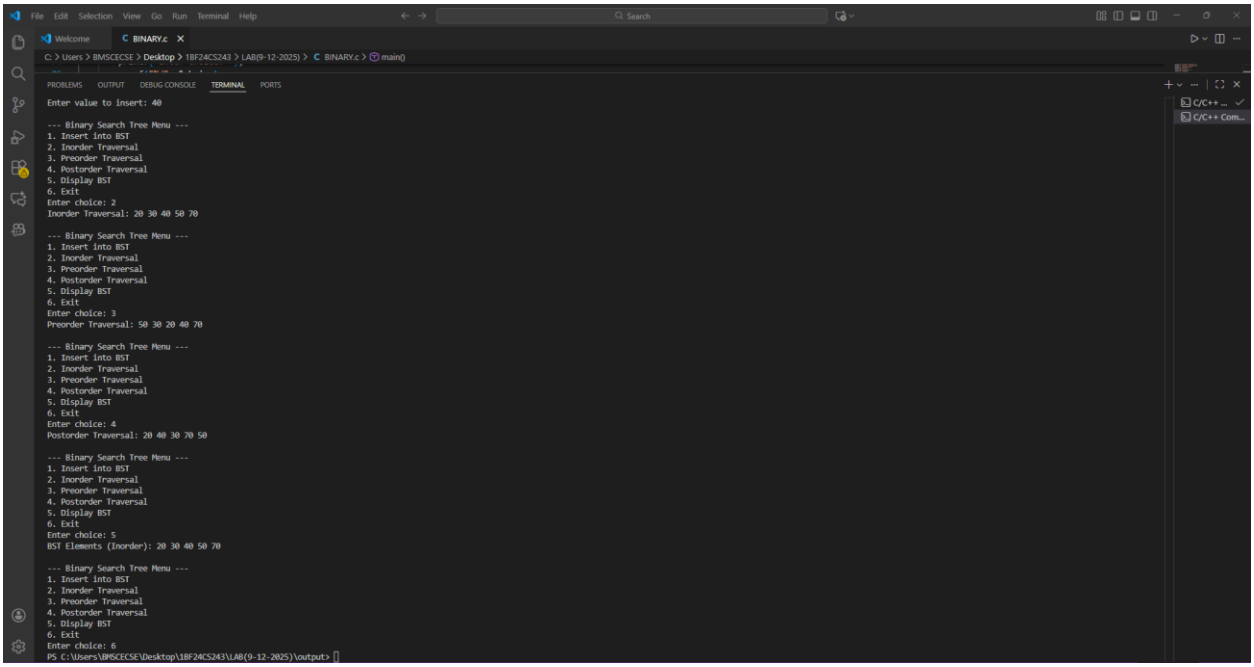


```
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Enter value to insert: ");
                scanf("%d", &value);
                root = insert(root, value);
                break;

            case 2:
                printf("Inorder Traversal: ");
                inorder(root);
                printf("\n");
                break;

            case 3:
                printf("Preorder Traversal: ");
                preorder(root);
                printf("\n");
                break;

            case 4:
                printf("Postorder Traversal: ");
                postorder(root);
                printf("\n");
                break;

            case 5:
                display(root);
                break;

            case 6:
                exit(0);

            default:
                printf("Invalid choice! Try again.\n");
        }
    }

    return 0;
}
```

OUPUT:



```
PS C:\Users\BMSCECSE> cd "c:\Users\BMSCECSE\Desktop\1BF24CS243\LAB(9-12-2025)\output"
PS C:\Users\BMSCECSE\Desktop\1BF24CS243\LAB(9-12-2025)\output> & .\"BINARY.exe"

--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 1
Enter value to insert: 50

--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 1
Enter value to insert: 30

--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 1
Enter value to insert: 70

--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 1
Enter value to insert: 20

--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 1
```


File Edit Selection View Go Run Terminal Help
Search
Welcome
BINARY.c
C: > Users > BMSCECSE > Desktop > 18F24CS243 > LAB(9-12-2025) > BINARY.c > main()
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
C/C++ ...
C/C++ Com...
Enter value to insert: 40
--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 2
Inorder Traversal: 20 30 40 50 70
--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 3
Preorder Traversal: 50 30 20 40 70
--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 4
Postorder Traversal: 20 40 30 70 50
--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 5
BST Elements (Inorder): 20 30 40 50 70
--- Binary Search Tree Menu ---
1. Insert into BST
2. Inorder Traversal
3. Preorder Traversal
4. Postorder Traversal
5. Display BST
6. Exit
Enter choice: 6
PS C:\Users\BMSCECSE\Desktop\18F24CS243\LAB(9-12-2025)\output>