

LAB(9-12-2025)

INPUT:

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C:\Users\BMSCECE\Desktop> 1BF24CS243 > LAB(9-12-2025) > C:\BINARY.c > ...
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 struct Node {
5     int data;
6     struct Node *left, *right;
7 };
8
9 // create a new node
10 struct Node* createNode(int value) {
11     struct Node *newNode = (struct Node*)malloc(sizeof(struct Node));
12     newNode->data = value;
13     newNode->left = newNode->right = NULL;
14     return newNode;
15 }
16
17 //INSERT
18 struct Node* insert(struct Node *root, int value) {
19     if (root == NULL)
20         return createNode(value);
21
22     if (value < root->data)
23         root->left = insert(root->left, value);
24     else if (value > root->data)
25         root->right = insert(root->right, value);
26
27     return root;
28 }
29
30 // Inorder Traversal
31 void inorder(struct Node *root) {
32     if (root == NULL) return;
33     inorder(root->left);
34     printf("%d ", root->data);
35     inorder(root->right);
36 }
37
38 // Preorder Traversal
39 void preorder(struct Node *root) {
40     if (root == NULL) return;
41     printf("%d ", root->data);
42     preorder(root->left);
43     preorder(root->right);
44 }
```

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38
39 // Preorder Traversal
40 void preorder(struct Node *root) {
41     if (root == NULL) return;
42     printf("%d ", root->data);
43     preorder(root->left);
44     preorder(root->right);
45 }
46
47 // Postorder Traversal
48 void postorder(struct Node *root) {
49     if (root == NULL) return;
50     postorder(root->left);
51     postorder(root->right);
52     printf("%d ", root->data);
53 }
54
55 // e) DISPLAY BST ELEMENTS
56 void display(struct Node *root) {
57     printf("BST Elements (Inorder): ");
58     inorder(root);
59     printf("\n");
60 }
61
62 int main() {
63     struct Node *root = NULL;
64     int choice, value;
65
66     while (1) {
67         printf("\n--- Binary Search Tree Menu ---\n");
68         printf("1. Insert into BST\n");
69         printf("2. Inorder Traversal\n");
70         printf("3. Preorder Traversal\n");
71         printf("4. Postorder Traversal\n");
72         printf("5. Display BST\n");
73         printf("6. Exit\n");
74         printf("Enter choice: ");
75         scanf("%d", &choice);
76
77         switch (choice) {
78             case 1:
79                 printf("Enter value to insert: ");
80                 scanf("%d", &value);
81                 root = insert(root, value);
82                 break;
83             case 2:
84                 inorder(root);
85                 printf("\n");
86                 break;
87             case 3:
88                 preorder(root);
89                 printf("\n");
90                 break;
91             case 4:
92                 postorder(root);
93                 printf("\n");
94                 break;
95             case 5:
96                 display(root);
97                 break;
98             case 6:
99                 return 0;
100            default:
101                printf("Invalid choice. Please try again.\n");
102            }
103        }
104    }
```

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C:\Users\BMSCICSE\Desktop > 1BF24C5243 > LAB(9-12-2025) > C:\BINARY.c > ...

75 scanf("%d", &choice);
76
77 switch (choice) {
78     case 1:
79         printf("Enter value to insert: ");
80         scanf("%d", &value);
81         root = insert(root, value);
82         break;
83
84     case 2:
85         printf("Inorder Traversal: ");
86         inorder(root);
87         printf("\n");
88         break;
89
90     case 3:
91         printf("Preorder Traversal: ");
92         preorder(root);
93         printf("\n");
94         break;
95
96     case 4:
97         printf("Postorder Traversal: ");
98         postorder(root);
99         printf("\n");
100        break;
101
102     case 5:
103         display(root);
104         break;
105
106     case 6:
107         exit(0);
108
109     default:
110         printf("Invalid choice! Try again.\n");
111 }
112
113 return 0;
114 }
115 }
```

OUTPUT:

```
File Edit Selection View Go Run Terminal Help
C:\Users\BMSCICSE\Desktop > 1BF24C5243 > LAB(9-12-2025) > C:\BINARY.c > main()

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\BMSCICSE> cd 'C:\Users\BMSCICSE\Desktop\1BF24C5243\LAB(9-12-2025)\output'
PS C:\Users\BMSCICSE\Desktop\1BF24C5243\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
```

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C: > Users > BMSCCESE > Desktop > 1BF24CS243 > LAB(9-12-2025) > C: \BINARY.c > main()

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
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\BMSCCESE\Desktop\1BF24CS243\LAB(9-12-2025)\output>
```