

lab 8 ds.c - Code::Blocks 20.03

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```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 struct Node {
5     int data;
6     struct Node *left, *right;
7 };
8
9 struct Node* createNode(int value) {
10    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
11    newNode->data = value;
12    newNode->left = newNode->right = NULL;
13    return newNode;
14 }
15
16 struct Node* insert(struct Node* root, int value) {
17    if (root == NULL)
18        return createNode(value);
19
20    if (value < root->data)
21        root->left = insert(root->left, value);
22    else if (value > root->data)
23        root->right = insert(root->right, value);
24
25    return root;
26 }
27
28 void inorder(struct Node* root) {
29    if (root != NULL) {
30        inorder(root->left);
31        printf("%d ", root->data);
32        inorder(root->right);
33    }
34 }
35
36 void preorder(struct Node* root) {
37    if (root != NULL) {
38        printf("%d ", root->data);
39        preorder(root->left);
40        preorder(root->right);
41    }
42 }
43
44 void postorder(struct Node* root) {
45    if (root != NULL) {
46        postorder(root->left);
47        postorder(root->right);
48        printf("%d ", root->data);
49    }
50 }
51
52 int main() {
53    struct Node* root = NULL;
54    int n, value;
```

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C:\Users\Admin\Desktop\lab 8 ds.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 27, Col 1, Pos 617 Insert Read/Write default

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```
48         printf("%d ", root->data);
49     }
50 }
51
52 int main() {
53     struct Node* root = NULL;
54     int n, value;
55
56     printf("Enter number of elements to insert into BST: ");
57     scanf("%d", &n);
58
59     printf("Enter the elements:\n");
60     for (int i = 0; i < n; i++) {
61         scanf("%d", &value);
62         root = insert(root, value);
63     }
64
65     printf("\nBST Traversals:\n");
66
67     printf("Inorder : ");
68     inorder(root);
69
70     printf("\nPreorder : ");
71     preorder(root);
72
73     printf("\nPostorder : ");
74     postorder(root);
75
76     printf("\n");
77
78     return 0;
79 }
80
81 }
```

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["C:\Users\Admin\Desktop\lab 8 ds.exe"]

Enter number of elements to insert into BST: 7

Enter the elements:

50 30 70 20 40 60 80

BST Traversals:

Inorder : 20 30 40 50 60 70 80

Preorder : 50 30 20 40 70 60 80

Postorder : 20 40 30 60 80 70 50

Process returned 0 (0x0) execution time : 28.974 s

Press any key to continue.

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["C:\Users\Admin\Desktop\lab 8 ds.exe"]

Enter number of elements to insert into BST: 9

Enter the elements:

6 88 17 -40 63 13 -2 48 26

BST Traversals:

Inorder : -40 -2 6 13 17 26 48 63 88

Preorder : 6 -40 -2 88 17 13 63 48 26

Postorder : -2 -40 13 26 48 63 17 88 6

Process returned 0 (0x0) execution time : 86.976 s

Press any key to continue.

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