

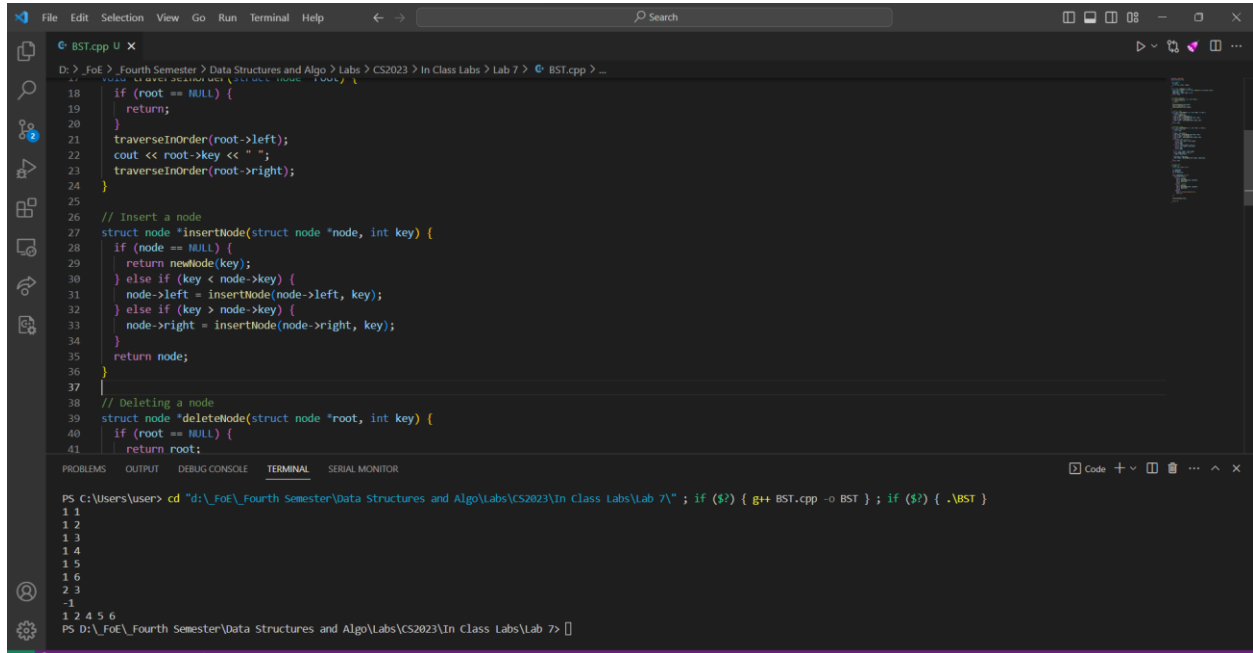
CS2023 - Data Structures and Algorithms

In Class Lab Exercise

Week 07

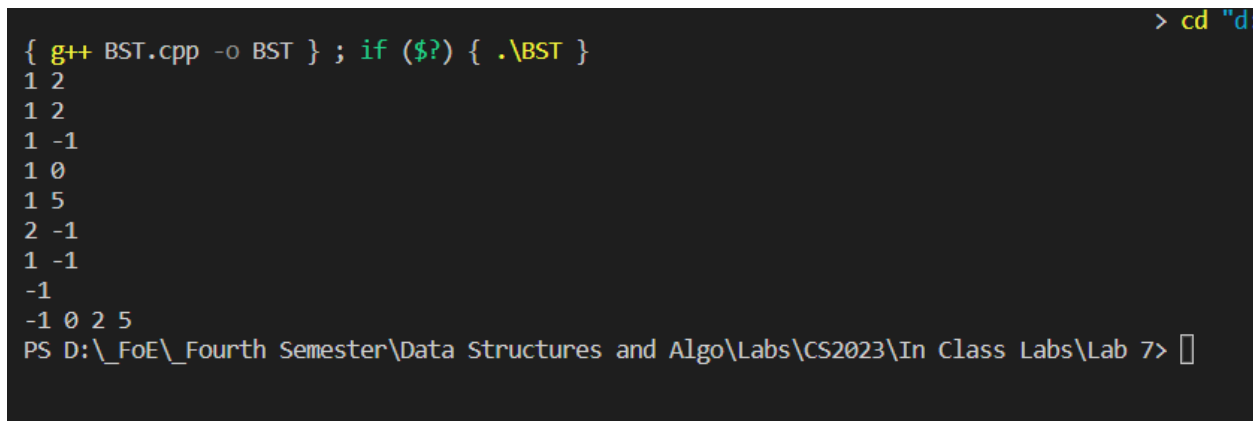
Index Number : 200105F

Answer



```
File Edit Selection View Go Run Terminal Help
D:\_FoE\_Fourth Semester\Data Structures and Algo\Labs\CS2023\In Class Labs\Lab 7> BST.cpp
18 if (root == NULL) {
19     return;
20 }
21 traverseInOrder(root->left);
22 cout << root->key << " ";
23 traverseInOrder(root->right);
24 }
25
26 // Insert a node
27 struct node *insertNode(struct node *node, int key) {
28     if (node == NULL) {
29         return newNode(key);
30     } else if (key < node->key) {
31         node->left = insertNode(node->left, key);
32     } else if (key > node->key) {
33         node->right = insertNode(node->right, key);
34     }
35     return node;
36 }
37
38 // Deleting a node
39 struct node *deleteNode(struct node *root, int key) {
40     if (root == NULL) {
41         return root;
42     }
43     if (key < root->key) {
44         root->left = deleteNode(root->left, key);
45     } else if (key > root->key) {
46         root->right = deleteNode(root->right, key);
47     } else {
48         // Node to be deleted
49         if (root->left == NULL) {
50             return root->right;
51         } else if (root->right == NULL) {
52             return root->left;
53         }
54         // Node has both left and right children
55         struct node *temp = root->left;
56         while (temp->right != NULL) {
57             temp = temp->right;
58         }
59         temp->right = root->right;
60         root = root->left;
61     }
62     return root;
63 }
64
65 int main() {
66     struct node *root = NULL;
67     int key;
68     char ch;
69     do {
70         cout << "Enter key: ";
71         cin >> key;
72         root = insertNode(root, key);
73         cout << "Enter 'd' to delete a node, 't' to traverse, 'e' to exit: ";
74         cin >> ch;
75     } while (ch != 'e');
76     deleteNode(root, key);
77     return 0;
78 }
```

```
PS C:\Users\user> cd "d:\_FoE\_Fourth Semester\Data Structures and Algo\Labs\CS2023\In Class Labs\Lab 7" ; if ($?) { g++ BST.cpp -o BST } ; if ($?) { .\BST }
1 1
1 2
1 3
1 4
1 5
1 6
2 3
-1
1 2 4 5 6
PS D:\_FoE\_Fourth Semester\Data Structures and Algo\Labs\CS2023\In Class Labs\Lab 7>
```



```
> cd "d:\_FoE\_Fourth Semester\Data Structures and Algo\Labs\CS2023\In Class Labs\Lab 7"
{ g++ BST.cpp -o BST } ; if ($?) { .\BST }
1 2
1 2
1 -1
1 0
1 5
2 -1
1 -1
-1
-1 0 2 5
PS D:\_FoE\_Fourth Semester\Data Structures and Algo\Labs\CS2023\In Class Labs\Lab 7>
```

GitHub Link : <https://github.com/UlinduP/CS2023/tree/main/In%20Class%20Labs/Lab%207>