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## Data Structure & Algorithm(Lab)

## Lab # 08 Task

**Question:**

Binary Search Tree Simple program to create a BST of integers and search an element in it. 15 root node

/ \

10 20

/ \ / \

8 12 17 25

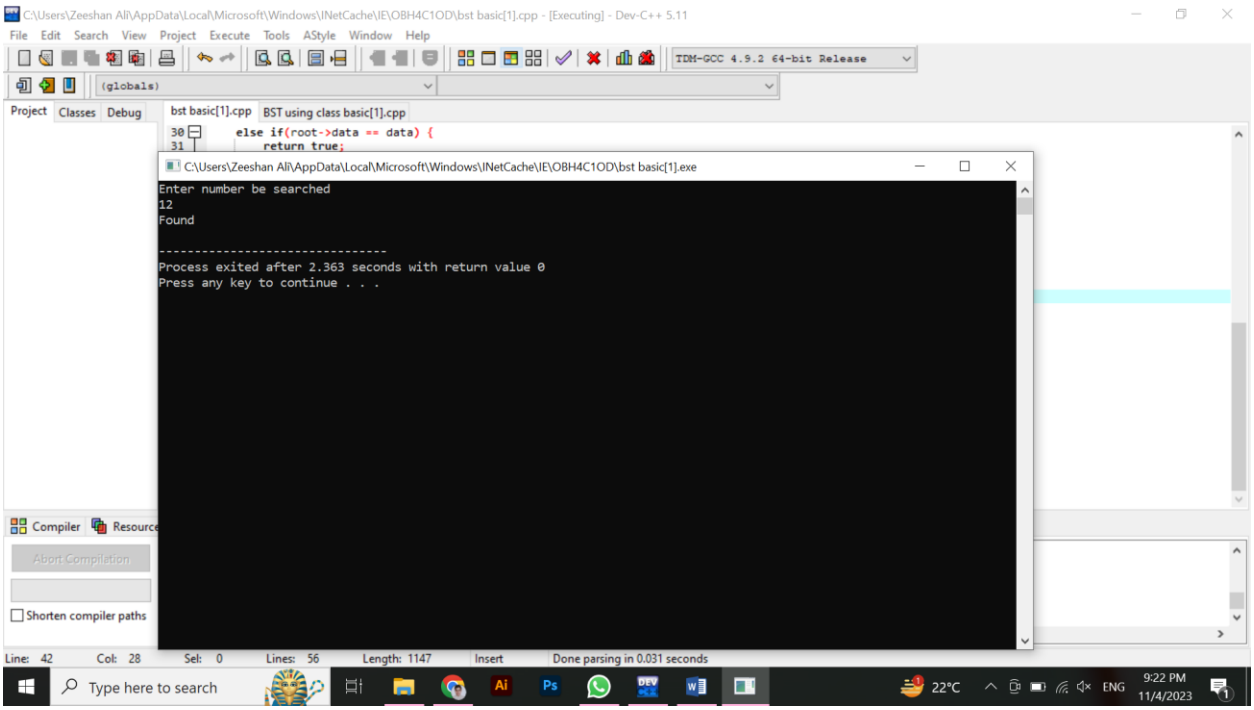
**Code:**

```
#include<iostream>
using namespace std;
struct BstNode {
	int data;
	BstNode* left;
	BstNode* right;
};
BstNode* GetNewNode(int data) {
	BstNode* newNode = new BstNode();
	newNode->data = data;
	newNode->left = newNode->right = NULL;
	return newNode;
}
BstNode* Insert(BstNode* root,int data) {
	if(root == NULL) {
```

```
		root = GetNewNode(data);
	}
	else if(data <= root->data) {
		root->left = Insert(root->left,data);
	}
	else {
		root->right = Insert(root->right,data);
	}
	return root;
}
bool Search(BstNode* root,int data) {
	if(root == NULL) {
		return false;
	}
	else if(root->data == data) {
		return true;
	}
	else if(data <= root->data) {
		return Search(root->left,data);
	}
	else {
		return Search(root->right,data);
	}
}
int main() {
	BstNode* root = NULL;
```

```
        root = Insert(root,15);
        root = Insert(root,10);
        root = Insert(root,20);
        root = Insert(root,25);
        root = Insert(root,8);
        root = Insert(root,12);
        root = Insert(root,17);
        int number;
        cout<<"Enter number be searched\n";
        cin>>number;
        if(Search(root,number) == true)
        cout<<"Found\n";
        else
        cout<<"Not Found\n";
}
```

# Output:


C:\Users\Zeeshan Ali\AppData\Local\Microsoft\Windows\INetCache\IE\OBH4C1OD\bst basic[1].cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
bst basic[1].cpp
BST using class basic[1].cpp
30 else if(root->data == data) {
31 return true;
C:\Users\Zeeshan Ali\AppData\Local\Microsoft\Windows\INetCache\IE\OBH4C1OD\bst basic[1].exe
Enter number be searched
12
Found
Process exited after 2.363 seconds with return value 0
Press any key to continue . . .
Compiler
Abort Compilation
Shorten compiler paths
Line: 42 Col: 28 Sel: 0 Lines: 56 Length: 1147 Insert
Done parsing in 0.031 seconds
Type here to search
22°C
ENG
9:22 PM
11/4/2023