Program –

```
#include <iostream>
using namespace std;
struct node
{
    int data;
    node *L;
    node *R;
};
node *root, *temp;
int count, key;
class bst
{
public:
    void create();
    void insert(node *, node *);
    void disin(node *);
    void dispre(node *);
    void dispost(node *);
    void search(node *, int);
    int height(node *);
    void mirror(node *);
    void min(node *);
    bst()
    {
        root = NULL;
        count = 0;
    }
};

void bst::create()
{
    char ans;
    do
    {
        temp = new node;
        cout << "Enter the data : ";
        cin >> temp->data;
        temp->L = NULL;
        temp->R = NULL;
        if (root == NULL)
        {
            root = temp;
        }
        else
            insert(root, temp);
        cout << "Do you want to insert more value : " << endl;
        cin >> ans;
        count++;
        cout << endl;
    } while (ans == 'y');
    cout << "The Total no.of nodes are:" << count;
}
void bst::insert(node *root, node *temp)
```

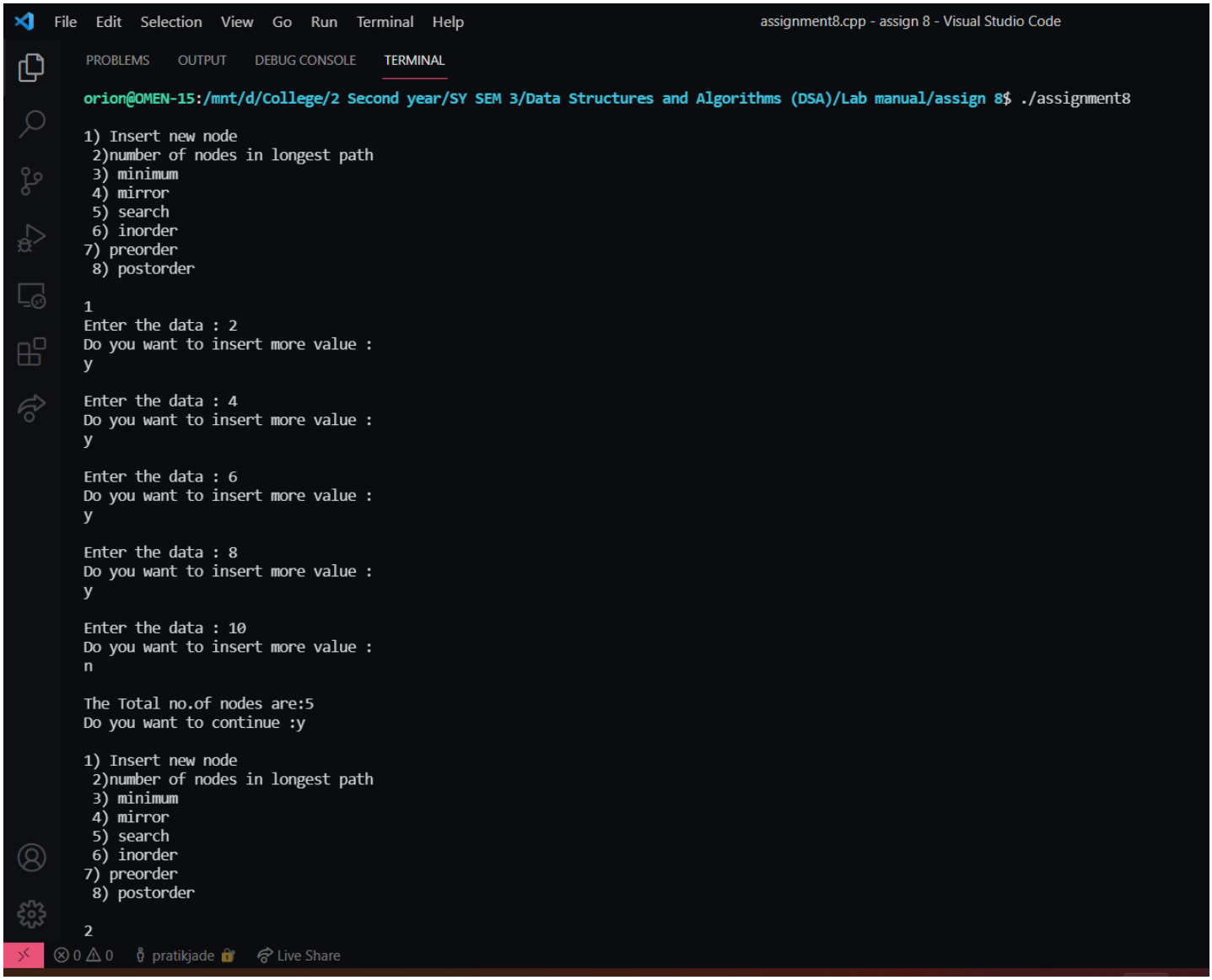
```
{
    if (temp->data > root->data)
    {
        if (root->R == NULL)
        {
            root->R = temp;
        }
        else
            insert(root->R, temp);
    }
    else
    {
        if (root->L == NULL)
        {
            root->L = temp;
        }
        else
            insert(root->L, temp);
    }
}
void bst::disin(node *root)
{
    if (root != NULL)
    {
        disin(root->L);
        cout << root->data << "\t";
        disin(root->R);
        count++;
    }
}
void bst::dispre(node *root)
{
    if (root != NULL)
    {
        cout << root->data << "\t";
        dispre(root->L);
        dispre(root->R);
    }
}
void bst::dispost(node *root)
{
    if (root != NULL)
    {
        dispost(root->L);
        dispost(root->R);
        cout << root->data << "\t";
    }
}
void bst::search(node *root, int key)
{
    int flag = 0;
    cout << "\nEnter your key : " << endl;
    cin >> key;
    temp = root;
    while (temp != NULL)
```

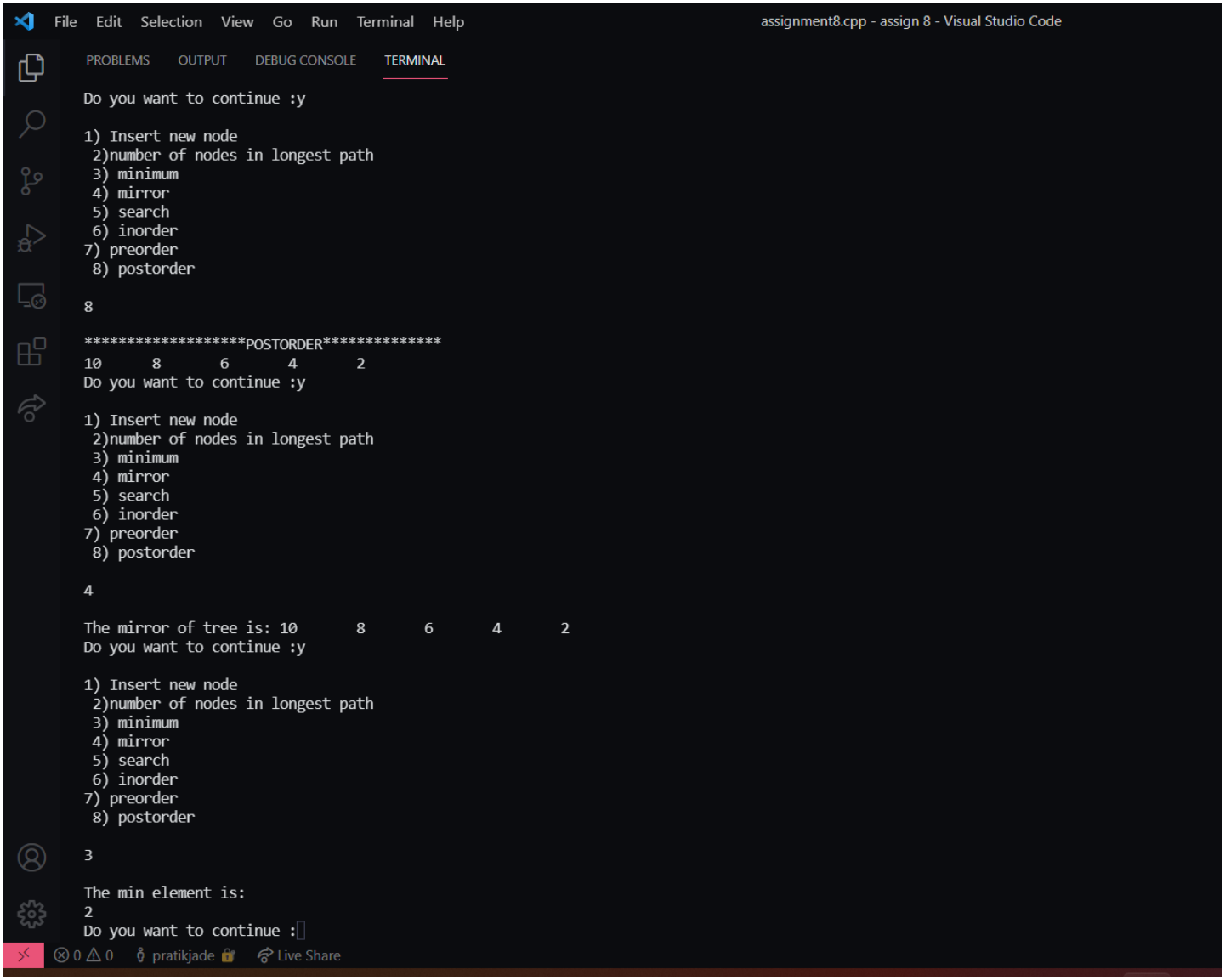
```
    {
        if (key == temp->data)
        {
            cout << "KEY FOUND\n";
            flag = 1;
            break;
        }
        node *parent = temp;
        if (key > parent->data)
        {
            temp = temp->R;
        }
        else
        {
            temp = temp->L;
        }
    }
    if (flag == 0)
    {
        cout << "KEY NOT FOUND " << endl;
    }
}
int bst::height(node *root)
{
    int hl, hr;
    if (root == NULL)
    {
        return 0;
    }
    else if (root->L == NULL && root->R == NULL)
    {
        return 0;
    }
    cout << endl;
    hr = height(root->R);
    hl = height(root->L);
    if (hr > hl)
    {
        return (1 + hr);
    }
    else
    {
        return (1 + hl);
    }
}
void bst::min(node *root)
{
    temp = root;
    cout << endl;
    while (temp->L != NULL)
    {
        temp = temp->L;
    }
    cout << root->data;
}
```

```
void bst::mirror(node *root)
{
    temp = root;
    if (root != NULL)
    {
        mirror(root->L);
        mirror(root->R);
        temp = root->L;
        root->L = root->R;
        root->R = temp;
    }
}
int main()
{
    bst t;
    int ch;
    char ans;
    do
    {
        cout << "\n1) Insert new node\n 2)number of nodes in longest path\n 3) minimum\n 4)
mirror\n 5) search\n 6) inorder \n7) preorder\n 8) postorder\n" << endl;
        cin >> ch;
        switch (ch)
        {
        case 1:
            t.create();
            break;
        case 2:
            cout << "\"n Number of nodes in longest path:" << (1 + (t.height(root)));
            break;
        case 3:
            cout << "\nThe min element is:";
            t.min(root);
            break;
        case 4:
            t.mirror(root);
            cout << "\nThe mirror of tree is: ";
            t.disin(root);
            break;
        case 5:
            t.search(root, key);
            break;
        case 6:
            cout << "\n***************INORDER**************" << endl;
            t.disin(root);
            break;
        case 7:
            cout << "\n***************PREORDER**************" << endl;
            t.dispre(root);
            break;
        case 8:
            cout << "\n*******************POSTORDER**************" << endl;
            t.dispost(root);
            break;
        }
```

```
        cout << "\nDo you want to continue :";
        cin >> ans;
    } while (ans == 'y');
    return 0;
}
```

Output-




File Edit Selection View Go Run Terminal Help
assignment8.cpp - assign 8 - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Do you want to continue :y
1) Insert new node
2)number of nodes in longest path
3) minimum
4) mirror
5) search
6) inorder
7) preorder
8) postorder
8
**********POSTORDER**********
10 8 6 4 2
Do you want to continue :y
1) Insert new node
2)number of nodes in longest path
3) minimum
4) mirror
5) search
6) inorder
7) preorder
8) postorder
4
The mirror of tree is: 10 8 6 4 2
Do you want to continue :y
1) Insert new node
2)number of nodes in longest path
3) minimum
4) mirror
5) search
6) inorder
7) preorder
8) postorder
3
The min element is:
2
Do you want to continue :
0 0 pratikjade Live Share