

Implementation of stack with push() and pop()

```
//Aneesh Panchal
//2K20/MC/21

#include<iostream>
using namespace std;

#define len 101
class stack{
public:
    int arr[len];
    int top=-1;

    void push(int x){
        if(top==len-1){
            cout<<"Stack Overflow"<<endl;
            return;
        }
        else{
            ++top;
            arr[top]=x;
        }
    }

    void pop(){
        if(top==--1){
            cout<<"Stack Underflow"<<endl;
            return;
        }
        else{
            arr[top]=-1;
            --top;
        }
    }

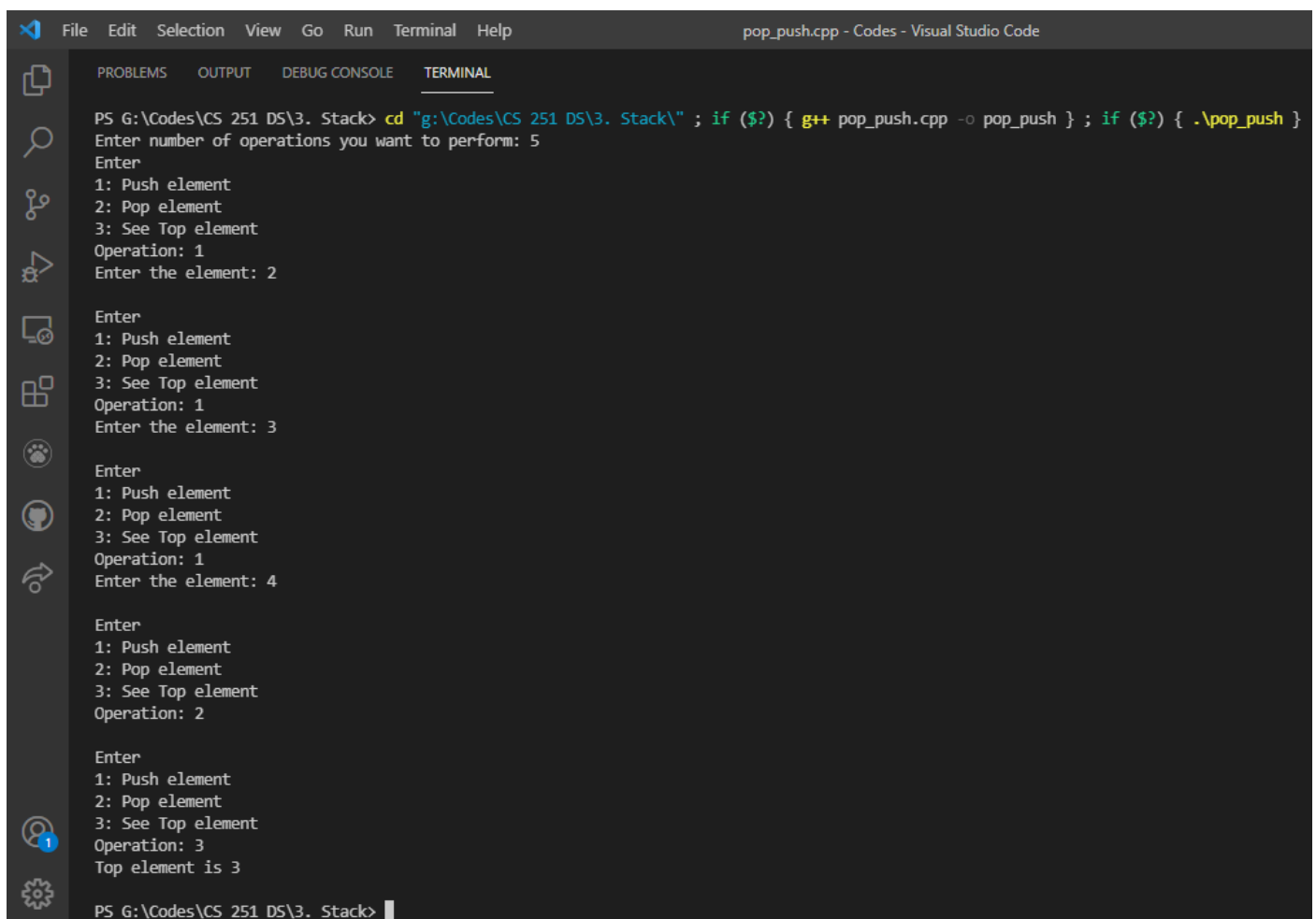
    int Top_Element(){
        if(top==--1){
            cout<<"Stack is empty"<<endl;
            return -1;
        }
        return arr[top];
    }
};

int main()
{
    stack stak;
    int number,operation,element;
    cout<<"Enter number of operations you want to perform: ";
    cin>>number;
    for(int i=0;i<number;++i)
    {
```

```

    cout<<"Enter\n1: Push element\n2: Pop element\n3: See Top element\nOperation: ";
    cin>>operation;
    if(operation == 1)
    {
        cout<<"Enter the element: ";
        cin>>element;
        stak.push(element);
    }
    else if(operation == 2)
        stak.pop();
    else if(operation == 3)
        cout<<"Top element is "<<stak.Top_Element()<<endl;
    else{
        cout<<"Please Enter a valid operation number"<<endl;
        --i;
    }
    cout<<endl;
}
return 0;
}

```



pop_push.cpp - Codes - Visual Studio Code

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

PS G:\Codes\CS 251 DS\3. Stack> cd "g:\Codes\CS 251 DS\3. Stack\" ; if (\$?) { g++ pop_push.cpp -o pop_push } ; if (\$?) { .\pop_push }

Enter number of operations you want to perform: 5

Enter

1: Push element

2: Pop element

3: See Top element

Operation: 1

Enter the element: 2

Enter

1: Push element

2: Pop element

3: See Top element

Operation: 1

Enter the element: 3

Enter

1: Push element

2: Pop element

3: See Top element

Operation: 1

Enter the element: 4

Enter

1: Push element

2: Pop element

3: See Top element

Operation: 2

Enter

1: Push element

2: Pop element

3: See Top element

Operation: 3

Top element is 3

PS G:\Codes\CS 251 DS\3. Stack>

Balanced and Imbalanced Parenthesis

```
//Aneesh Panchal
//2K20/MC/21

#include<iostream>
#include<string>
using namespace std;

#define len 101
class stack{
public:
    char array[len];
    int top=-1;

    void push(char x){
        if(top==len-1){
            cout<<"Stack Overflow"<<endl;
            return;
        }
        else{
            ++top;
            array[top]=x;
        }
    }

    void pop(){
        if(top==--1){
            cout<<"Stack Underflow"<<endl;
            return;
        }
        else{
            array[top]='X';
            --top;
        }
    }

    char Top_Element(){
        if(top==--1){
            cout<<"Stack is empty"<<endl;
            return -1;
        }
        return array[top];
    }

    bool empty(){
        return top==--1;
    }
};

bool isvalid(string paranthesis){
    int length = paranthesis.length();
    stack stak;
```

```

for (int i=0;i<length;++i){
    if(paranthesis[i]=='{' or paranthesis[i]=='[' or paranthesis[i]=='(')
        stak.push(paranthesis[i]);
    else if(paranthesis[i]==')')
        if(stak.Top_Element()=='(')
            stak.pop();
        else
            return false;
    else if(paranthesis[i]==']')
        if(stak.Top_Element()=='[')
            stak.pop();
        else
            return false;
    else if(paranthesis[i]=='}')
        if(stak.Top_Element()=='{')
            stak.pop();
        else
            return false;
}
if(!stak.empty())
    return false;
return true;
}

int main(){
    string paranthesis;
    cout<<"Enter the paranthesis string"<<endl;
    getline(cin,paranthesis);
    cout<<endl;
    if(paranthesis.length()>=50)
    {
        cout<<"Please shorten the length of the string"<<endl;
        return 0;
    }
    else{
        if(IsValid(paranthesis))
            cout<<"Balanced Paranthesis"<<endl<<endl;
        else
            cout<<"Imbalanced Paranthesis"<<endl<<endl;
    }
    return 0;
}

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell

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Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS G:\Codes> cd "g:\Codes\CS 251 DS\3. Stack" ; if (\$?) { g++ parenthesis.cpp -o parenthesis } ; if (\$?) { .\parenthesis }

Enter the parenthesis string

{{{{[]}}}}

Imbalanced Paranthesis

PS G:\Codes\CS 251 DS\3. Stack> cd "g:\Codes\CS 251 DS\3. Stack" ; if (\$?) { g++ parenthesis.cpp -o parenthesis } ; if (\$?) { .\parenthesis }

Enter the parenthesis string

{}{}{}

Stack is empty

Imbalanced Paranthesis

PS G:\Codes\CS 251 DS\3. Stack> cd "g:\Codes\CS 251 DS\3. Stack" ; if (\$?) { g++ parenthesis.cpp -o parenthesis } ; if (\$?) { .\parenthesis }

Enter the parenthesis string

{}{}{}{}

Imbalanced Paranthesis

PS G:\Codes\CS 251 DS\3. Stack> cd "g:\Codes\CS 251 DS\3. Stack" ; if (\$?) { g++ parenthesis.cpp -o parenthesis } ; if (\$?) { .\parenthesis }

Enter the parenthesis string

[[[]]]

Imbalanced Paranthesis

PS G:\Codes\CS 251 DS\3. Stack> cd "g:\Codes\CS 251 DS\3. Stack" ; if (\$?) { g++ parenthesis.cpp -o parenthesis } ; if (\$?) { .\parenthesis }

Enter the parenthesis string

()([[]]){}{}

Imbalanced Paranthesis

PS G:\Codes\CS 251 DS\3. Stack> |