

Stack (Insertion, Deletion)

Lab Session 01: Stack using array

2. //Write C++ program to implement Stack using array.

```
#include <iostream>

using namespace std;

int stack[100], n=100, top=-1;

void push(int val) {
    if(top>=n-1)
        cout<<"Stack Overflow"<<endl;
    else {
        top++;
        stack[top]=val;
    }
}

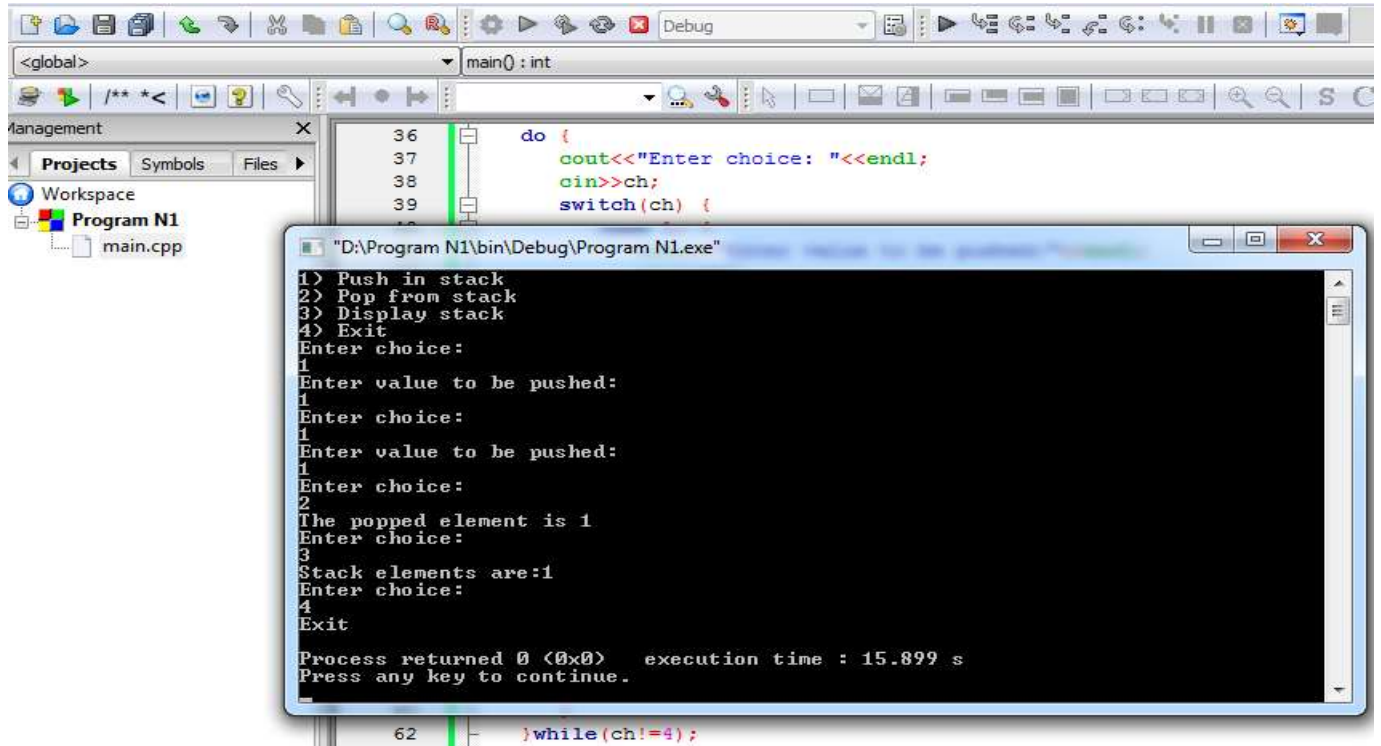
void pop() {
    if(top<=-1)
        cout<<"Stack Underflow"<<endl;
    else {
        cout<<"The popped element is "<< stack[top] <<endl;
        top--;
    }
}

void display() {
```

```
if(top>=0) {
    cout<<"Stack elements are:";
    for(int i=top; i>=0; i--)
        cout<<stack[i]<<" ";
    cout<<endl;
} else
    cout<<"Stack is empty";
}

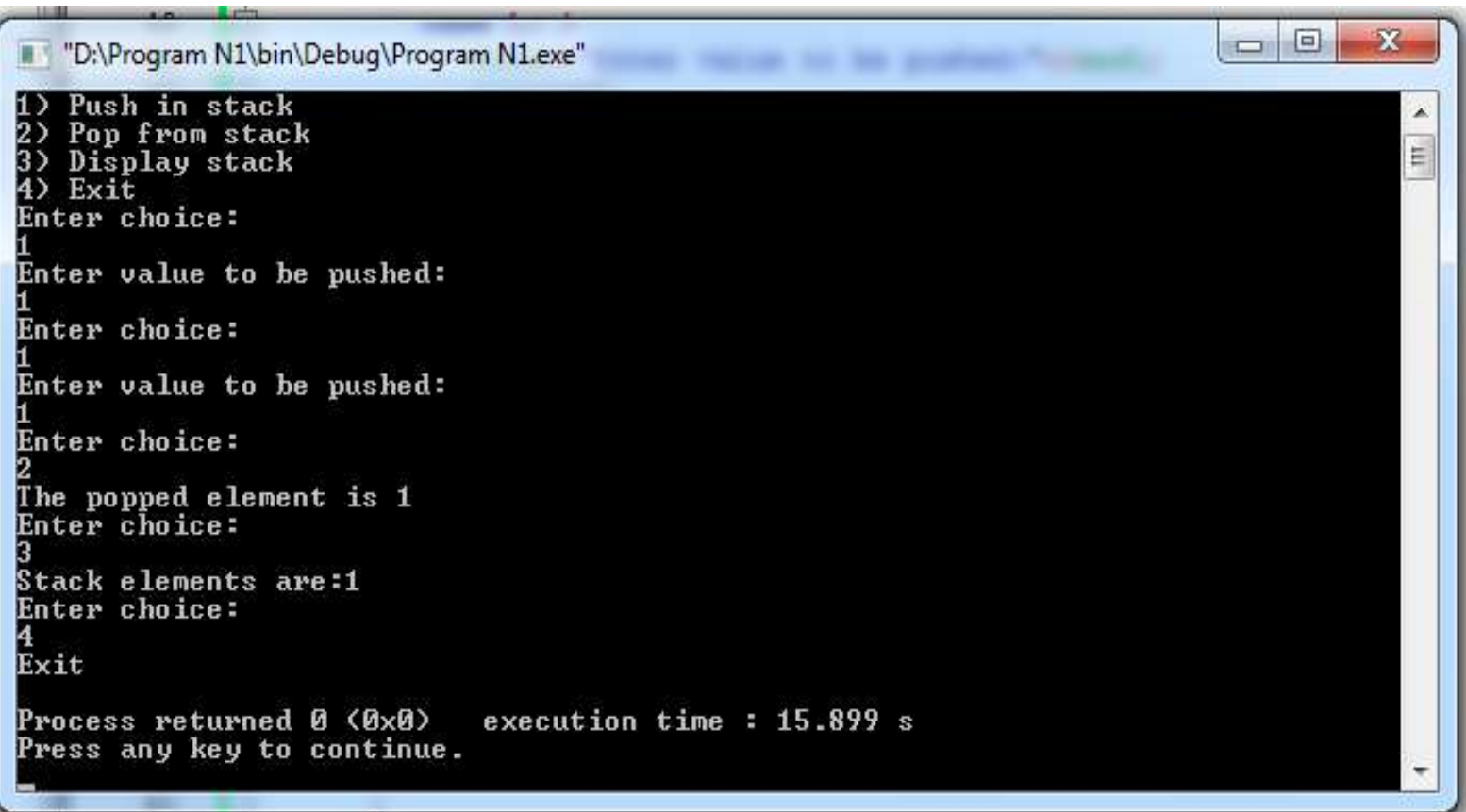
int main() {
    int ch, val;
    cout<<"1) Push in stack"<<endl;
    cout<<"2) Pop from stack"<<endl;
    cout<<"3) Display stack"<<endl;
    cout<<"4) Exit"<<endl;
    do {
        cout<<"Enter choice: "<<endl;
        cin>>ch;
        switch(ch) {
            case 1: {
                cout<<"Enter value to be pushed:"<<endl;
                cin>>val;
                push(val);
                break;
            }
        }
    } while(ch != 4);
}
```

```
    }  
    case 2: {  
        pop();  
        break;  
    }  
    case 3: {  
        display();  
        break;  
    }  
    case 4: {  
        cout<<"Exit"<<endl;  
        break;  
    }  
    default: {  
        cout<<"Invalid Choice"<<endl;  
    }  
}  
}while(ch!=4);  
return 0;  
}
```

Outputs:

The screenshot shows a C++ IDE with a project named "Program N1". The source code in main.cpp includes a menu with options: 1) Push in stack, 2) Pop from stack, 3) Display stack, and 4) Exit. The program prompts the user to enter a choice and a value to be pushed. The console output shows the user entering '1' for the choice and '1' for the value, then entering '2' to pop the element, which results in the message "The popped element is 1". Finally, the user enters '3' to display the stack, showing "Stack elements are:1". The program then prompts for another choice, where '4' is entered to exit. The console also displays "Process returned 0 (0x0) execution time : 15.899 s" and "Press any key to continue."

```
36 do {  
37     cout<<"Enter choice: "<<endl;  
38     cin>>ch;  
39     switch(ch) {  
62         }while(ch!=4);
```



This screenshot shows the same C++ IDE and console output as the previous image. The console window displays the same sequence of user inputs and program outputs: entering '1' for the choice and '1' for the value, popping the element to get "The popped element is 1", displaying the stack as "Stack elements are:1", and finally exiting by entering '4'. The console also shows "Process returned 0 (0x0) execution time : 15.899 s" and "Press any key to continue."

```
1) Push in stack  
2) Pop from stack  
3) Display stack  
4) Exit  
Enter choice:  
1  
Enter value to be pushed:  
1  
Enter choice:  
1  
Enter value to be pushed:  
1  
Enter choice:  
2  
The popped element is 1  
Enter choice:  
3  
Stack elements are:1  
Enter choice:  
4  
Exit  
Process returned 0 (0x0) execution time : 15.899 s  
Press any key to continue.
```