

Activity No. <4.2>

<Hands-on Activity 4.2 Stacks>

Course Code: CPE010

Program: Computer Engineering

Course Title: Data Structures and Algorithms

Date Performed: 8/28/25

Section: CPE21S4

Date Submitted: 8/28/25

Name(s): Alcantara, Jason P.

Instructor: Engr. Jimlord Quejado

6. Output:

```
C:\Users\TIPQC\Docum X + - □ X
SUCCEFULLY PUSHED1
SUCCEFULLY PUSHED2
SUCCEFULLY PUSHED3
SUCCEFULLY PUSHED4
SUCCEFULLY PUSHED5
SUCCEFULLY PUSHED6
SUCCEFULLY PUSHED7
SUCCEFULLY PUSHED8
SUCCEFULLY PUSHED9
SUCCEFULLY PUSHED10
Testing isEmpty: /n0

Testing Push: /nSTACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!
STACK OVERFLOW!

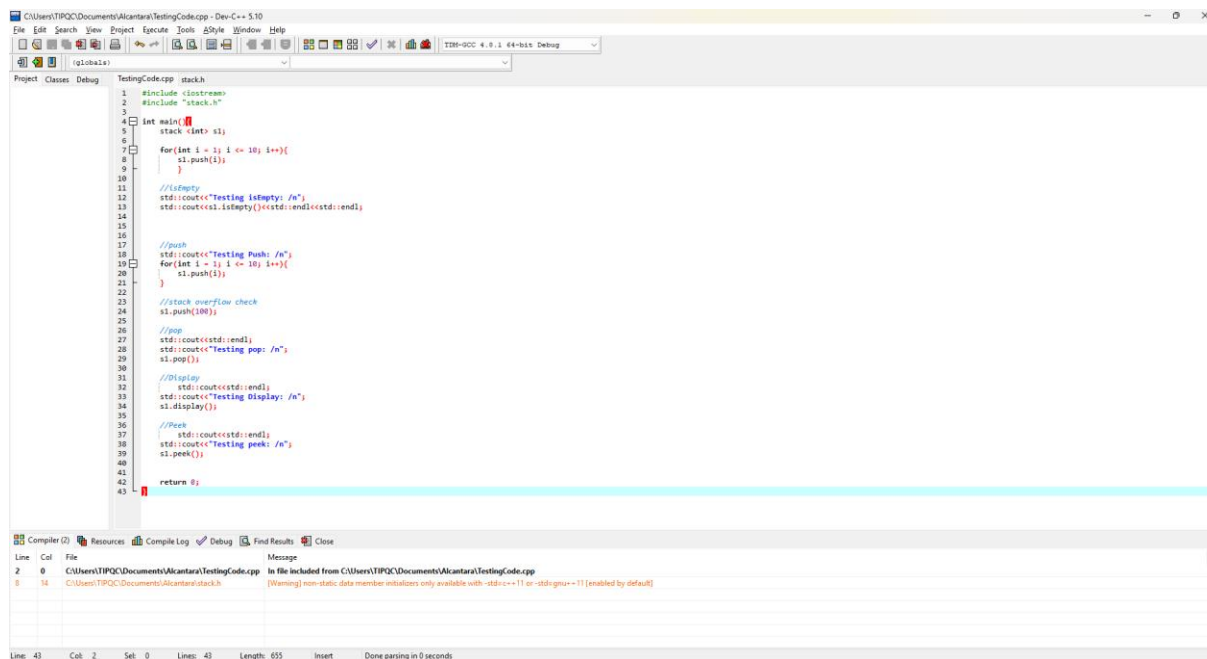
Testing pop: /nSUCCEFULLY POP10

Testing Display: /n9
8
7
6
5
4
3
2
1

Testing peek: /nThe value of the top is:9

-----
Process exited after 0.01407 seconds with return value 0
Press any key to continue . . . |
```

Syntax:



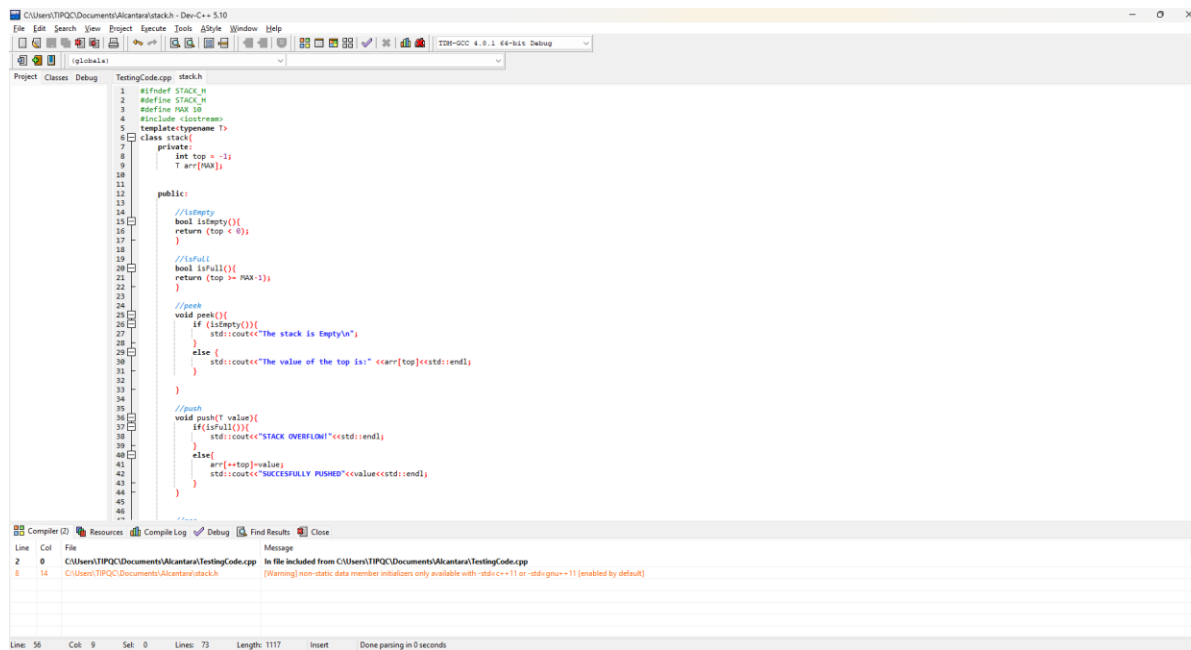
```
1 #include <iostream>
2 #include "stack.h"
3
4 int main()
5 {
6     stack<int> s1;
7
8     for(int i = 1; i <= 10; i++){
9         s1.push(i);
10    }
11
12    //isEmpty
13    std::cout<<"Testing isEmpty: /n";
14    std::cout<<s1.isEmpty()<<std::endl<<endl;
15
16    //push
17    std::cout<<"Testing Push: /n";
18    for(int i = 1; i <= 10; i++){
19        s1.push(i);
20    }
21
22    //stack overflow check
23    s1.push(100);
24
25    //pop
26    std::cout<<std::endl;
27    std::cout<<"Testing pop: /n";
28    s1.pop();
29
30    //Display
31    std::cout<<std::endl;
32    std::cout<<"Testing Display: /n";
33    s1.display();
34
35    //Peek
36    std::cout<<std::endl;
37    std::cout<<"Testing peek: /n";
38    s1.peak();
39
40    return 0;
41 }
```

Compiler (2) Resources Compile Log Debug Find Results Close

Line	Col	File	Message
2	0	C:\Users\TIPQC\Documents\Alcantara\TestingCode.cpp	In file included from C:\Users\TIPQC\Documents\Alcantara\TestingCode.cpp
8	14	C:\Users\TIPQC\Documents\Alcantara\stack.h	[Warning] non-static data member initializers only available with -std=c++11 or -std=gnu++11 [enabled by default]

Line: 43 Col: 2 Sel: 0 Lines: 43 Length: 655 Insert Done parsing in 0 seconds

Header File:



```
1 #ifndef STACK_H
2 #define STACK_H
3 #define MAX 10
4 #include <iostream>
5 template<typename T>
6 class stack{
7 private:
8     int top = -1;
9     T arr[MAX];
10
11 public:
12
13     //isEmpty
14     bool isEmpty(){
15         return (top < 0);
16     }
17
18     //isFull
19     bool isFull(){
20         return (top >= MAX-1);
21     }
22
23     //peek
24     void peek(){
25         if (isEmpty()){
26             std::cout<<"The stack is Empty/n";
27         }
28         else {
29             std::cout<<"The value of the top is:" <<arr[top]<<std::endl;
30         }
31     }
32
33     //push
34     void push(T value){
35         if(isFull()){
36             std::cout<<"STACK OVERFLOW!"<<std::endl;
37         }
38         else{
39             arr[++top]=value;
40             std::cout<<"SUCCESSFULLY PUSHED"<<value<<std::endl;
41         }
42     }
43
44     //pop
45     void pop(){
46         if(!isEmpty()){
47             arr[top--];
48         }
49     }
50
51     //display
52     void display(){
53         if(!isEmpty()){
54             for(int i = top; i >= 0; i--){
55                 std::cout<<arr[i]<<" ";
56             }
57             std::cout<<std::endl;
58         }
59     }
60 }
```

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Line: 56 Col: 9 Sel: 0 Lines: 73 Length: 1117 Insert Done parsing in 0 seconds

```
46
47
48 //pop
49 void pop(){
50     if (isEmpty()){
51         std::cout<<"THE STACK IS EMPTY"<<std::endl;
52     }
53     else {
54         std::cout<<"SUCCESSFULLY POP" <<arr[top--]<<std::endl;
55     }
56
57 //display
58 void display(){
59     if (isEmpty()){
60         std::cout<<"THE STACK IS EMPTY"<<std::endl;
61     }
62     else {
63         for(int i = top; i >= 0; i--){
64             std::cout << arr[i] <<std::endl;
65         }
66     }
67 }
68
69 }
70
71 #endif
72
73
```

Compiler (2) Resources Compile Log Debug Find Results Close

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Line: 56 Col: 9 Sel: 0 Lines: 73 Length: 1117 Insert Done parsing in 0 seconds

7. Supplementary Activity

8. Conclusion:

In our class activity I learned how to make cpp file more simple and header files, so the code is more neat easier to understand. And we discussed all important use of all elements when doing stacks for example pop, push, isEmpty, Display and peek so we will be more prepared in our practical exam. But I still need to study more about it because I still get confused.

9. Assessment Rubric