

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
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6. Output:

```
C:\Users\TIPQC\Docum 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!
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:

The screenshot shows the Dev-C++ IDE interface with the file `TestingCode.cpp` open. The code implements a stack using an array and pointer. It includes functions for push, pop, peek, and isEmpty operations, along with a display function. The code is annotated with comments explaining its purpose.

```
1 #include <iostream>
2 #include "stack.h"
3
4 int main(){
5     stack s1;
6
7     for(int i = 1; i <= 10; i++){
8         s1.push(i);
9     }
10
11    //isEmpty
12    std::cout<<"Testing isEmpty: /n";
13    std::cout<<s1.isEmpty()<<std::endl<<std::endl;
14
15    //push
16    std::cout<<"Testing Push: /n";
17    for(int i = 1; i <= 10; i++){
18        s1.push(i);
19    }
20
21    //stack overflow check
22    s1.push(100);
23
24    //pop
25    std::cout<<std::endl;
26    std::cout<<"Testing pop: /n";
27    s1.pop();
28
29    //Display
30    std::cout<<std::endl;
31    std::cout<<"Testing Display: /n";
32    s1.display();
33
34    //Peek
35    std::cout<<std::endl;
36    std::cout<<"Testing peek: /n";
37    s1.peek();
38
39
40
41
42    return 0;
43 }
```

Compiler (2) Resources (1) Compiler Log (1) Debug (1) Find Results (1) Close

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

2 14 C:\Users\TIPQC\Documents\Alcantara\stack.h

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

Header File:

The screenshot shows the Dev-C++ IDE interface with the header file `stack.h` open. The code defines a stack class using a private array and pointer. It includes methods for isEmpty, isFull, peek, push, and pop operations, along with a display method. The code is annotated with comments explaining its purpose.

```
1 #ifndef STACK_H
2 #define STACK_H
3 #include <iostream>
4 #include <limits.h>
5
6 template<typename T>
7 class stack{
8     private:
9         int top = -1;
10        T arr[100];
11
12    public:
13
14        //IsEmpty
15        bool isEmpty(){
16            return (top < 0);
17        }
18
19        //IsFull
20        bool isFull(){
21            return (top >= MAX-1);
22        }
23
24        //peek
25        void peek(){
26            if (!isEmpty()){
27                std::cout<<"The stack is Empty/n";
28            }
29            else {
30                std::cout<<"The value of the top is: "<<arr[top]<<std::endl;
31            }
32        }
33
34
35        //push
36        void push(T value){
37            if (!isFull()){
38                std::cout<<"STACK OVERFLOW!<<std::endl;
39            }
40            else{
41                arr[++top]=value;
42                std::cout<<"SUCCEFULLY PUSHED"<<value<<std::endl;
43            }
44        }
45
46    };
47 }
```

Compiler (2) Resources (1) Compiler Log (1) Debug (1) Find Results (1) Close

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

8 14 C:\Users\TIPQC\Documents\Alcantara\stack.h

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

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

Compiler (2) Resources Compile Log Debug Find Results Close

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

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 -fdrcc++11 or -fdrgnu+11 [enabled by default]

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