

**Activity No. <4.2 Stacks>**

**<Stacks string elements>**

**Course Code:** CPE010

**Program:** Computer Engineering

**Course Title:** Data Structures and Algorithms

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**6. Output**

```
1  #ifndef STACK_H
2  #define STACK_H
3  #define MAX 10
4  #include <iostream>
5
6  template<typename T>
7  class stack{
8      private:
9          int top = -1;
10         T arr[MAX];
11
12     public:
13     bool isEmpty(){
14         return (top == -1);
15     }
16
17     bool isFull(){
18         return (top >= MAX-1);
19     }
20
21     void peek(){
22         if(isEmpty()){
23             std::cout << "the stack is empty\n";
24         }
25     else{
26         std::cout << "the value of the stack is: " << arr [top] << std::endl;
27     }
28 }
29
30     void push(T value){
31         if (isFull()){
32             std::cout << "stack overflow!!" << std::endl;
33         }
34     else{
35         arr[++top]=value;
36         std::cout << "successfully pushed" << top << std::endl;
37     }
38
39     void pop(){
40         if (isEmpty()){
41             std::cout << "The stack is empty";
```

```
        }
    }
void pop(){
    if (isEmpty()){
        std::cout<<"The stack is empty";
    }
    else{
        std::cout<<"successfully popped" <<arr[top--]<<std::endl;
    }
}
void display(){
    if (isEmpty()){
        std::cout <<"the stack is empty";
    }
    else{
        for(int i =0; i <= MAX; i--){
            std::cout << arr[i] << std::endl;
        }
    }
}
#endif
```

main.cpp [\*] stack.h [\*] Untitled6

```
1 #include <iostream>
2 #include "stack.h"
3
4 int main(){
5     stack <int> s1;
6     stack<std::string> s2;
7     s1.peek();
8     s1.push(10);
9     s1.push(9);
10    s1.push(8);
11    s1.push(7);
12    s1.push(6);
13    s1.push(5);
14    s1.push(4);
15    s1.push(3);
16    s1.push(2);
17    s1.pop();
18    s1.push(1);
19    s1.peek();
20    s1.pop();
21    s1.display();
22    return 0;
23 }
```

```
the value of the stack is: -1
successfully pushed10
successfully pushed9
successfully pushed8
successfully pushed7
successfully pushed6
successfully pushed5
successfully pushed4
successfully pushed3
successfully pushed2
successfully pushed1
the stack is empty
The stack is empty
```

---

```
Process exited after 0.01013 seconds with return value 0
Press any key to continue . . . |
```

```
import b C:\Users\TIPQC\Documents\c + v
the value of the stack is: -1
successfully pushedKasm
successfully pushed10
successfully pushed9
successfully pushed8
successfully pushed7
successfully pushed6
successfully pushed5
successfully pushed4
successfully pushed3
successfully pushed2
successfully pushed1
the value of the stack is: -1
-----
Process exited after 0.01649 seconds with return value 0
Press any key to continue . . .
```

## 7. Supplementary Activity

## 8. Conclusion

- i learn in this activity on how stack work in cpp the way it manipulates the numbers using its element such as pop, display, push and others. this enhances my programming skill by giving awareness about the stack.

## 9. Assessment Rubric