

Q1 Implement stack operations (push, pop, peek) using arrays

```
1. #include<iostream>
2. using namespace std;
3. class stack{
4.     private:
5.         int top ;
6.         int arr[10];
7.     public :
8.         stack(){
9.             top =-1;
10.        }
11.        void push(int value){
12.            if(top==9){
13.                cout<<"Overflow";
14.            }
15.            else{
16.                arr[++top]=value;
17.                cout << value << " pushed" << endl;
18.            }
19.        }
20.        void pop(){
21.            if(top== -1){
22.                cout<<"underflow";
23.            }
24.            else{
25.                cout<<arr[top--]<<" popped"<<endl;
26.            }
27.        }
28.        void peek(){
29.            if(top== -1){
30.                cout<<"Stack is empty" << endl;
31.            }
32.            else{
33.                cout<<arr[top]<<" top element"<<endl;
34.            }
35.        }
36. };
37. int main(){
38.     stack s;
39.     s.push(3);
```

```

40.     s.pop();
41.     s.peak();
42.     cout << "Ridhi Sood" << endl;
43.     cout << "102305055 " << endl;
44. }

```

```

C:\Users\IOT Lab 2\Desktop\IOT Lab 2\Code\Stack\Stack.cpp
3 pushed
0 popped
Stack is empty
Ridhi Sood
102305055

-----
Process exited after 0.06741 seconds with return value 0
Press any key to continue . . . |

```

Q2. Write a program to evaluate a postfix expression using a stack

```

1. #include <iostream>
2. #include <stack>
3. using namespace std;
4.
5. int evaluatePostfix(string exp) {
6.     stack<int> s;
7.
8.     for (char c : exp) {
9.         if (isdigit(c)) {
10.            s.push(c - '0');
11.        } else {
12.            int b = s.top(); s.pop();
13.            int a = s.top(); s.pop();
14.            if (c == '+') s.push(a + b);
15.            else if (c == '-') s.push(a - b);
16.            else if (c == '*') s.push(a * b);
17.            else if (c == '/') s.push(a / b);
18.        }

```

```
19. }
20. return s.top();
21. }
22.
23. int main() {
24.     string postfix = "231*+9-";
25.     cout << "Result: " << evaluatePostfix(postfix) << endl;
26.     return 0;
27. }
```

Output

```
^ Result: -4
  Ridhi Sood
  102305055
```

```
=== Code Execution Successful ===|
```