**PSG COLLEGE OF TECHNOLOGY**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**I MCA**

**23MX16 DATA STRUCTURES LABORATORY**

**Problem Sheet -6**

**Date: 09-10-2023**

1. Given a stack of N numbers and an array of numbers. Count the numbers of pop operations required to get each element of the array. Once an element is popped then its not pushed back again. Assume that the all the elements from the array present inside the stack initially.

Input: N = 5  
Stack: 6 4 3 2 1  
Array: 6 3 4 1 2  
Output: 1 2 0 2 0

1. Given a stack of integers. The task is to design a special stack such that maximum element can be found in O(1) time and O(1) extra space.

**Examples**:

Given Stack : 2 5 1 64 --> Maximum

So Output must be 64 when getMax() is called.

1. Given an expression string exp , write a program to examine whether the pairs and the orders of “{“ , ”}” , ”(“ , ”)” , ”[“ , ”]” are correct in exp. For example, the program should print true for exp = “[()]{}{[()()]()}” and false for exp = “[(])”
2. Write C Program which will Evaluate entered Postfix Expression by user using Stack

**OUTPUT:**

Enter the expression :: 245+\*

The result of expression 245+\* = 18

1. Given a stack, sort it using recursion. Use of any loop constructs like while, for..etc is not allowed. Use the following ADT functions on Stack S:

is\_empty(S) : Tests whether stack is empty or not.

push(S) : Adds new element to the stack.

pop(S) : Removes top element from the stack.

top(S) : Returns value of the top element.