

## **Lab Assignment 4**

### **Stacks**

1. Develop a menu driven program demonstrating the following operations on a Stack using array:  
(i) push(), (ii) pop(), (iii) isEmpty(), (iv) isFull(), (v) display(), and (vi) peek().
2. Given a string, reverse it using STACK. For example “DataStructure” should be output as “erutcurtSataD.”
3. Write a program that checks if an expression has balanced parentheses.
4. Write a program to convert an Infix expression into a Postfix expression.
5. Write a program for the evaluation of a Postfix expression.

#### **Additional Questions:**

- Given an array A, find the nearest smaller element for every element A[i] in the array such that the element has an index smaller than i.  
<https://www.interviewbit.com/problems/nearest-smaller-element/>
- Design a stack that supports getMin() in O(1) time and O(1) extra space.  
<https://www.geeksforgeeks.org/design-a-stack-that-supports-getmin-in-o1-time-and-o1-extra-space/>
- <https://www.codechef.com/problems/BEX>