# Data Structures and Algorithms Lab (CSE217L) Lab 5 Stacks and Queues

**Objective:** The objective of this lab is to cover the implementation of Stacks and Queues, it variants using Arrays and Linked Lists. The Lab Assignment might appear to be a lengthy one but it is expected that the initial part of the Assignment to be done well in advance before coming to the lab. You may definitely clarify your doubts (if any) which you have while completing the initial part during the lab sessions.

## **Problem Statement I:**

Develop a menu driven program demonstrating the following operations on a Stack:

push(), pop(), isEmpty(), isFull(), display(), and peek().

Note: You have to do it using arrays and linked list both

## **Problem Statement II:**

Given a String, Reverse it using STACK. For example "data structure" should be output as "erutcurtsatad."

### **Problem Statement III:**

Write a program that checks if an expression has balanced parentheses.

### **Problem Statement IV:**

Develop a menu driven program demonstrating the following operations on a Queue:

isEmpty() // to return true if the queue is empty

front() // to return the first element in the queue c.

rear() // to return the last element in the queue

enqueue() //to insert element at the back.

dequeue() //to remove the element at the front list

display() // to print the elements in the queue

Note: You have to do it using arrays and linked list both