Data Structures and Algorithms
MC 124
Lab 8
May 25, 2022

Q.1 Write the code for the following problems through Recursion:
   a. Reverse the linked list through the recursion.
   b. Find Fibonacci series of length n
   c. Count the sum of the digits of a given number

Q.2 Implement a stack using queues (only 2 queues). The implemented stack should support all the functions of a normal stack (push, top, pop, and empty).

Q.3 Write function(s) to multiply each data of the stack with **X** and store the elements in a linked list (insert at head) as shown in figures below.
   Input Stack:

   Input X=10

   Output Linked List:

Q.4 For any mathematical equation to run successfully, the parenthesis plays a vital role in its solution. For long equations, there are the chances of the misplaced brackets or missing brackets. Being a futuristic potential engineer, design a parenthesis balance checking program.
   For eg.: [(A+B)-(C+D)} → Unbalanced
            [A+B(C+D(E+G)] → Unbalanced
            [A+{B+(C+D)+E}+F] → Balanced

Q.5 Accept the evaluation formula string from user and evaluate the formula using stack.
   For eg.: Input: (1+(2*3)-5)
            Output: 2
   Hint: You may use infix or postfix expression for the solution