Home Assignment 2

1. Create a **Stack** class. The Stack will be implemented using **Linked List**. The class will have the following functions:
   i) int pop() : Pops and returns the top element of the stack, the element is removed from the stack
   ii) void push(int elem) : Insert the given element inside the stack
   iii) int isEmpty() : Return 1 if the Stack is empty, return 0 if the Stack is not empty
   iv) int peek() : Return the top element without removing it from the Stack
   v) void display() : Print all the elements of the Stack
   vi) void sort() :Add a function to sort the stack in ascending order (with biggest items on top) using only push, pop, and peek operations. (5*3+5=20 Marks)s
2. Create a **CircularQueue** class. This class will be implemented using **Arrays.** This class will have the same functions as the normal queue class, with a slight change. In the normal queue implementation, we only incremented the front pointer whenever an element was dequeued. This left some free empty spaces in the array which we were unable to use. Your implementation of the CircularQueue will use those empty spaces to add more elements inside the queue.
   i) Use this **CircularQueue** class to find the first non-repeating character in a string using a queue. (5+5= 10 marks)