

National Institute of Technology Silchar

Semester: 3rd. Branch: CSE

Data Structures Lab Assignment 5

Date: 14/09/2018

Submission due: 21/09/2018

1. Implement the routines empty, push, pop, and popandtest for a Stack using the

(a) linked list

(b) doubly linked list (

c) circular linked list

2. Implement the routines empty, insert, and remove of a Queue using the

(a) array

(b) linked list

(c) doubly linked list

(d) circular linked list

3. Implement the routines empty, pqinsert, and pqmindelete using a dynamic storage implementation of a linked priority queue.

4. A group of people stand in a circle and each chooses a positive integer. One of their names and a positive integer n are chosen. Starting with the person whose name is chosen, they count around the circle clockwise and eliminate the n th person. The positive integer that the person chose is then used to continue the count. Each time that a person is eliminated, the number he or she chose is used to determine the next person to be eliminated. For example, suppose that the five people are A, B, C, D, and E and that they chose integers 3, 4, 6, 2, and 7, respectively, and that the integer 2 is initially chosen. Then if we start from A then the order in which people are eliminated from the circle is B, A, E, C, leaving D as the last one in the circle. Write a C program that reads a group of input lines. Each input line except the first and the last contains a name and a positive integer chosen by the person. The order of the names in the input data is the clockwise ordering of the names in the circle, and the count is to start with the first name in the input. The first input line contains the number of people in the circle. The last input line contains only a single positive integer representing the initial count. The program prints the order in which the people are eliminated from the circle.