Data structures and Algorithms LAB – BSDSF21

(Morning and Afternoon)

Lab 08 – 07-03-2023

Task 1: Create a doubly linked list class with only header nodes as its data members and its driver/tester main code to store the sorted list of objects names and yours assigned lucky numbers for your at least 10 best friends. The class contains constructor, add, remove based on lucky numbers, search based of friend's name. Also, write __len__ member function.

Task 2: Through custom iterator classes, make the above linked list class, an iterarble class. Test the functionality of the iterators.

Task 3: Using the concept of simple singly circular linked list, solve the Josephus Problem as stated below.

There are N people standing in a circle waiting to be executed. The counting out begins at some point in the circle and proceeds around the circle in a fixed direction. In each step, a certain number of people are skipped and the next person is executed. The elimination proceeds around the circle (which is becoming smaller and smaller as the executed people are removed), until only the last person remains, who is given freedom.

Given the total number of persons N and a number k which indicates that k-1 persons are skipped and the kth person is killed in a circle. The task is to choose the person in the initial circle that survives.

Note: better to use only head and data member of list and write minimum required function in the class.

********* The end *********