**CSE 211 – Data Structures**

**Fall 2022**

**Lab Assignment 3**

**Q1)** Complete the MyQueue class given to you. It should store ***int*** type of data. All data in the queue class should be stored in a genDLList instance (genDLList class will be given to you). Your queue class should also have a size variable, which tracks the size of the queue. Implement the following ***member*** functions:

* ***void enqueue(int data) -*** Adds an element into the queue (It needs to add the tail of the doubly linked list).
* ***int dequeue()*** - Deletes the element in the front and returns it.
* ***int peek()*** - Retrieves an element from the queue without removing it.
* ***int getSize()*** - Returns the size of the queue.
* ***bool isEmpty()*** - Returns true if the queue is empty, and false otherwise.

Do not make any changes to the given genDLList class.

**Q2)** In the second part of the lab assignment, you must use the queue class that you completed in the first part. You will design a program that will decide the next customer to be served in a bank. There are two types of customers in the bank, elite and normal. If there are both types of customers waiting for the service. The elite customer will be the next one to be served. If 3 elite customers are served consecutively, then a normal customer will be served. Also if the next normal customer is older than 60 and the elite customer is not, then it will be served before the elite one.

Write a class with the name **Bank,** your class should have two queue data structures, 1 for elite customers and 2 for the normal customers.

**Methods in the class:**

**● void add(int age, int type)**

○ This function adds a customer with her/his age to the elite queue if the type is 1. Otherwise, it will add the customer to the normal queue.

**● int serveNext()**

○ This function will select and serve the next customer and return the age.

○ The queues should be updated if necessary.

**● void serveAll()**

○ This function will print the service order of customers in the bank.

**SUBMISSION RULES:**

* Do your own work to stay away from punishment.
* .zip your all files and upload your .zip file on YULEARN.

**Example output:**

