University of Central Florida

COP 3502C

Lab 4

This week we will practice the code for queue operations with an application scenario.

Problem : Simulate a call center queue system

Simulate a call center queue system. When a customer calls to the call center, it will take the account number and name as input and put the customer in a queue. Consider a queue of customer type with maximum size of 6. Use circular queue for your solution. The customer structure is described below:

```
Typedef struct Customer
{
        int account_no;
        char name[100];
} customer;
```

In an infinite loop, randomly choose between option ‘c’ (call) or ‘s’ (serve). Maybe put ‘c’ and ‘s’ in a character array and use rand() method to choose between array index.

- If ‘c’ is picked, we assume a call is made. If the queue is full, inform the user that the system reached maximum capacity and to call later. If the queue is not full, ask the user to enter the account_no and name. Then put the user into Queue and display the queue with all the user account no and name based on their priority.
- If ‘s’ is picked we assume the front customer will be served. Remove the customer from the queue and display the queue based on their priority.

Press ctrl+c to close your program whenever you want to.

The purpose of the lab is not just to solve the problem, but also enforce you to understand the materials. As part of it, you should solve the above problem based on the circularQueueNoRear.c

In your code, you should implement the following functions:

```
struct queue {
   customer* elements; // you need to declare the customer structure. Use typedef while declaring
   int front;
   int numElements;
   int queueSize;
};
```

```
void init(struct queue* qPtr);
void enqueue(struct queue* qPtr); // all the necessary inputs should be taken inside this function
void dequeue(struct queue* qPtr); //display the served customer
int empty(struct queue* qPtr);
void displayQueue(struct queue* qPtr); // display the queue after any enqueue or dequeue operation
```