**S.Y. B. Tech. Academic Year 2018-19 Trimester: IV**

**Data Structure-I**

**LABORATORY WRITE UP**

###### Experiment Number: 04

### **TITLE: Queue Operations**

**PROBLEM STATEMENT**:

Pizza parlor accepting maximum M orders. Orders are served in first come first served basis. Order once placed cannot be cancelled. Write a C program to simulate the system with simple queue using array. Implement the same system using Circular Queue.

**OBJECTIVE:**

1. To study Queue and its operations
2. To study the importance of queue as a data structure in computer science

**THEORY: *//To be Written by Students***

***// Write theory by elaborating below points***

Write in brief about linear and circular queue.Write different applications of queue (job scheduling by cpu scheduler)

**IMPLEMENTATION:**

* **PLATFORM:** 
  + 64-bit Open source Linux or its derivatives.
  + Open Source C Programming tool like gcc/Eclipse Editor.
* I**INPUT & OUTPUT:**

|  |  |  |
| --- | --- | --- |
| **TEST CASE NO** | **INPUT** | **OUTPUT** |
| TC001 | addQ(10,abc,kothrud)  addQ(11,xyz,karve nagar) | Front =0, rear=1  Order\_no=10 , name=abc,addr=kothrud  Front =0, rear=2  Order\_no=11 , name=xyz,addr=karve nagar |
| TC002 | deleteQ() | Front =1, rear=2  Order served :  Order\_no=11 , name=xyz,addr=karve nagar |
| TC003 | addQ(13,pqr,karve nagar) | Front =1, rear=3  Order\_no=13 , name=pqr,addr=karve nagar |

* **TEST CONDITIONS:-**

1. DeleteQ(), AddQ(1,a,pimpri), AddQ(2,b,karve nagar),delete(),delete(),delete()

* **PSEUDO CODE: *//To be Written by Students***

Write pseudo code for ADDQ,deleteQ,isEmpty and isFull for queue operation.Write pseudo code for Linear as well as Circular queue.

* **TIME COMPLEXITY: *//To be Written by Students***

Write time complexity of above operations

* **CONCLUSION:**

Thus, implemented queue Operations assignment using Array concepts.

* **FAQs *//To be Written by Students***
* What is advantage and disadvantage of linear queue ?
* What is advantage and disadvantage of circular queue ?
* Give various applications of queue .
* **PRACTICE ASSIGNMENTS**

###### Write a program for job sequencing using queue.

1. Write a program to implement Josephus problem. In the Josephus problem from antiquity, *n* people are in dire straits and agree to the following strategy to reduce the population. They arrange themselves in a circle (at positions numbered from 0 to *n*−1) and proceed around the circle, eliminating every mth person until only one person is left. Legend has it that Josephus figured out where to sit to avoid being eliminated.
2. Write a program to implement priority queue operations.Priority queue is a collection of finite number of prioritized items.Priority queues are the queues in which we can insert items or delete items from any position based on some fundamental ordering of the elements.