S.Y. B. Tech. Academic Year 2022_23 Trimester: III

Fundamentals of Data Structures

LABORATORY WRITE UP

Experiment Number: 09

TITLE: Queue Operations

PROBLEM STATEMENT:

Queues are frequently used in computer programming, and a typical example is the creation of a job queue by an operating system. If the operating system does not use priorities, then the jobs are processed in the order they enter the system. Write a program for simulating job queue. Write functions to add job and delete job from 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.

- **TEST CONDITIONS:-**

1. DeleteQ(), AddQ(), AddQ(),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 are the advantages and disadvantages of a linear queue ?
  - What are the advantages and disadvantages of a circular queue ?
  - Give various applications to the queue .

- **PRACTICE ASSIGNMENTS**

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 nth 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 a 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.