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Academic Year 2024_25

S.Y. B. Tech.- AIDS

Semester: 3

AID2PR02A - Data Structures Laboratory Write Up

Experiment Number: 04

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

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.

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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 n th 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.