

Lab session 10: Queue

Objective

The objective of **lab session 10** is

- To know the properties of queue
- To understand the basic operation of queues
- To implement the queue operation
- To know different flavors of queues

Pre-lab Exercise

1. Select the false statement about queues from the following
 - A. It is open at both its ends
 - B. Follows first in first out methodology
 - C. Follows last in last out methodology
 - D. It is abstract data type.
2. Which operation contain the following procedures
 - Step1: Check if the queue is full**
 - Step2: If the queue is full, produce overflow error and exit**
 - Step3: If not full, increment rear pointer and point o the next empty space**
 - Step4: Add data element to the queue location, where the rear is pointing**
 - Step5: Return Success**
 - A. Enqueue Operation
 - B. Dequeue Operation
 - B. Push Operation
 - C. Peek Operation
3. Which pointer(s) of the queue manipulated when dequeue operation executed
 - A. Rear
 - B. Front
 - C. Top
 - D. A and B
4. Write the two basic tasks involved when we access data from the queue?
5. Accessing the content while removing it from the queue is known as _____.
 - A. Enqueue
 - B. Deque
 - C. Dequeue

6. You can have underflow when we implement queue using _____ -
 A. Array B. Linked List C. All
7. Insertion and deletion can occur at either end. This statement describes
 A. Stack B. Queue C. Deque D. B and C
8. Assume, a largest first out priority queue with the following data

23→6→1¹→21→19→29→5→14

Write the item sequence when eight sequential dequeue operation executed.

9. Let Q be queue. Illustrate the following operations (the state of the queue and the sequence of outputs).
- enqueue(Q, 'A')
 - enqueue(Q, 'D')
 - dequeue(Q)
 - enqueue('S')
 - dequeue(Q)
 - dequeue(Q)

In-lab Exercise

10. Create a simple program to create a queue and to queue integer numbers from 1 to 30. Then dequeue and print on screen the content of the queue. Use an array queue.
11. You are developing the help desk application of a company. Request of issues will be stored to be served on a **first-come first-serviced** basis. For each issue, the name of the employee and the description will be stored. Implement the ADT queue on C++ for issues. Use a linked list queue.

Post-lab Exercise

1. What is the drawback of implementing queues using normal array? And how to solve this drawback?
2. It is possible to implement a queue with two stacks? What is the complexity of the **enqueue** and **dequeue** operation?