

Experiment No. 5

Aim: Implementation of Circular Queue using Array

Theory: Circular Queue

A circular queue is similar to a linear queue as it is also based on the FIFO (First In First Out) principle except that the last position is connected to the first position in a circular queue that forms a circle. It is also known as a **Ring Buffer**.

Operations on Circular Queue:

- Front: It is used to get the front element from the Queue.
- Rear: It is used to get the rear element from the Queue.
- enQueue(value): This function is used to insert the new value in the Queue. The new element is always inserted from the rear end.
- deQueue(): This function deletes an element from the Queue. The deletion in a Queue always takes place from the front end.

The steps of enqueue operation are given below:

- First, we will check whether the Queue is full or not.
- Initially the front and rear are set to -1. When we insert the first element in a Queue, front and rear both are set to 0.
- When we insert a new element, the rear gets incremented, i.e., $rear=rear+1$.

The steps of dequeue operation are given below:

- First, we check whether the Queue is empty or not. If the queue is empty, we cannot perform the dequeue operation.
- When the element is deleted, the value of front gets decremented by 1.
- If there is only one element left which is to be deleted, then the front and rear are reset to -1.

Conclusion: (Students write conclusion in your own words. You have to describe what you understood from the experiment and the concept of the experiment. **Conclusion carry 4 marks out of 10**)