Fundamentals of
Data Structures using C

Queue ADT

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Introduction

- A queue is list with the restrictions that insertion is done at one end (rear), whereas deletion is performed at the other end (front).

- It follows First-In-First-Out (FIFO) principle.

- Example: Waiting line in a reservation counter

Operations on Queue

- Enqueue - which inserts an element at the end of the list (called rear).

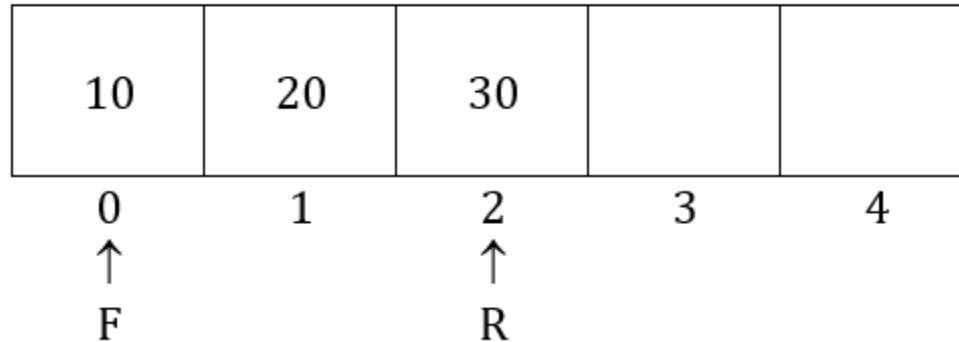- Dequeue - which deletes (and returns) the element at the start of the list (known as front).
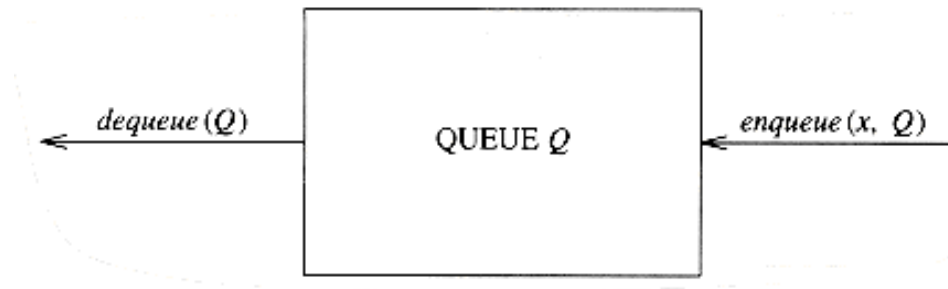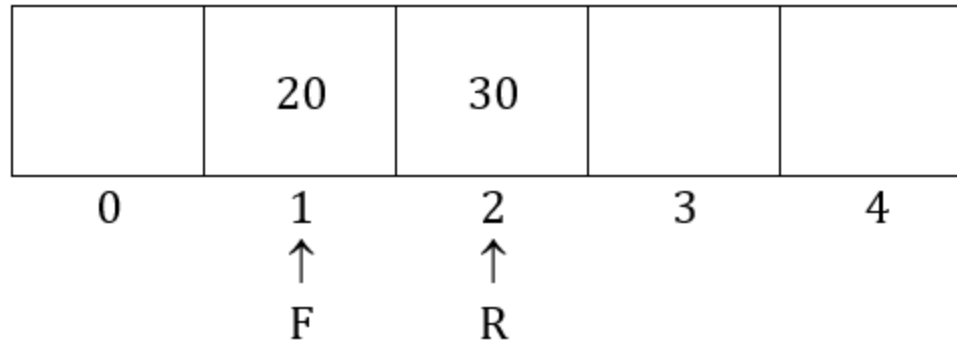
Empty Queue (Initial State)
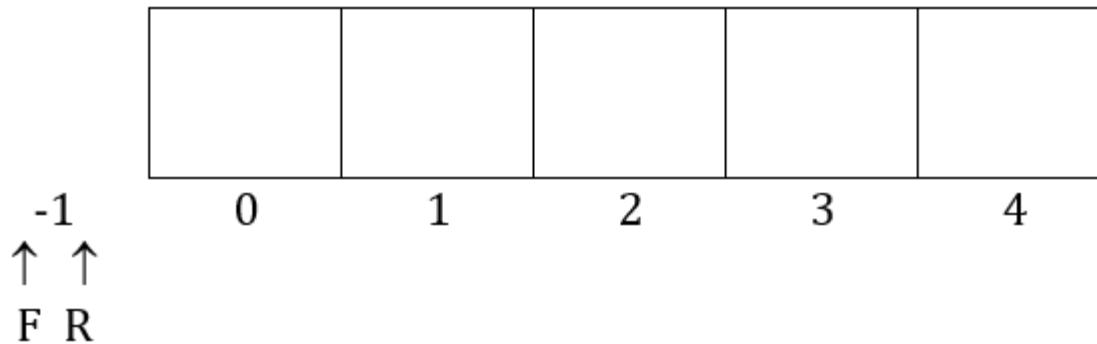
Enqueue

- The process of inserting a new element on to the rear of the queue is called enqueue operation.

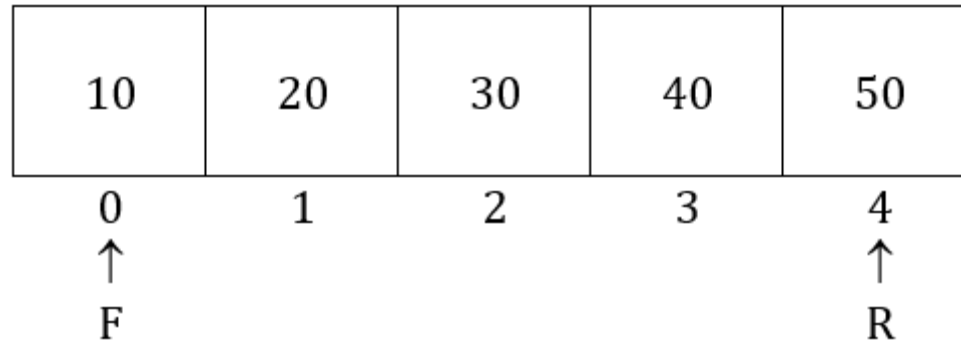- For every enqueue operation the rear pointer is incremented by 1.

Dequeue

- The process of deleting an element from the front of queue is called dequeue operation.

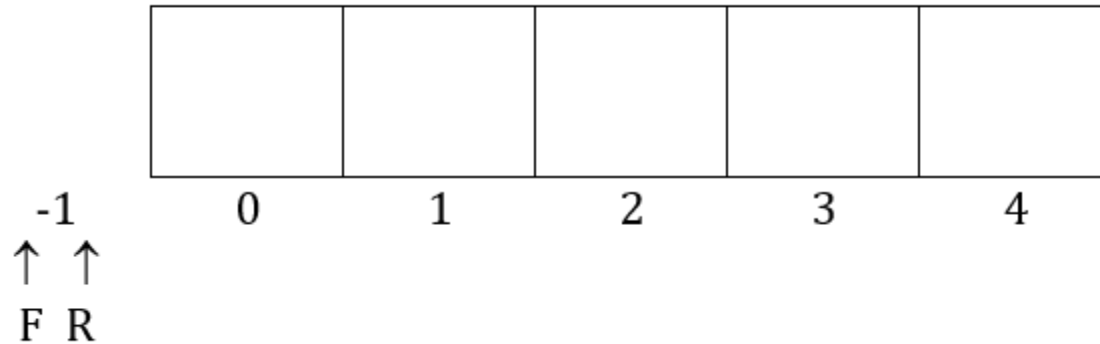- After every dequeue operation the front pointer is incremented by 1.

Overflow

- Attempt to insert an element when the queue is full is said to be overflow.

Underflow

- Attempt to delete an element, when the queue is empty is said to be underflow.

Implementation of Queue

- Array

- Linked List

Applications of Queue

- Batch processing in an operating system

- To implement priority queues

- Mathematics user queuing theory

- Computer networks where the server takes the jobs of the client as per the queue strategy

Queries?

Thank You!