WEB C.A SAD C#

Date No

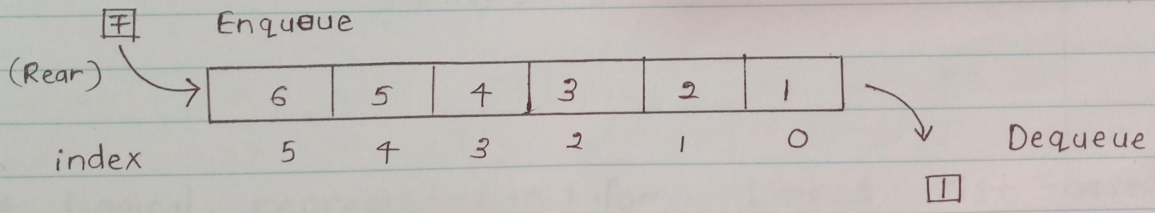
ALGO - Lab Sheet 03

① What is a queue?

Queue is a linear data structure that follows the First - In - First - Out (FIFO) principle. It represents a collection of elements, and the primary operations allowed on a queue are adding an element to the end (enqueue) and removing an element from the front dequeue.

② Draw the logical representation of the Queue?

For an example, if we consider the following linear number sequence.



According to the above representation, Queue follow LIFO method.

③ What are the features of a queue?

Insertion
Deletion
FIFO
Limited Capacity
Empty Queue
Full Queue

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④ What is a FIFO ? Describe.

A FIFO is a data structure that follows the principle of first in, frist out. This means that the first element that is inserted into the FIFO is the first element that is removed.

⑤ There are three instances in which the queue could be empty. Mention those ?

01. The queue is just created.
When a queue is first created, it is empty by default. This means that there are no elements in the queue, and the front and rear pointers are both set to -1

02. All of the elements have been dequeued
If all of the elements in the queue have been dequeued, then the queue will be empty. This means that the front and rear pointers will both be pointing to the same element, which is -1

03. The queue has reached it's maximum capacity
If a queue has reached it's maximum capacity, then it will be unable to accept any more elements. This means that the queue will be empty, even through there may be elements waiting to be enqueued.

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⑥ Give example of queues in real life.

* The checkout line at a wholesale store.
* Queuing up to the dispensing window of a dispensary.
* The Queue for an ATM
* Queue of vehicles at a gas station