Course: ICT2101 Quiz: 2 Total marks: 20

1. Given the following queue (array implementation), containing the numbers 4, 3, 6, 8 and 9.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 4 | 3 | 6 | 8 | 9 |  |  |  |  |  |  |  |

* + 1. What are the values of front and rear?
    2. Given this queue, suppose we call **Dequeue** twice and **Enqueue** once. What would be the new values of front and rear?
    3. How many elements can this queue hold?

1. Suppose a queue is maintained by a circular array QUEUE with N=12 memory cells. Find the number of elements in QUEUE if a) FRONT = 4, REAR=8; b) FRONT = 10, REAR=3; c) FRONT = 5, REAR=6.
2. Suppose a circular queue of capacity (n – 1) elements is implemented with an array of n elements. Assume that the insertion and deletion operation are carried out using REAR and FRONT as array index variables, respectively. Initially, REAR = FRONT = 0. The conditions to detect queue full and queue empty are:
3. Full: (REAR+1) mod n == FRONT, empty: REAR == FRONT
4. Full: (REAR+1) mod n == FRONT, empty: (FRONT+1) mod n == REAR
5. Full: REAR == FRONT, empty: (REAR+1) mod n == FRONT
6. Full: (FRONT+1) mod n == REAR, empty: REAR == FRONT
7. Consider the following operation along with **Enqueue** and **Dequeue** operations on queues, where k is a global parameter.

MultiDequeue(Q){

m = k

while (Q is not empty and m > 0) {

Dequeue(Q)

m = m - 1

}

}

What is the worst case time complexity of a sequence of n **MultiDequeue()** operations on an initially empty queue?