Assignment No 9

Problem Statement:

Consider a scenario for Hospital to cater services to different kinds of patients as Serious (top priority), b) non-serious (medium priority), c) General Checkup (Least priority). Implement the priority queue to cater services to the patients.

THEORY:

What is Priority Queue ?

Priority Queue is an abstract data type that performs operations on data elements per their priority. To understand it better, first analyze the real-life scenario of a priority queue.

A priority Queue is a type of queue that follows the given below properties:

- An item with higher priority will be dequeued before the item with lower priority.

- If two elements present in the priority queue are having the same priority, then they will be served according to the order in which they are present in the queue.

The hospital emergency queue is an ideal real-life example of a priority queue. In this queue of patients, the patient with the most critical situation is the first in a queue, and the patient who doesn't need immediate medical attention will be the last. In this queue, the priority depends on the medical condition of the patients.

he priority queue in data structure resembles the properties of the hospital emergency queue. Thus, it is highly used in sorting algorithms. It behaves similar to a linear queue except for the fact that each element has some priority assigned to it. The priority of elements determines the order of removal in a queue, i.e., the element with higher priority will leave the queue first, whereas the element with the lowest priority at last.

ALGORITHM:

structure for Queue--

Store name of patients in name array

Store priority of patients in Pr array.

Insert Function/Enqueue :

1. Check if queue is full? Display message "Queue is full

2. Else

3. If queue is empty then insert patient name at first position in an array store it's priority in Pr array at first position

4. If queue is not empty then compare priority of new patient with priorities of previous patients in queue .Find correct position 'p' to insert queue.

5. Shift all records from position 'p' to r towards right by one position. Shift respective priorities from Pr array.

6. Insert new record at position 'p'.

7. Increment rear.

Delete Patient details from Queue after patient get treatment:

1.Check if queue is empty display message-" queue is empty"

2. IF queue is not empty then display name of the patient present at front position as Deleted patient.

3.Increment front

Step 2: Front = Front->Next;

Step 3: return Temp

Display Queue:

1. For i= front to rear position

   i)   display name[i]

   ii)   Check priority and display status of patients (Serious ,non serious or general checkup) according to priority in Pr array.

2. Stop

Conclusion: Hence we studied how to use priority queue for implementing hospital scenario.