CSE 110: Assignment 1

Problem

We provide a class **Queue** that provides the functionality of **Queue** data structure. You have to implement the missing methods to make this class work.

Step 1: Understanding Attributes

1. queue: containers-an array of integers
2. capacity: size of *queue*
3. front: index denoting which element to delete next
4. rear: index denoting where the next insertion will be

Step 2: Understanding Constructor

We provide a constructor method with *size* parameter inside which we allocate the memory for array *queue*, set the value of *front* and *rear* to -1 and 0 respectively.

Step 3: Implementing enqueue() method

We need to place the new element in the position pointed to by *rear* and update rear for the next insertion.

Note:

1. Before enqueing you must check whether the queue is full or not. If full, then print "The queue is full"
2. Only when you are enqueing the first element, set the value of $front$ to 0.

Step 4: Implementing dequeue() method

We need to remove an element from the queue pointed to by *front* and update *front* accordingly.

Note:

1. Before dequeing, we check if queue is already empty or not. If empty, then print "The queue is empty"
2. Only when you are dequeing the last element, set the value of $front$ and *rear* to -1

Step 5: Implementing peek() method

We need to return the element at *front* without removing it.

Step 6: Implementing clear() method

We need to reset the $front$ and $rear$ index.

Step 7: Implementing isFull() method

We need to check if the queue is full or not. If full return true, else false.

Step 8: Implementing isEmpty() method

We need to check if the queue is empty or not. If empty return true, else false.

Step 9: Implementing toString() method

We need to print the elements of queue in a **single line**.

Deadline

Deadline is set at 3 July, 2019 6:30 pm.