Data structures 2720 **Due: 10/05/2020 @11:30 PM**

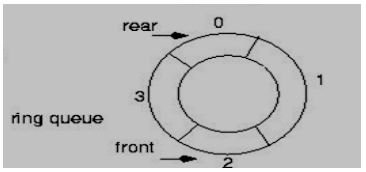
Assignment 1

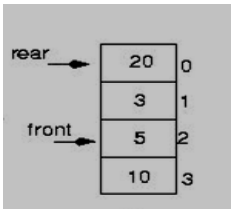
This assignment will enable you to create your own FIFI queue using a dynamic array. Future projects will require you to use this implementation and/or to extend it.

Requirements:

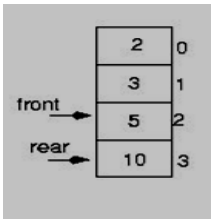
Given the attached header file QueType.h and the test driver QueDr.cpp, implement the ADT queue in a file called " QueType.cpp".

1) Your implementation should conform to function specification. Function specification is included as comments in the file QueType.h.
2) Your implementation should use a dynamic array to store queue elements.
3) The queue is a circular queue (Ring queue), where queue elements wrap around in the array. Items are enqueued initially starting from index zero, when rear reached the last index of the array, new items will be enqueued at index zero again, and so forth, until the queue is full.





a) Items in the queue are [3,20] in that order



b) Items in the queue are [3,2,10] in that order

4) Queue is a FIFO structure; you have to dequeue items in the same order they were enqueued.
5) Do **NOT** use a counter or the length function to check if the queue is full.
6) Do **NOT** use a counter or the length function to check if the queue is empty.
   The constructor should allocate an array that can occupy the number of items specified by the user. For example: if the user instantiates a queue of five items, as in the statement: [QueType<int> Queue(5);] then he/she must be able to save a maximum of 5 items in the queue. If the user did not specify the size of the queue, the queue will hold the default value of items, which is 500 items.
7) Do NOT change the header file QueueType.h. We might test with our original file.
   We will test your program with the test driver QueDr.cpp and our inFile.text.
   Run the test driver with your own test cases. Make sure that the program will give the correct results and will not stop due to any run-time error.
   The input file inFile.txt is attached. The attached outFile.txt contains the expected output when executing the driver program; reading commands from inFile.txt

Submit your assignment1 directory to user csci-2720 on *odin*. (use the following command: submit project1 csci-2720).

The directory should include

1. QueType.cpp
2. QueType.h
3. QueDr.cpp
4. The make file