Labwork 5

Your work should be able to compile and run with the example main file provided. Your work will be evaluated using Visual Studio 2015.

Q1: You are handed a slightly modified version of DoublyLinkedList. In this new class, all functions except the constructor, destructor, and isEmpty are declared private. Therefore you can use the pre-existing functions, but only inside the class. Additionally, a new member variable called priority is added to the DLLNode class.

Your task is to implement two new functions to convert this class into a priority queue. Priority queues store elements in an ordered fashion according to the elements' priorities. Example:

enqueue("John", 5)
enqueue("Michael", 8)
enqueue("Bill", 7)
enqueue("Tom", 2)
enqueue("Jim", 5)

The resulting queue would be:
Michael (8), Bill (7), John (5), Jim(5), Tom (2)

Also notice that first-in-first-out policy is preserved among elements with equal priorities (John and Jim in the above example).

The two functions you need to implement are:

- void enqueue(const T& element, int priority): Adds a new element into the priority queue according to the priority.
- T& dequeue(): Removes the first element of queue and returns it.

Q2: Write a main function in which you declare a PriorityQueue which stores strings, and ask the user for names (single word) and priorities to add to the queue, until the user enters a priority of -1. Print the contents of queue at each step.