COP 3530 Data Structure and Algorithm Analysis
Homework 3

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In this assignment, you are given several classes in the cpp file "DList.cpp". Your task is to complete the implementation of the classes specified as below. You need to submit the following two files:

- A *single* cpp file that contains everything about your source code. It must be compilable and executable. Do not submit things irrelevant (such as .exe).
- A *single* pdf file that describes your methods and analysis.

You can discuss with anyone, but you should **write your own** code and writeup. In the pdf document, you **must** mention/acknowledge all people that you have discussed with. For example, you can say Idea A was from the discussion with Person B. Details are described below.

1 Your Task

You are given a class "Item" that contains one integer value, and two pointers. You are going to build a doubly linked list class DLinkedList. I describe the tasks below.

Task 1: Implement the constructors (default and copy) of DLinkedList. You need to make sure that the copy constructor makes a separate copy of the list.

Task 2: Implement push back, push front, pop back, pop front, get front, get back, display, swap. The functions are pretty self explanatory from their names.

Task 3: Implement Inserts. You should handle "insert an item" and "insert a list".

Task 4: Implement extract min, extract max. They return the pointer to the min/max item in the list. If there is a tie, then choose arbitrarily among the mins/maxes. (Explain your choice in the writeup).

Task 5: Implement classes myQueue and myStack *using* DLinkedList. Do not re-write codes. (This task is pretty easy).

Task 6: Design a test function to test your DLinkedList. You don't need to test your Stack nor Queue, as checking them is easy, assuming your DLinkedList is correct.

Task 7: Write a short report about your implementation of the above tasks.