Programming Assignment #2

List ADT with Linked Lists

CS 3358.751, Summer II 2013
Instructor: Jill Seaman

Due: Wednesday, 7/17/2013 (upload electronic copy by 11:30am)

Problem:

For this assignment you will implement the List ADT from the class demo (List_3358 on the class website) using doubly linked lists. This will make the insert and delete O(1). The class demo is implemented using an array, and the insert and delete are O(n).

Use the following header file: list_3358_LL.h. The header file contains the datatype and member variables necessary for the doubly linked list. Make a separate implementation file (*.cpp) for the member function definitions.

You will have to implement the List ADT and write a good test program (list_test.cpp) to make sure all the functions work properly (The functions are the same as in the class demo. The only differences are the private instance variables, so you should be able to use the same test program for both the class demo and your linked list version--and get the exact same results)

NOTES:

- Read the comments in the *.h files carefully (but they are mostly the same as in the class demo). They explain what each function needs to do. Most of the directions for this assignment are in the *.h files.

- Do not implement the copy constructor until last (you may want to implement it by calling other function(s) in the class).

- Make sure you maintain both the next AND previous pointers (and head AND tail) as you implement the operations. Use NULL for EOL.

- Run your test program on the class demo to get the correct output, then run it on your linked list implementation to validate the output from your implementation.

- The purpose of this assignment is to get experience implementing an ADT in two different ways (the first one is the class demo), to practice with linked lists and pointers, and to get more familiar with the separation of interface and implementation. These include objectives ii, 3a, and 7a+b from the syllabus.

Style:

See the Style Guidelines document on the course website.

Logistics:

Since there are multiple files for this assignment, you need to combine them into one file before submitting them. You can use the zip utility from the Linux/Unix command line:

```
[...]$zip assign2_xxxxxx.zip list_test.cpp list_3358_LL.cpp
list_3358_LL.h
```

The xxxxx is your TX State NetID (your txstate.edu email id).

Submit: an electronic copy only, using the Assignments tool on the TRACS website for this class.