CS 311 HW Assignment 5 (Due by 9am on March 13th)

1. **[30 points] Implement a singularly linked list class. Complete llist.h, llist.cpp, and client.cpp.**

   The client/main program is a menu based program:

   Case 1:

   1. check empty and report the result
   2. display the list L.displayAll();
   3. add 4 integers L.addRear(1); L.addRear(2); L.addRear(3); L.addRear(4)
   4. display the list L.displayAll(); - 1 2 3 4
   5. remove from front twice (and display the elements as they are removed)
   6. display the list - 3 4
   7. check empty again and report the result
   8. remove from the rear twice (display the elements removed)
   9. check empty again and report the result

   Case 2:

   1. add to front once (element 5)
   2. add to front again (element 4)
   3. delete Front -- this removes 4
   4. add to rear 3 times (elements 6,8,9)
   5. displayAll (4 elements) – 5 6 8 9
   6. add before the 1st (element 4) – 4 5 6 8 9
   7. add before the 4th (element 7) – 4 5 6 7 8 9
   8. add before the 7th (element 10) – 4 5 6 7 8 9 10
   9. add before the 9th (element 12) – error (out of range)
   10. add before the 0th (element 0) – error (out of range)
   11. displayAll – 4 5 6 7 8 9 10
   12. delete Ith I==1 (indicate the element removed) – 5 6 7 8 9 10
   13. delete Ith I==6 (indicate the element removed) - 5 6 7 8 9
   14. delete Ith I==3 (indicate the element removed) - 5 6 8 9
   15. delete Ith I==5 – error (out of range)
   16. delete Ith I==0 – error (out of range)
   17. displayAll - 5 6 8 9
   18. delete from rear until it is empty (indicate the elements removed)
   19. displayAll - [empty]

Case 3:

1. add before the 0th – error (out of range)
2. delete front – error (underflow)

Case 4:

1. delete 2nd – error (out of range)
2. delete rear – error (underflow)

Note: The above are the minimal required test cases. You should test other error cases thoroughly since this program will be used in later assignments!

Submission

SUBMIT THESE 3 FILES IN **A ZIP FILE** TO COUGAR COURSES:

Always make sure the files you submit can be compiled on empress.csusm.edu.

- llist.h -- class declaration (header file)
- llist.cpp -- class definition (source file)
- client.cpp -- application (main file)

Note: Compress all the above files in a zip file, name it with your name, and submit the zip file on Cougar Course. For example, my first name is Xin and my last name is Ye, then I will name the zip file as XinYe.zip.

Grading

1. On Cougar Course, submit all the files in a zip file with your name. Otherwise, we will not grade it.
2. Your code should be compiled on Cougar Course. If there is a compilation error, you will get 0 points.
3. If your code fails in 1 test case, we will deduct 10% of the total points.
4. If your code fails in 2 test cases, we will deduct 20% of the total points.
5. If your code fails in 3 test cases, we will deduct 40% of the total points.
6. If your code fails in more than 3 test cases, we will deduct 90% of the total points.
7. The comments in your code count for 10% of the total points.
8. Additionally, we will deduct 10% of the total points for each day after the due date.