Homework 5

CS 173: Intermediate Computer Science — Spring 2014
Instructor: Thomas Bressoud — **Due: 2014-03-05**

- You will practice inheritance in this assignment.
- The earlier guidelines for documenting and commenting your code hold.
- You will also practice some initial C++ programs that use loops and variables, but no functions other than `main()`.

Python Inheritance

Part 1: Stack revisited

Rewrite your stack class from HW 2 so that it inherits from your doubly linked list class from HW 4. The methods for your new stack class should have identical functionality as your previous stack class, from the point of view of the user of your ADT. In particular, you should make sure your rewritten stack class passes all of the unit tests in `test_StackDrB.py`. This new version should again be named `Stack.py`, and you should include all required Python modules for `DLList`.

Part 2: RPN calculator revisited

Rewrite your RPN calculator class from HW 2 so that it inherits from your new stack class. Again, make sure you can pass all unit tests and name your RPN implementation `RPNCalculator` in `RPNCalculator.py` file.

Two Initial C++ Programs

Compute Average

Write a C++ program that allows the set to enter non-negative numbers (pressing the Return key after each number is entered). A negative number entered by the user indicates the end of the list of numbers. With appropriate accompanying strings, output the total and the average of the numbers the user entered, excluding the negative number. Your program should be named `average.cpp`

Annual Compound Interest

Write a C++ program that inputs an annual investment amount (as an integer whole number of dollars), the (integer) percentage interest rate earned each year, and the (integer) number of years. The program outputs the final value of the investment

assuming the same amount is invested at the beginning of each year and the interest is compounded annually at the end of the year. Extra credit for those who can process the three integer input values from the command line, but only if you detect and support both command-line entry and interactive user entry. Your C++ source code should be in a file named `interest.cpp`

Your final submission should consist of 5 files: `DLList.py`, `Stack.py`, `RPNCalculator.py`, `average.cpp`, and `interest.cpp`. Submit through submit box.