

CS 210 - Fundamentals of Programming I

Spring 2006 - Programming Assignment 4

20 points

Out: February 16, 2006

Due: February 23, 2006

Problem Statement

We would like to specify a Counter class that will implement a Counter object. A Counter object is used to count things, so it records a count that is a nonnegative whole number. The attribute of the Counter class is an integer value. The operations of the Counter class are as follows:

- Default constructor that sets the counter value to zero.
- Explicit-value constructor with one received parameter that sets the counter value to the received parameter value.
- Increment - a member function that increases the value of the counter by one.
- Decrement - a member function that decreases the value of the counter by one. Note that the counter value should be nonnegative, so this function should not perform the operation if doing so would make the counter negative. In this case it should print an error message to the screen and leave the value unchanged.
- Reset - a member function that sets the counter value back to zero.
- GetValue - a member function that returns the current counter value.
- Write - a member function that receives and passes back an `ostream` object and writes the counter value to the `ostream` object.

Assignment

(6 points) Write the analyses and designs for the operations of the Counter class. **These are to be put in the function header comment block above each function definition in place of the function header specified in the guidelines.**

(14 points) Implement the Counter class. The class definition **must be put in a file named `counter.h`**. The class source file (with the member function implementations) should be in a file name `counter.cpp`. **The names of the functions must match the specification given above.** A main program that tests the Counter class is available in file `countertest.cpp` under today's date on the course website. You should download this file and use it to test your class implementation.

Follow the guidelines in the on-line handout *A C++ Programming Style Guideline*. As stated in the syllabus, part of the grade on a programming assignment depends on how well you adhere to the guidelines. The grader will look at your code listing and grade it according to the guidelines.

Turn in a hardcopy printout of both the header file `counter.h` and the source file `counter.cpp` (containing the analyses and designs) to the instructor, and submit both files electronically by emailing them as an attachments to `cs210@csserver.evansville.edu` by 5pm on the due date. (**Make sure you send it to csserver. If you send to just evansville.edu, it will not be delivered.**)

Please note: If you write this program using a system other than in Visual Studio .NET 2005, please make sure that your program will compile and run under VS before you turn it in. Also check that the code is formatted correctly under the VS editor.