

CS212 Lab 7: Chapters 5 Defining Classes and Methods

Practice Program

2) Define a class called Counter. An object of this class is used to count things, so it records a count that is non-negative whole number. Include methods to set the counter to 0, to increase the count by 1, and to decrease the count by 1. Be sure that no method allows the value of the counter to become negative. Also include an accessor method that returns the current count value, as well as a method that displays the count on the screen. Do not define an input method. The only method that can set the counter is the one that sets it to zero. Write a program to test your class definition. [You need only one instance variable.]

Projects

1. Write a grading program for an instructor whose course has the following policies:

- Two quizzes each graded on the basis of 10 point, are given.
- One midterm exam and one final exam, each graded on the basis of 100 points, are given.
- The final exam counts for 50 percent of the grade, the midterm counts for 25 percent and the two quizzes together count for a total of 25 percent. (Do not forget to normalize the quiz scores. They should be converted to percentages before they are averaged in.)

Any grade of 90 percent or more is an A, any grade between 80 and 89 percent is a B, any grade between 70 and 79 is a C, any grade between 60 and 69 is a D, and any grade below 60 percent is an F.

The program should read in the student's scores and display the student's record, which consists of two quiz scores, two exam scores, the student's total score for the entire course, and the final letter grade. The total score is a number in the range 0 to 100, which represents the weighted average of the student's work.

Define and use a class for student record. The class should have instance variables for the quizzes, midterm, final, total score for the course, and final letter grade. The class should have input and output methods. The input method should not ask for the final numeric grade nor should it ask for the final letter grade. The class should have methods to compute the overall numeric score and the final grade. These last two methods will be void methods that set the appropriate instance variables. Remember, one method can call another method. If you prefer, you can define a single method that sets both the overall numeric score and the final letter grade, but if you do this, use a helping method. Your class should have a reasonable set of accessor and mutator methods, whether or not your program uses them. You may add other methods if you wish.