CS 2433 C/C++ Programming

Programming assignment 7
20 points
Due date and time: 11:59 PM, October 27, 2016

Objective: familiarize with use of the `cin` and `cout` I/O streams in C++.
For this assignment, you are required to design and implement a C++ program, in a file named p7.cpp, to read data from `cin` as directed by the program. The first input will indicate the number of objects of class `RecordV` to be created (minimum of 2, maximum of 4). For each of these objects you will use `cout` to prompt the user for input, and `cin` to read entered data to fill the name field (that is a private member of the object) and the public array (of doubles) each object of class `RecordV`. A final value will be entered as prompted for a factor by which the values in the arrays of all the objects will be multiplied, thus proportionally altering the values in the arrays for all instances.

The instances/objects of `RecordV` class will contain a private string that will contain the user entered name for the instance/object, and a public array of five doubles. This means that in addition to a class constructor, you will need a `setName` method to change the name, and another method (`getName`) to return the name, else will not be able to change the name when required. Obviously, the instances/objects must also contain the data elements described here.

When all of the objects have been created and the data elements filled, the user will be prompted for the modification factor. The entered double will be used as a multiplier for the doubles, such that for each of these doubles, if the original value was `x` and the modifier `y`, the double will be changed to contain `x * y`.

Output from the program will begin by printing the contents of each instance/object created in the following sample format.

```
                Name:  Coarse Ground Oats
               Price:  $11.25
      Unit size (kg):  10.0
   Quantity (tonnes):  45.3
         Decay facor:  0.02
Decay period (days):  90.0
```

Your code must then prompt the user for a new name for the first instance/object, change the name of that object, and print the modified object in the above format.

NOTE: Your program must handle dealing with invalid inputs. This will mean checking the state of `cin` and used the `cin.clear()` method when necessary, as well as re-querying the user for the data incorrectly entered.

When printing the contents of objects, you may choose to implement a `print()` method, or print directly in the `main` function. No points are dependent upon your choice.

1) (penalty 3 points) Implement a `main` program that will create the required class and objects, and fill the data fields of objects created using `cout` and `cin` for providing prompts and reading inputs.
2) (penalty 2 points) Correctly identify and clear `cin` blockages due to invalid inputs.

3) (penalty 2 points) Implement the required class with specified data members with correct scope modifiers.
4) (penalty 1 points) Implement the required methods (`setName` and `getName`)
5) (penalty 1 points) The program must have the required information regarding your name, course and assignment information. (See previous assignments.)
6) (penalty 3 points) Document the functions, methods and code, along with all data declarations with suitable comments.
7) (penalty 1 points each test case) Correctly print the first group of outputs (one block as described above for each object).
8) (penalty 1 points each test case) Correctly accept the name change for the first object created, and print the modified object in the format above.
9) The program must compile and run in csx to get any credit.

Note: there will be four test-cases, so items 7 and 8 total 4 points total over the test-cases.

CAUTION: This is an individual programming assignment. All work must be done individually. Sharing (or copying from any source) of code segment will be treated as plagiarism and dealt with accordingly.

Submit the solutions using the "handin" command. Example submission command is "handin cs2433 program7 p7.cpp". p7.cpp is the file being submitted.