Homework - 5

Objective: Design the Coffee Hour Project and create Java classes as follows:

○ Coffee - this class represents a single cup of coffee with instance variables and methods.

○ CoffeeTester - this class create two instances of the Coffee class and tests the accessors, mutators and other methods work as intended.

Requirements:

• Functionality (85 pts)

   ○ No Syntax, Major Run-Time, or Major Logic Errors. (85 pts*)

      ▪ *Code that cannot be compiled due to syntax errors is non-functional code and will receive no points for this entire section.

      ▪ *Code that cannot be executed or tested due to major run-time or logic errors is nonfunctional code and will receive no points for this entire section.

   ○ Clear and Easy-To-Use Interface (5 pts)

      ▪ Users should easily understand what the program does and how to use it.

      ▪ Users should be prompted for input and should be able to enter data easily.

      ▪ Users should be presented with output after major functions, operations, or calculations.

      ▪ All the above must apply for full credit

   ○ Create a class called *Coffee* with the following

      ▪ Class Definition and Instance Variables (5 pts)

         • Name

            ○ A non-null String that represents the name of the Coffee

         • Caffeine content in a single cup

            ○ Coffee contains around 50mg to 300mg of caffeine per cup

- A default constructor- sets the instance variables to default values as follows: (5 pts)

  - Default Coffee Name : none

  - Default Caffeine Content: 50 mg

- Methods

  - Accessors for all instance variables (10 pts)

    - Create accessors for each instance variable

    - Returns the value of the current instance

  - Mutators for all instance variables (15 pts)

    - Create mutators for each instance variable

    - The mutator for the instance variable caffeine content is only allowed to accept a value between 50 and 300 (both inclusive)

  - RiskyAmount (10 pts)

    - Calculates the number of coffee's before it would be dangerous to consume more within a short time frame, and it is based on this formula:

      - *cups amount = 180.0/((caffeine content / 100.0)*6.0)*

    - Returns the maximum number of coffee cups that can be consumed before it could become a health risk.

  - Equals (10 pts)

    - has a parameter of type Coffee

    - Returns true if this coffee's instance matches with the other coffee's instance

  - toString (10 pts)

    - Returns a String with the format

Name: <<coffee name>>
Caffeine Amount: <<caffeine content>>

- Create a test class: ***CoffeeTester*** (15 pts)

  - This class contains a main method

  - Create 2 objects of the type Coffee

  - The user must be asked to enter the name and caffeine content of both coffees, and those values must be assigned as long as they are valid.

  - The program must then print out the properties of each coffee (name and caffeine content) and print out the number of cups that if consumed within an hour would be a health risk.

  - The program must then determine if the two coffee's have the same properties.

  - Finally, the user must be prompted to either stop the program or restart it. (See Example)

- Coding Style (9 points)

  - Readable Code

    - Meaningful identifiers for data and methods.

    - Proper indentation that clearly identifies statements within the body of a class, a method, a branching statement, a loop statement, etc.

    - All the above must apply for full credit.

- Comments (6 pts)

  - Your name at the beginning of the file as a single-line comment. (1 pt)

  - At least 5 meaningful comments in addition to your name. These must describe the function of the code it is near. (5 pts)

Example:

Welcome to the Coffee Hour!!!

What's the name of the first coffee?

Double Triple Loca Mocha Latte Venti Grande

What's the caffeine content?

150

Coffee Name: Double Triple Loca Mocha Latte Venti Grande

Caffeine Amount: 150

It would take 20.0 cups of Double Triple Loca Mocha Latte Venti Grande before it's dangerous to drink more.

What's the name of the second coffee?

Waffle House Coffee

What's the caffeine content?

100

Coffee Name: Waffle House Coffee

Caffeine Amount: 100

It would take 30.0 cups of Waffle House Coffee before it's dangerous to drink more.

Are both coffee's the same? False

Do you want to create more coffee objects? Enter "Yes" or "No":

No

Submission:

- Submit all .java files on Dropbox