Exam 1 (take home) ECE 39595

1. In the course lectures we used the Decorator pattern to specify the properties of a particular coffee drink and its ingredients. We used the Strategy pattern to specify the actions of different Ducks in the DuckSim program.
   (a) Write the DuckSim program (you can reuse code you did for your homework) using Decorators. (25 points)
      1. Possible Quack behaviors to implement as decorators are QuackQuack (living ducks) and Squeak (the DogToy). If a Duck, for example the RubberDuck, does not have a Quack behavior, simply don't decorate it with a behavior.
      2. Possible fly behaviors are FlyWithWings
      3. Possible Swim behaviors are Paddles (living ducks) and Floats (RubberDuck). The DogToy does not have a Swim behaviors
   (b) Write a coffee ordering program using the Strategy class (25 points)
      1. Implement a DarkRoast and Regular coffee
      2. Have Cream, Soy and Sugar ingredients that can be added
2. Consider the program in 1a, and describe what would be required to change the behavior of a Duck, e.g., to go from a QuackQuack to no Quack. (15 points)
3. Consider the program in 2b, and describe what would be needed to add a new ingredient Mocha to a coffee. What classes would need to be changed? (15 points)
4. What characteristics of the program in 1a make the Strategy pattern (as used in the lecture slides) better than the Decorator class for implementing it? (10 points)
5. What characteristics of the program in 1b make the Decorator pattern (as used in the lecture slides) better than the Strategy class for implementing it? (10 points)

What to turn in:

Turn in a directory named your userid. Inside the directory should be two sub-directories. They should be named 1a and 1b. Each should contain the corresponding code and a makefile that makes and runs your program in the directory. Turn in a .doc, .odt or .pdf file that contains your answer to 2, 3, 4 and 5. Name it answer.eee, where eee is the correct file extension.

Please ask all questions on Blackboard or by email, with 39595 in the subject line.