ComS 207: Programming I

Homework 4

Out: Mon. Feb 13, 2006

Due: Due. Feb 20, 2006 (*BEFORE* the start of class)

Student Name:

Recitation Section:

1. **Programming Projects**

   Choose ***two of the following four*** programming projects and implement them. Your grade will NOT depend on which ones you choose. Just puck the ones that you like.

   (a) Spheres

   Design and implement a class called Sphere that contains instance data that represents the sphere;s diameter. Define the Sphere constructor to accept and initialize the diameter, and include getter and setter methods for the diameter. Include methods that calculate and return the volume and surface area of the sphere (Volume= $\frac{4}{3}\pi r^3$, area = $4\pi r^2$). Include a toString method that returns a one-line description of the sphere. Create a driver class called MultiSphere, whose main method instantiates and updates several (at least 5) Sphere objects.

   [Same as Programming Project 4.1 in the textbook.]

   (b) Dogs and Dog Years

   Design and implement a class called Dog that contains instance data that represents the dog's name and age. Define the Dog constructor to accept and initialize instance data. Include getter and setter methods for the name and age. Include a method to compute and return the age of the dog in "person years" (seven times the dog age). Include a toString method that returns a one-line description of the dog. Create a driver Program called Kennel, whose main method instantiates and updates several (at least 5) Dog objects.

   [Same as Programming Project 4.2 in the textbook.]

   (c) Books

   Design and implement a class called Book that contains instance data for the title, author, publisher, and copyright date. Define the Book constructor to accept and initialize this data. Include setter and getter methods for all instance data. Include a toString method that returns a nicely formatted multi-line description of the book. Create a driver class called Bookshelf, whose main method instantiates and updates several (at least 5) Book objects.

   [Same as Programming Project 4.4 in the textbook.]

(d) Flights

Design and implement a class called Flight that represents an airline flight. It should contain instance data that represents the airline name, flight number, and the flight's origin and destination cities. Define the Flight constructor to accept and initialize all instance data. Include getter and setter methods for all instance data. Include a toString method that returns a one-line description of the flight. Create a driver class called FlightTest, whose main method instantiates and updates several (at least 5) Flight objects.

Please use data for some real flights. For example, you can get some of that from the web page for the Des Moines airport: http://www.dsmairport.com/fids/ARR-TIME.HTM

[Similar to Programming Project 4.5 in the textbook.]

2. *** For Advanced (or Bored) Students Only!**

Develop an application that implements a prototype user interface for composing an e-mail message. The application should have text fields for the To, CC, and Bcc address lists and subject line, and one for the message body. Include a button labeled Send. When the Send Button is pushed, the program should print the contents of all fields to standard output using println statements.

[Same as Programming Project 4.15 in the textbook.]

3. **What to Submit**

Submit two printouts, one for each of the two programs that you chose to write. The printouts should represent complete programs, not just snippets of code. If you choose to do part 2 submit a printout for it as well.

Also, for part 1 (and 2 if you chose to do it) submit your code electronically using WebCT.

Submit your homework *BEFORE* the start of class on Monday, Feb 20. Make sure to put you name on your printouts.

IMPORTANT: Staple all of your printouts together. We are not be responsible for finding missing or misplaced pages.

IMPORTANT: Once again, no late homeworks will be accepted.

That's it. Good Luck!