

ComS 207: Programming I

Homework 4

Out: Wed. Sep 20, 2006

Due: Fri. Sep 29, 2006 (***BEFORE*** the start of class)

Student Name:

Recitation Section:

1. Programming Projects

Choose *****three** of the following four ******* programming projects and implement them. Your grade will NOT depend on which ones you choose. Just pick 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.

(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.

(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.

(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.dsmaairport.com/fids/ARR-TIME.HTM>

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.

3. What to Submit

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 Friday Sep. 29.

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

That's it. Good Luck!