

IST 256
Lab Week 12, Wednesday, November 16, 2011

1. Practice in Writing a Method in a Data Class

Suppose that we have a class that represents circles. The circles are defined by the (x,y) coordinates of the location of the center of the circle and by the radius of the circle. There is a method to get the radius and a method to calculate the area of the circle.

```
public class Circle
{
    // fields for the radius and the coordinates
    private double radius;
    private double x,y;

    // constructor initializes all three fields
    public Circle ( double startradius, double startx, double starty)
    {
        radius = startradius;
        x = startx;   y = starty;
    }

    // access the radius
    public double getRadius()
    {
        return radius;
    }

    // compute the area of the circle as the constant pi times radius squared
    public double computeArea()
    {
        return ((radius * radius) * 3.1759 );
    }
}
```

Write a method called `getDiameter` that could be added to this class to return the diameter of the circle. (Recall that diameter is 2 times the radius.)

2. Extending the program with Student data from a file

In this example, we will again extend the Students example that we have been working on in lab. Today we will add dorm address data for each student.

a. Start by **opening the Students** project.

b. **Create additional data.**

Edit the file students.txt to have two additional items of data for each student. Add a dorm name and a dorm room number, separated by commas, on each line. Each line should look something like:

```
Alex,M,20,73,Dellplain Hall,326
```

Don't forget that there shouldn't be any extra blanks around the commas.

c. **Create a DormAddress class:**

We are going to represent the dorm name and room together in a class for dorm addresses. In the left pane of NetBeans, find the Students project and right click on the name Students. In the menu, select New -> Java class. In the new class window:

give the **class name** as DormAddress
select the **package** of the class to be students

d. **Write the code for the DormAddress class.**

Write a class:

- Put two fields in the class, both are Strings representing the dorm name and room.
- Put a constructor that can initialize both fields.
- Put a method called toString that returns a String with the room followed by the dorm name, and labeled as the dorm address, e.g.
 - Dorm address: 326 Dellplain Hall

e. **Extend the Student class.**

In the code for the Student class:

- Add a field to keep a dorm address. Suppose that you call this field dormaddr. Then the field declaration will be:
DormAddress dormaddr;
- Change the toString method so that the dorm address is added to the end of each student's string. For this, you can call the DormAddress toString method:
... dormaddr.toString() ...

- Change the Constructor method to have two additional parameters, the dorm and the dorm room. Initialize the dormAddr field by creating a new instance of the DormAddress class.

```
dormAddr = new DormAddress(startDorm, startRoom);
```

f. The form interface does not need to be changed. But when students are displayed, they will have additional information on the form.

g. Revise the code for the GUI.

Check the students array and variable numstudents at the top of the program and remember what variable names you used if they are different.

In the first button to read the file:

- With the other variable declarations, add the declarations for two variables to read from the file for the dorm name and room number.
- Inside the while loop, add two more if statements to read these two lines from the file. Which hasNext and next methods should you use?
- Change the call to the Student constructor to pass the dorm name and room.

No changes need to be made to the second button to display the students, except that the toString method returns longer strings as the dorm information has been added and you may need to adjust the size of the form.

h. Test your program so far and make sure that the dorm information is displaying correctly.

When you click on the Display students button, does the room number and dorm name show up for each student?

Hand in this lab sheet with the code for the two classes Student and DormAddress by Monday, November 28.