UNM

Computer
Science

The University of New Mexico

CS152L
Computer Programming Fundamentals
ASSIGNMENT 1:"beginner programs"

Matthew J. Barrick
**Due: Thursday 06/19/2008 @ 11:59pm**

Goal

This first programming assignment is designed for you to become comfortable with using Eclipse, and creating projects, classes, and writing small programs. Your allowed and encouraged to get help from your classmates in getting the first program up and running, but the second should be done individually as normal.

Initial Setup

Create a new package (in your project previously created). Name the package "assignment1". In this package, create a Class (Java) "MyInfo". At this point your left hand side should look something like this:
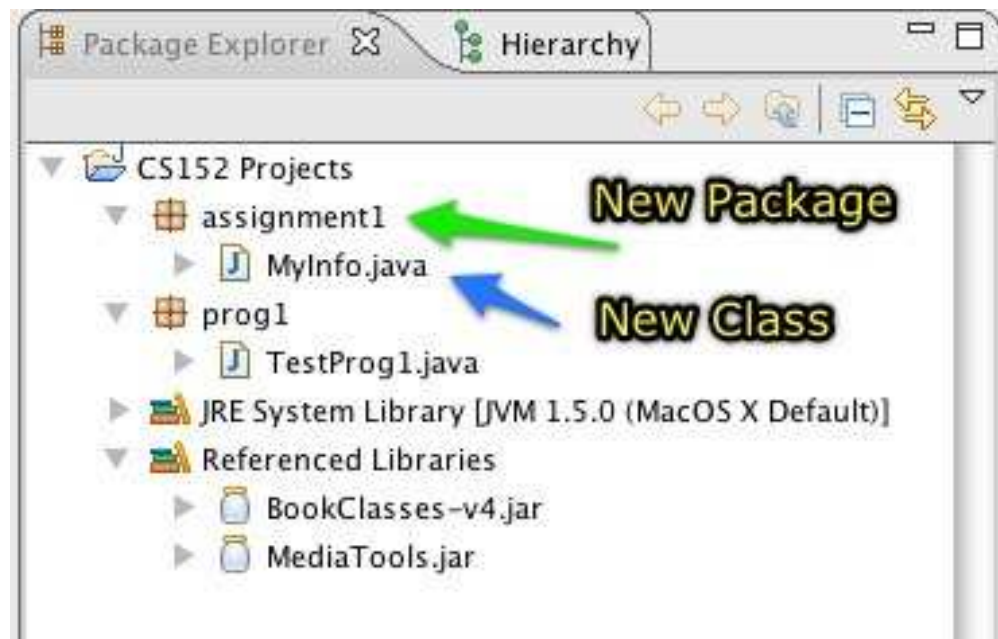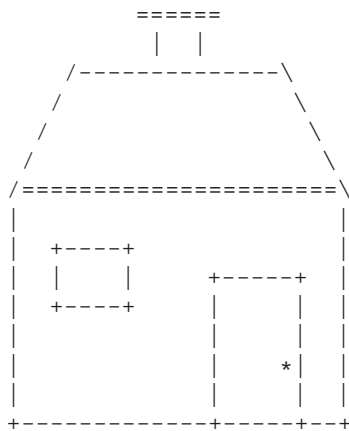

Alright, we're ready to write our first "real" program in Eclipse. This new class should print out a bit of what's called ASCII art on the console window, when run (this time, we'll do some text based work, next assignment will be dealing with graphics.) It might look something like below left.

```
*******************************
* Class: CS152L - Section 1   *
* Name : Bob                  *
* Major: Computer Science     *
* Hobby: Cycling              *
* Pets?: Yes, Three dogs      *
*******************************
*    A Little ASCII Artwork   *
*******************************

               ======
                | |
          /--------------\
         /                \
        /                  \
       /                    \
      /======================\
      |                      |
      |   +----+             |
      |   |    |     +-----+ |
      |   +----+     |     | |
      |             |     | |
      |             |   *| | |
      |             |    | | |
      +-------------+-----+--+
```

This can be accomplished by a series of `System.out.println` statements in java, or **print** statements in Python, as long as they are organized in a neat fashion. Note that when printing special characters, such as \ or " in a string and you need to "escape" them using a '\' character before that character, so it will look something like:
`"\"Hey Dude\", this program is cool."`

Your ASCII art drawing should contain an information part containing at least five lines of stuff about you, and the ASCII drawing should be at least 20 lines long. Be as creative as you can - It should look different from the example above. There are many examples of ascii art online if you are intersted in how to create them. Please just don't copy something that someone else did, but create your own stuff.

Note that this part of the assignment is supposed to give you some experience with writing strings into a program. It's sort of like a more complicated "Hello World" program.

Warmed up yet? - Expected Component

This part of the program is a bit trickier, it's designed for you to get some practise with assignments, variables, and expressions, and how to combine these into a program that can make a calculation, and then present the result in a feasible way onto the screen. In order to do this, please create a new *class* named `Geometry` where you'll write the code.

A figure of a Two-Base Sphere segment
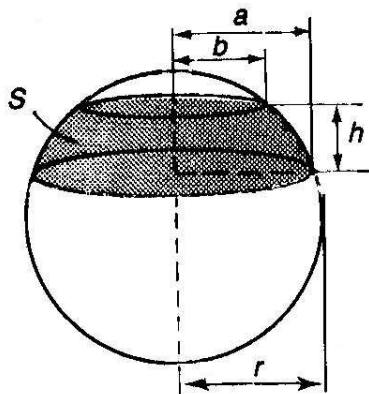
Formulas for a Two-Base Sphere segment

$$S = 2\pi r h$$
$$V = \left(\frac{\pi}{6}\right)(3a^2 + 3b^2 + h^2)h$$

Create another class in the same package as before and, call it `Geometry`. This part of the assignment should be used to calculate the surface area and volume of a somewhat complicated geometric shape called a *Two Base Sphere Segment*.

For this program, you should create variables (of the appropriate type in Java) for each of the values as specified here (all values are in inches): $r = 15.3, h = 7.5, a = 8, b = 5$

Your task is to calculate the two values S and V based on the two forumlas above. Then, you should present the values of these two values (surface area, and volume) and the inputs value (r, h, a, and b) used to caluculate them, in a nice way on the screen. Hint! You can get the value of π from the math libraries in Java . In Java, you would say `Math.PI` in your program.

Commenting your program

When writing computer programs, it's important to properly comment the code you are writing. It's important for many reasons, and the first main reason is that we want to know who wrote the code. Therefore, at the beginning of each file that you create, there should be a comment about who you are, what class you are writing this code for, and what the purpose of the program is. Usually, these comments are made in Java something like this:

```
/**
 * File   : MyInfo.java
 * Author : Matthew Barrick (barrick@cs.unm.edu)
 * Date   : 06/19/2008
 * Purpose: Solution for part 1 of assignment 1. Displays information about me.
 */
```

all files that you turn in should be commented in this way.

Turning in your homework

When you have finished your assignment, you should go back to the WebCT assignment page, and attach your source code files (MyInfo.java, and Geometry.java) to the assignment, and click "Submit". If you know of any problems in your program either document this in the "Add Comment" box before submitting.