**CS1401 – Programming Assignment 1**

**Due: February 1, 2015**

**To be submitted via Piazza in the folder “lab1”**

**Welcome to your first programming assignment!**

This week, you are going to start getting your feet wet with programming. You will have the opportunity to tinker with code that we prepared for you. This code will enhance your familiarity with:

* Compiling and executing programs (and what that means)
* Basic programming elements
* Basic output
* Variables, computations
* Algorithms
* Tracing and debugging of code

We hope you have fun!

Ok, let’s get started! Here are the three activities you will be working on.

**Activity 1.** In this activity, you will work with a program (provided to you) whose aim is to print out messages (in a terminal window on your screen).

**Part 1.a.** **Getting familiar with compiling and executing a program.**

Please review and follow the instructions at:

<http://docs.oracle.com/javase/tutorial/getStarted/cupojava/win32.html>

Namely:

1. Save the file that we provided to you as: **lab1.java** in a directory of your choice.
2. Open a terminal window: navigate to the directory in which you saved lab1.java.
3. Type: “**javac lab1.java**”: this command instructs the computer to use the java compiler and creates a file that you can execute (**lab1.class**).
4. Execute the program by “**java lab1**”.

Now please answer the following questions (to be turned in):

1. Write down what you observe on the screen.
2. Why does it print a statement per line sometimes and two statements per line otherwise?

**Part 1.b.** Now **modify the program** you just ran (namely printout) to print something different. It should now print exactly what is specified in the following three lines:

Your-first-name Your-last-name

First lab for CS1401

Here you write how comfortable you feel with this programming assignment

Now, here is what you have to do:

1. Re-write printout so that it now prints what is instructed above.
2. Compile your file as in Part 1.a.
3. Execute it and observe / check that it does what it is expected to do.
4. Comment out the code you just wrote.

And here is what you will have to turn in for this activity 1.b.:

1. You will turn in your code commented as instructed before (when you turn in the lab1.java file at the end)
2. Take a screen shot of your terminal when you execute your code and turn it in.

**Part 1.c.** Now it is **your turn to be creative and decide what you want to print out**.

Here you need to follow the same instructions as in 1.b. except that you will decide what to print out and you implement it in the program called **yourOwnPrintout**.

**Activity 2.**  In this activity, you have to work with a piece of code that is also given to you. The name of this part of code is: **mystery**.

**Part 2.a.** **Read the code of mystery** and try to **figure out what it does**.

**Part 2.b.** **Compile and execute mystery**. In order to do this, modify the part of the code that is called **main**.

Answer the following questions:

1. Does the code do what it is supposed to do? Why or why not?
2. If it does not do what it is supposed to do, how to fix it?
3. Turn in the correct(ed) code.
4. How to make it more general? I.e., suited to work with different values of grade1, grade2, creditHours1, and creditHours2? Turn in the modified code.

**Activity 3.** This last activity will not be done in Java. You will use the Scratch programming language instead.

Please open a web-browser and go to: <http://scratch.mit.edu>, and then select “Create”.

You arrive on a page that is a web-based environment for you to program in Scratch (a drag and drop programming language).

Here is what you are expected to do:

**Part 3.a. Design an algorithm** (sequence of well-defined steps) for Scratch (the cat on the screen) to **go all around the screen** in a counter-clock-wise manner.

1. Write it on the paper
2. Put it together in the web-based system
3. Execute it

Then take a screen shot of the interface with your code and turn it in.

**Part 3.b.** **Change the avatar.** Replace Scratch for another character of your choice (extra credit will be given for self-made avatars, as opposed to choosing an avatar among those available in the Scratch library).

1. Change the avatar
2. Run the same algorithm as in Part 3.a., but with the new avatar
3. Take a screen shot of the interface to show both your code and the new avatar.

**Part 3.c. Make changes to your original algorithm** to, e.g., change the speed of move, the circuit, etc.

1. Write it on the paper and document the changes
2. Put it together in the web-based system
3. Execute it

Then take a screen shot of the interface with your code and turn it in.