LAB #10 – Proficiency Practice
Location: DEAR 119

First!!!
Log into Canvas, and make sure you Lab grades are correct. Make sure you clear any unresolved lab disputes in this lab with your lab TAs. TAs will not answer anymore lab questions after this lab!!!

Second!!
For those of you who didn’t finish lab #9, finish this lab, and make sure you get checked off for it because we don’t have another lab!!!

Third!
Please read the entire lab before proceeding to make sure you understand everything that needs to be completed for this last lab of the quarter!!!

Surveys:
After you complete the survey, leave the completion page in your browser to get checked off at the end of lab. You can open another tab to get checked off for both surveys at the same time.

(1 pt) Recitation Feedback
We need you to give us feedback about the peer-led, peer to peer recitations! First, figure out which recitation section you are in by visiting the Recitation Page on the class page: http://classes.engr.oregonstate.edu/eecs/spring2017/cs162-001/recitations/

Please take a few minutes at the beginning of lab to complete this survey:
http://survey.az1.qualtrics.com/jfe/form/SV_ba1tNyrOiGSqiep

(1 pt) Paired Programming/Major Survey
Open another tab in your browser
Last Survey, I promise!!! Please fill out this really quick survey about paired programming and information about your declared major and CS.
http://survey.az1.qualtrics.com/jfe/form/SV_8vjRm1hO87lfOw5

Proficiency Demo:
(8 pts) Proficiency Demo
If you do not pass, there will be a makeup demo scheduled during finals week!
Extended Learning:

Learning a new language:

Students feel it is an eye-opener when they are exposed to more and more programming languages. It seems to help strengthen understanding of programming semantics and new environments, which builds a richer mental picture of abstract concepts. In this lab, we will explore the Java language and its similarities and differences to C/C++. First, create a file, `intFun.java`, to read an int from the user and print it to the screen, and the name your file must be the same as the class containing the main function.

```java
import java.util.Scanner; /* needed for input*/

/* The class name has to be the same as the filename.java*/
public class intFun {
    public static void main(String[] args) {
        int x;
        Scanner input = new Scanner(System.in);
        System.out.println("enter int: ");
        x = input.nextInt();
        System.out.println(x);
    }
}
```

Java is a different kind of language, where you need the compiler for development and a virtual machine for running the program. This is because Java is a hybrid approach. First, the source code is compiled into Java Bytecode, and then the bytecode is interpreted by the java virtual machine, which allows it to be run on any platform. Here is how you need to compile and run a java program on our ENGR system:
Now you have compiled and run your first Java program. It is very similar to C/C++, but just a little different! Now, let’s take it a step further.

**Explore how to make loops, a function, arrays, and objects in Java**

What would you do if you were told to learn Java on your own? Part of your job is to explore code and resources you would use to learn Java. Convince your TA that you have figured out how to write a loop, function (they call them methods), and create an array in Java, before you can move forward. Answer the following questions:

**Loops:**
- What types of loops are supported in Java?
- What is the syntax of these loops?

**Arrays:**
- How do you create a static array of ints? (Is this possible?)
- How do you create a dynamic array of ints? (Is this possible?)

**Functions:**
- How do you create a function in Java, i.e. what is the syntax?
- How is an `int` passed to a function (by value or reference)? Can you change this?
- How is an array passed to a function (by value or reference)? Can you change this?
- Write the syntax for functions to get an integer from the user, creates an array of this length, initialize an array with values, and prints the array. Total functions: 4

**Classes:**
- How do you create an object? (Is this possible for an object to be on the stack?)
- How do you create an array of objects? (where is the new used?)
Now, write a Java program that has 4 functions to create and fill an array of x ints. Here is an example run of the program...

```
How big is the array?
5
5
1 2 3 4 5
flip1 ~/cs161_files 164%
```

Hope this was fun!!!

Enjoy your summer break!!!