Review Lab #1

If you happen to speak multiple languages, you'll be familiar with the concept of "use it or lose it" – if you don't practice your multi-lingual skills, they quickly get rusty and eventually fade away. Programming languages are no different. Hopefully you spent at least a *little* time programming this summer – regardless, let's review some of the basics to get us back in the swing of things.

As the material in this lab is intended as a review, it might be useful to utilize the link to review the ‘1st year Java Topics’ located in canvas.

1. Open your codeHS sandbox, make a new program called “Review Lab 1”, and *rename MyProgram.java* to *Tester.java and change ‘public class MyProgram to public class Tester*.
2. Write a print statement that will print "Hello again, world!" to the console (white window).
3. Create a comment below the print statement that says "the above prints "Hello again, world!"".
4. Declare and initialize (to a value of your choosing) an integer variable called numApples. **Variable names must be descriptive, should start with a lower-case letter, and should always be in** camelCase **(when applicable).**
5. Declare and initialize a double constant *constant* called PRICE\_OF\_APPLE representing the price of an apple (in cents). Make something up for the price. **Constants should be in all caps with underscores separating words and should be preceded by the** final **keyword. If you don’t remember constants, Google is your friend!**
6. Using **one** print statement (and concatenation), print the total price for all apples (number of apples multiplied by the price for each) to the console (white window).
7. Write an if statement that will print "Thank you valued customer!" if the total price of all apples was over 20.00 (i.e. over $20).
8. Write a for loop that will produce the following output with a variable (no hard coding): 1 2 3 4 5 6 7 8 9 10 11 12
9. Write a for loop that will produce the following output with a variable (no hard coding): 1, 4, 9, 16, 25, 36, 49, 64, 81
10. Write a for loop that will produce the following output with a variable (no hard coding): 1 4 16 64 256
11. Declare and initialize a new Scanner object called console that you will use to get keyboard (user) input. Don't forget to add the import statement above the class header!
12. Declare and initialize a new String called name whose value is taken from the keyboard. Don't forget to prompt the user (with a print statement) to enter something first!
13. Call a method (rather than counting the letters) to print the length of the name variable to the console.
14. Write a while loop that will sum all the integer values entered by the user, until the user enters 0. Print the total sum and the average of the numbers entered (the average should be a double). For example, if the user enters: 1,3,11,0 then the sum is 15 and the average is 5.
15. Declare (only!) an array of doubles called areas. On separate line, initialize the array to have 9 elements.
16. Set the value of the first element in areas equal to 4.56.
17. Declare a new integer variable called length and set it equal to the number of elements in areas **without using a number to the right of the equals sign (so no hard-coded number).**
18. Set the value of the last element in areasequal to 8.08 **using the** length **variable declared previously.**
19. Declare and initialize (in one line) a new boolean array that starts with the values true, true, false, false, true.
20. **Outside the** main() **method,** write a static method (meaning the word ‘static’ is in the method header after public) with a void return type that will print "This is a method!" Method names must be descriptive, should start with a lower-case letter, and should always be in camelCase (when applicable). **Method names can be distinguished from variable names in that they will always be followed by round brackets (parentheses).**
21. Write a static method (meaning the word ‘static’ is in the method header) that will *return* the sum of two integer parameters.
22. Write a static method (meaning the word ‘static’ is in the method header) that will *return* the longer of two String parameters.
23. Write a static method (meaning the word ‘static’ is in the method header) that accepts a String as a parameter and returns a String with the capitalization altered such that the even letters are all in lowercase and odd letters are all in uppercase. Non-alphabetic characters don't count as letters (the Character.isLetter(char c) method will return true if the parameter is a letter). String's charAt() method will help with this.

altCaps("Hey!! THERE!") >>> "hEy!! ThErE!"

1. **Inside Tester's** main() **method,** print a call to each of the methods you just wrote (to test them).