**Name**

**Advanced Programming in Java**

**Lab Exercise 9/7/2023**

1. Read Lesson 7 in Blue Pelican.

Questions to answer:

1. What are the three data types that we are able to input from the keyboard?

2. Suppose a *Scanner* object, kb*Reader*, has already been created. Show code that uses

kbR*eader*to input a number with “decimal places” from the keyboard and store the result

in the variable, *fract*.

3. Suppose a *Scanner* object, kb*Reader*, has already been created. Show code that uses

*kbReader*to input a quantity like “John Smith” from the keyboard and store the result in

the variable, *name*.

4. Suppose a *Scanner* object, *kbReader*, has already been created. Show code that uses

*kbReader*to input a number with “**no** decimal places” from the keyboard and store the

result in the variable, *count*.

**Programs:**

1. The area of a circle is given by:

area = 

Now, suppose we know the area and wish to find r. Solving for r from this equation

yields:



Write a program (project and class both named *RadiusOfCircle*) that uses *sqrt( )* and *PI*

from the *Math* class to solve for the radius of a circle. Use keyboard input to specify the

area (provide for the possibility of area being a decimal fraction).

**What is the area?** \_

Present your answer like this:

Radius of your circle is 139.4.

2. Write a program that allows the user to enter from the keyboard their first and then their last name, each with its own prompt. Store each in a separate *String* and then concatenate them together to show your full name. Call both the project and the class *FullName*. When your program is finished running, the output should appear similar to that below:

What is your first name? Cosmo

What is your last name? Kramer

Your full name is Cosmo Kramer.

3. When cashiers in a store give you change they try first try to "fit" dollars into the amount you get back, then try to "fit" quarters (25 cent coins) into what is left over, they try to "fit" dimes (10 cent coins) into what is now left over, then try to "fit" nickels (5 cent coins) into what is left, and finally are left with a few odd cents. For example, say that your change is 163 cents:

One dollar fits into 163, leaving 63 cents.

Two quarters fit into 63 cents, leaving 13 cents.

One dime fits into 13 cents, leaving 3 cents.

No nickels fit into 3 cents.

Three cents are left.

Your change is: 1 dollar, 2 quarters, 1 dime, and 3 cents.

Write a program that reads change due to a user (in cents) and writes out how many dollars, quarters, dimes, nickels, and pennies she is due. All variables and all math in this program will be integers. If you are stuck, it will help to do an example problem with paper and pencil.

4. Ohm's law relates the resistance of an electrical device (like a heater) to the electric current flowing through the device and the voltage applied to it. The law is:

I = V/R

Here, V is the voltage (measured in volts), I is the current (measured in amps), and R is the resistance (measured in ohms.) Write a program that asks the user for the voltage and the resistance of a device. The program will then write out the current flowing through it. Use integers for V and R and a floating point value for I. Use floating point math.

Since V and R are integers (converted from user input) you must use a trick to do floating point division. Change the equation to this:

I = (V + 0.0)/R

The math inside parentheses is done first. So V + 0.0 is done first, and since 0.0 is floating point, so will be the result.

**When you have completed these 4 programs, submit your documented source code.**