**Name:**

**Advanced Programming in Java**

**Lab Exercise 8/28/2024**

In the following exercises you will experiment with different data types. Write short programs to solve the following problems. Read Lesson 3 in Blue Pelican Java

## Exercise 1 --- Payroll Program

Examine this program:

class Example

{

public static void main ( String[] args )

{

int hoursWorked = 40;

double payRate = 10.0, taxRate = 0.10;

System.out.println("Hours Worked: " + hoursWorked );

System.out.println("pay Amount : " + (hoursWorked \* payRate) );

System.out.println("tax Amount : " + (hoursWorked \* payRate \* taxRate) );

}

}

Modify it so that each variable is declared by itself and is not initialized. Next write three assignment statements to assign a value to each variable. Run the program; examine the output.

## Exercise 2 --- Value of a Quadratic

Say that you are interested in the value of the quadratic...

3X2 -8X + 4

...for several values of X. Write a program that has a double precision variable X. Assign a value to it. Write statement that computes a value for the quadratic and stores the result in another double precision variable. Finally write out the result, something like:

At X = 4.0 the value is 20.0

Run the program with several values for X (edit the program for each value of X) and examine the result. Use values with decimal points, large values, small values, negative values, and zero. Solve the equation with paper and pencil (use the quadratic formula.) The quadratic should evaluate to zero at X = 2.0 and at X = 2/3. Try these values for X. Are the results exactly correct?

## Exercise 3 --- Re-assigning values to Variables

Modify the program in exercise 2 so that one run of the program will evaluate and write out the value of the quadratic for three different values of X: 0.0, 2.0, and 4.0 (or any three values of your choice.)

Write the program using only two variables, probably called x and value. Of course this means that you will have to put different things in these variables in different places in the program.

In writing the program make use of your editor's "copy" and "paste" functions to avoid re-typing similar lines.

**Exercise 4 --- Name that Celebrity**

Create a new project called *NameThatCelebrity* in which only partially recognizable names of celebrities are to be produced. In a real implementation of this game, the idea is for a contestant to be able to guess the real name of the celebrity after the first two and last three letters are dropped from the name. We have been given the task of testing the feasibility of this idea by producing the following printout:

Allan Alda>>>lan A

John Wayne>>>hn Wa

Gregory Peck>>>egory P

Begin your code within the *main* method as follows:

String s1 = “Allan Alda”;

String s2 = “John Wayne”;

String s3 = “Gregory Peck”;

Apply the *length* and *substring* methods to these *String*s to produce the above printout.

**Submit your source code for the 4 projects and attach to this sheet.**