**Lab Assignment – 4  
Total Points: 100  
Due Date: 9/17 (Monday), 11.59 pm**

In this lab assignment, you would be working on two programming assignments and also answer some programming related questions.

Start by creating a new NetBeans project called Lab04-YourFirstName-YourLastName. Make sure to uncheck the “Create Main Class” button while creating the project.

**Instructions:**

1. Make sure to comment your program appropriately.
2. Make sure to follow the naming conventions
   * 1. Make sure to use meaning names for variable and constant names. The name should convey the meaning of the data they hold.
     2. Class name should start with capital letter as well as any inner words
     3. Variable names should always start with lower case and capitalize the first letter of any inner word.
     4. Constants should be written in all uppercase.

*Please note 10% of your grade is for comments, using appropriate meaningful names for your identifiers (variables, constants) and following naming conventions for class, variable and constant names.*

1. Write a program (**QuartsToGallons)** that declares a named constant to hold the number of quarts in a gallon (4). Also declare a variable to represent the number of quarts needed for a painting job, and assign an appropriate value – for example, 18. Computer and display the number of gallons and quarts needed for the job. Display explanatory text with the values – for example, *A job that needs 18 quarts requires 4 gallons plus 2 quarts.*

public class MilesConversion {

public static void main( String [] args )

{

// define the number of inches, feet, and years included in a mile

final int INCH\_PER\_MILE = 63360;

final int FEET\_PER\_MILE = 5280;

final int YARDS\_PER\_MILE = 1760;

// the total miles waiting to convert

int miles = 12;

// output the result

System.out.println( miles + " miles equal to "

+ miles \* INCH\_PER\_MILE + " inches, or "

+ miles \* FEET\_PER\_MILE + " feets, or "

+ miles \* YARDS\_PER\_MILE );

}

}

1. Write a program (**MilesConversion**) that declares named constants to represent the number of inches, feet, and yards in a mile. Also declare a variable to represent a number of miles and assign a value to it. Compute and display, with explanatory text, the value in inches, fee, and yards.

public class QuartsToGallons {

public static void main( String [] args )

{

// the number of quarts in a gallon

final int QUARTS\_PER\_GALLON = 4;

// total number of quarts needed for a paint job

int quartsTotal = 63;

// total gallons included in quartsTotal

int gallon = quartsTotal / QUARTS\_PER\_GALLON;

// the quarts left in quartsTotal

int quart = quartsTotal - gallon \* 4;

// output the result

System.out.println( " A job that needs " + quartsTotal

+ " quarts requires " + gallon + " gallons plus "

+ quart + " quarts.");

}

}

1. Type your answers to the following questions:
2. Assume that int a = 1 and double d = 1.0, and that each expression is independent. What are the results of a that following expression?
   1. a = 46 / 9;

**5**

* 1. a = 46 % 9 + 4 \* 4 – 2;

a = 1 + 16 – 2

**a = 15.**

* 1. a = 45 + 43 % 5 \* (23 \* 3 % 2)

a = 45 + 43 % 5 \* 1

= 45 + 3

**a = 48.**

* 1. a %= 3 / a + 3;

a = a % ( 3 / a + 3 );

= 1 % ( 3 / 1 + 3 )

**a = 1.**

* 1. d = 4 + d \* d + 4;

d = 4 + 1.0 \* 1.0 + 4

= 4 + 1.0 + 4

= 4.0 + 1.0+ 4.0

**d = 9.0.**

* 1. d += 1.5 \* 3 + ++a

a = a + 1 = 2;

d = d + ( 1.5 \* 3 + 2 )

= 1.0 + 6.5

= 7.5

**d = 7.5**

* 1. d -= 1.5 \* 3 + a++;

a = 1;

d = d – ( 1.5 \* 3 + 1 )

= 1.0 – ( 4.5 + 1 )

= 1.0 – 5.5

= -4.5

**d = -4.5**

1. How would you write the following arithmetic expression in Java?

**4 / ( 3 \* ( r + 34 ) – 9 \* ( a + b )**

**+ ( 3 + d \* ( 2 + a ) ) / ( a + b \* d )**

1. What is the output of the following code:

float f = 12.69F;

int i = (int)f;

System.out.println(“f is “ + f);

System.out.println(“i is “ + i);

**f is 12.69**

**i is 12**

**Things to turn in:**

* Right click each of the programs and select and paste it in a word document.
* Copy the contents of the output window of each of the program.
* Finally take a screen shot of the programs in NetBeans using ***Alt + PrintScreen*** button and paste it in the word document.
* Type the answers to the questions 3.
* Save the word file using the following convention **lab04-LnameFM** where Lname is your last name and F and M are the first and middle initials. Submit the word file along with a zipped copy of the NetBeans Project folder using the Lab Assignment – 4 link by the due date.



