Lab 3

Programming Fundamentals (CS-130-02)

CS 130-02 Fall 2022   Total=100

Open Eclipse IDE and create a new class for each of the following questions:

Question 1. Write the code that will print the pattern exactly as the following example: (Only use the print method)   10 points

```
        *
       ***
      *****
     *******
    *********
     *******
      *****
       ***
        *
```

Question 2. Write a program that will convert an <mark>integer</mark> number to <mark>double</mark> using automatic conversion and convert the double back to <mark>float</mark> then convert it back to <mark>int</mark> using explicit conversion.   Integer → Double → Float->Integer

Your program should produce the following output:

Class name: AutoExplicit

The integer number is 30

The double number is 30.0

The floating point number is 30.0

The integer number is 30

Question 3. Write a program that will prompt for three integers and print their average. Your program should produce the following output:

Enter the first integer number: 1

Enter the second integer number: 2

Enter the third integer number: 3

You entered: 1, 2, and 3.

The average is 2

Question 4. Write an application that asks the user to enter two floating point numbers and prints their sum, difference and product using <u>assignment operator </u>(+=, *=).

Your program should produce the following output:

Class name: FloatMath

Enter the first floating point number: 29.7

Enter the second floating point number: 32.8

The sum is 62.50

The difference is -3.10

The product is 974.16

Question 5. Write an application to calculate the MPG for a tank of gas for a car. Prompt the user for the number of miles driven and the number of gallons of gas in the tank. Below is a sample of your output:

Class name= MilePerGalon

Enter the number of miles driven: 340

Enter the number of gallons in the tank: 15

The MPG is 22.666666666666668.

```
<terminated> CS130_Lab3Q3 [Java Application] /Users/tylerlericos/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.x86_64
Enter Number 1 :
1
Enter Number 2 :
2
Enter Number 3 :
3
The average of the numbers is : 2
```

```java
import java.util.Scanner;

public class CS130_Lab3Q3 {

    public static void main(String[] Args) {

        Scanner scan = new Scanner(System.in);

        System.out.println("Enter Number 1 : ");
        int number1 = scan.nextInt();

        System.out.println("Enter Number 2 : ");
        int number2 = scan.nextInt();

        System.out.println("Enter Number 3 : ");
        int number3 = scan.nextInt();

        int sum = number1+number2+number3;

        int average = sum/3;

        System.out.println("The average of the numbers is : " + average);

    }
}
```

Console:
```
<terminated> CS130_Lab3Q3 [Java Application] /Users/tylerlericos/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.x86_64...
Enter Number 1 :
1
Enter Number 2 :
2
Enter Number 3 :
3
The average of the numbers is : 2
```

The floating point number is 30.0

The integer number is 30

Question 3. Write a program that will prompt for three integers and print their average. Your program should produce the following output:

Enter the first integer number: 1

Enter the second integer number: 2

Enter the third integer number: 3

You entered: 1, 2, and 3.

The average is 2

Question 4. Write an application that asks the user to enter two floating point numbers and prints their sum, difference and product using assignment operator (+=, *=).

Your program should produce the following output:

Class name: FloatMath

Enter the first floating point number: 29.7

Enter the second floating point number: 32.8

The sum is 62.50

The difference is -3.10

The product is 974.16

Question 5. Write an application to calculate the MPG for a tank of gas for a car. Prompt the user for the number of miles driven and the number of gallons of gas in the tank. Below is a sample of your output:
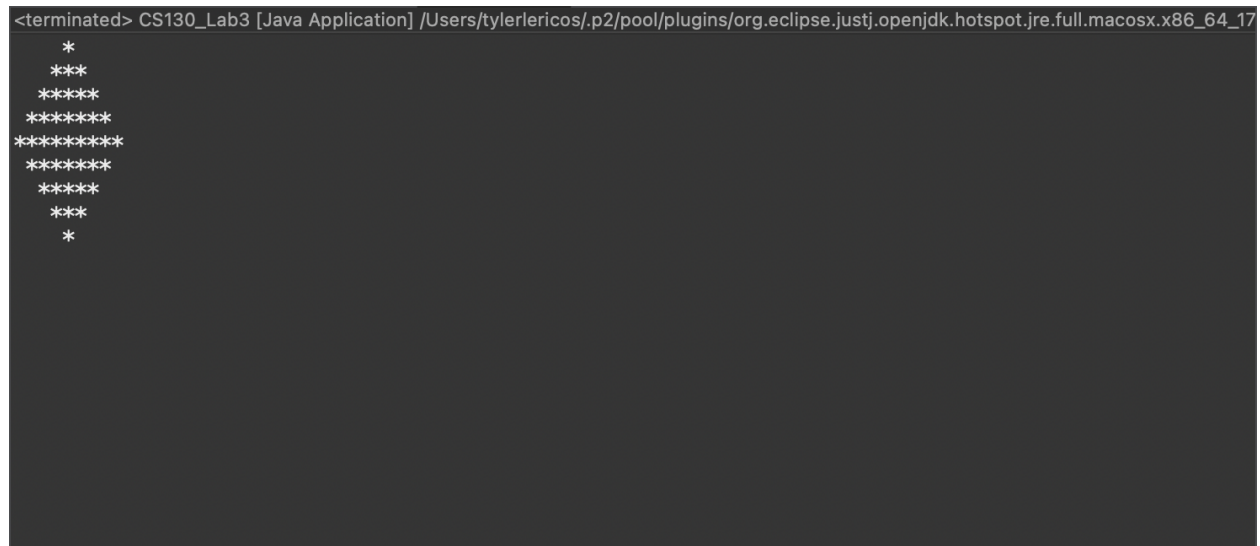
Class name= MilePerGalon

Enter the number of miles driven: 340

Enter the number of gallons in the tank: 15

The MPG is 22.666666666668.

```
<terminated> CS130_Lab3 [Java Application] /Users/tylerlericos/.p2/pool/plugins/org.eclipse.justj.openjdk.hotspot.jre.full.macosx.x86_64_17
        *
       ***
      *****
     *******
    *********
     *******
      *****
       ***
        *
```

```
The Integer is : 30
The Double is : 30.0
The float is : 30.0
The second float is : 30
```

```
Enter number1 :
29.7
Enter number2 :
32.8
The sum of the numbers is : 62.5
The difference of the number is : 29.7
The product of the number is : 974.16
```

```
Enter Miles Driven :
340
Enter Gallons of Gas :
15
The MPG is : 22.666666666666668
```