WestVirginiaUniversity
INSTITUTE OF TECHNOLOGY

Computer Science 121

Lab 3 100 Points

In this lab, you will start adding comments to your code. This is to get into a good habit of properly documenting your code. At the top of each Java source file, you must include the following comment:

```
/*
* Your Name
* Submission Date
* CS 121 Lab
* Name of Program
*
* Describe what the program does in one to two sentences.
*/
```

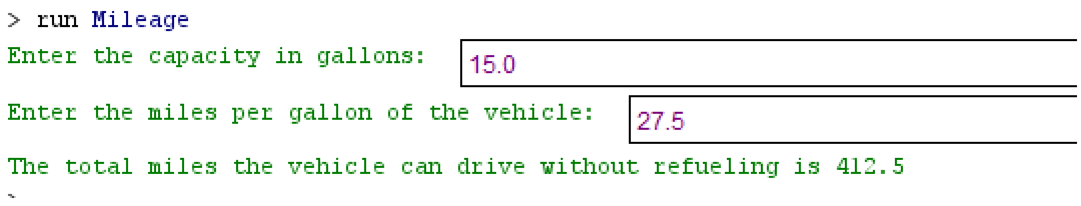
Then in the code, you need to explain what each of the section does as comments. You do not need to comment every line, but only the instructions which does something significant.
Also remember to name your variables something sensible rather than just naming x,y etc.

1. Vehicle Mileage (40 Points, to be finished and demonstrated during the current lab)

Create a new Java program, and name the class Mileage.

Write a program that asks the user to enter the capacity in gallons, of an automobile fuel tank and the miles per gallons the automobile can be driven. After the user inputs the values, the program should compute the number of miles the automobile can be driven without refueling and print it.

An example of the output is as follows:

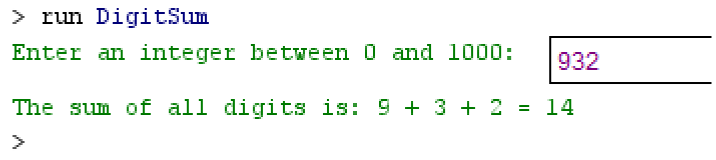


```
> run Mileage
Enter the capacity in gallons:  15.0
Enter the miles per gallon of the vehicle:  27.5
The total miles the vehicle can drive without refueling is 412.5
```

2. Sum the digits in an integer (50 Points, to be finished and demonstrated in the lab)

Create a new Java program, and name the class DigitSum. Write a program that asks the user for an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 9 +3 +2 = 14.

An example of the output is as follows:



```
> run DigitSum
Enter an integer between 0 and 1000:  932
The sum of all digits is: 9 + 3 + 2 = 14
>
```

Hint: Use the % operator to extract digits, and use the / operator to remove the extracted digit. For instance, if the input is 932:

The first digit is 932 % 10 = 2
Remaining digit is 932 / 10 = 93
So the second digit is 93 % 10 = 3
And remaining digit is 93 / 10 = 9
So the third digit is 9 % 10 = 9
Hence your sum is the sum of first, second and third digit.

3. Increment and Decrement operators (10 Points to be finished by next week if out of time)

Here is a part of the code containing integer values using some increment and decrement operators. In a notebook, write down what do you think will be the values of j, k, l, m, n, o.

After that write the code in a java program named, OperatorTests and print the values in a single line. Check if you were correct or not by comparing your notes and the output of the program. Write the correct values in comment in your program.

```
//testing increment and decrement operators in integer values

   int i=5;

   int j = i++; // j = ? write in a notebook first
   int k = ++i; // k = ? write in a notebook first

   int l = i--; // l = ? write in a notebook first

   int m = --i; // m = ? write in a notebook first

   int n = ++i * i--; // n =? write in a notebook first

   int o = i++ + --i; // o = ? write in a notebook first
```

Upload the java file in e-campus that prints all the values in single line which shows the value of each separated by a comma such as:

```
j=?, k=?, l=?, m=?, n=?, o=?  //replace ? by the result values
```

Submitting your Code

When you are done, you will need to submit your code for both questions on eCampus. When logging onto eCampus, be sure to select your corresponding lab session instead of T01. When you actually submit your code, be sure to submit the .java file, not the .java˜ or .class files.

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Grading Rubric

	Question	Max Points
1	comment at beginning	5
	comment through out the code	5
	double variables	5
	use of scanner	5
	input capacity	5
	input miles/gallon	5
	compute & print miles	5
	successful execution	5
	Q1 Total	40
2	comment at beginning	5
	good comments through the code	5
	int variables with proper names	5
	ask/input user for input between 0 and 1000	5
	compute last digit	5
	compute second digit	5
	compute third digit	6
	output correct sum of digits	7
	successful execution	7
	Q2 Total	50
3	Code with correct values of variable written in code	10
	Total	100