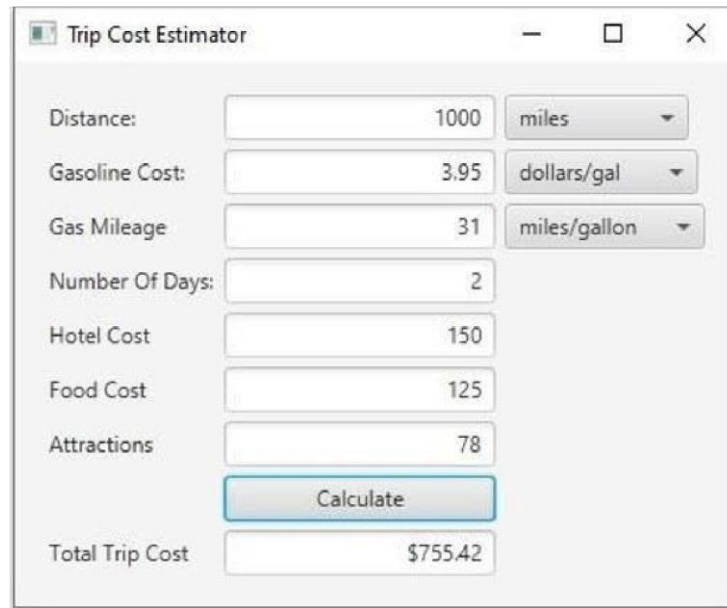


## CMSC 215 Intermediate Programming

### Programming Project 3

The third programming project involves writing a program that produces a road trip cost estimator with a GUI interface. The required GUI is shown below,



The screenshot shows a Java Swing window titled "Trip Cost Estimator". It contains several input fields and a "Calculate" button. The inputs are: Distance (1000 miles), Gasoline Cost (3.95 dollars/gal), Gas Mileage (31 miles/gallon), Number Of Days (2), Hotel Cost (150), Food Cost (125), and Attractions (78). The "Calculate" button is highlighted with a blue border. Below the button is a text field for the "Total Trip Cost" which displays "\$755.42".

Input	Value	Unit
Distance	1000	miles
Gasoline Cost	3.95	dollars/gal
Gas Mileage	31	miles/gallon
Number Of Days	2	
Hotel Cost	150	
Food Cost	125	
Attractions	78	
Total Trip Cost	\$755.42	

The java program must contain a ***main ()*** method. The program class [public class (Java filename)] must have the same name as the java file name. Standard programming practice locates the ***main ()*** method at the end of the program.

The text fields above the **Calculate** button are the input fields and the one below is the output field. The output field should not be editable. Three of the input fields have combo boxes to their right, which allow the data to be input as described below:

- The distance can be entered in either miles or kilometers.
- The gasoline cost can be input in either dollars per gallon or dollars per liter.
- The gas mileage can be input as either miles per gallon or kilometers per liter.

The necessary calculations are as follows.

$$\text{gasoline cost} = (\text{distance/gas milage}) * \text{gasoline cost}$$

$$\text{total trip cost} = \text{gasoline cost} + (\text{hotel cost} + \text{food cost}) * \text{number of days} + \text{attractions}$$

Your program should consist of two classes. The *first-class*, **InputData**, should define the GUI illustrated above. The *second class*, **TripPost**, should be an immutable class that has at a minimum a constructor that creates a trip cost object and a method that computes and returns the total trip cost.

## Output

*Blackbox [Using above example entries]: >*

$$\text{gasoline cost} = (\text{distance/gas milage}) * \text{gasoline cost}$$

$$\text{gasoline cost} = (1000/31) * \text{gasoline cost} \quad \text{gasoline}$$

$$\text{cost} = (32.258) * \text{gasoline cost} \quad \text{gasoline cost} =$$

$$(32.258) * 3.95$$

$$\text{gasoline cost} = 127.42$$

$$\text{total trip cost} = \text{gasoline cost} + (\text{hotel cost} + \text{food cost}) * \text{number of days} + \text{attractions}$$

$$\text{total trip cost} = \text{gasoline cost} + (150 * 125) * \text{number of days} + \text{attractions} \quad \text{total trip}$$

$$\text{cost} = \text{gasoline cost} + 275 * \text{number of days} + \text{attractions} \quad \text{total trip cost} = \text{gasoline}$$

$$\text{cost} + 275 * 2 + \text{attractions} \quad \text{total trip cost} = \text{gasoline cost} + 550 + \text{attractions}$$

$$\text{total trip cost} = 127.42 + 550 + 78 \quad \text{total trip cost} = 755.42$$

## DELIVERABLES

You are to submit two files.

1. The first file is a single java program file that contains all the source code for the project. Attach not more than one java file. NO ZIP FILES. The java file should contain only source code with appropriate comments and nothing else. If you elect to use a package the java file should be in a folder whose name is the package name. The program file should include a comment block at the top containing your name, the project name, the date, and a short description of the program.

The java file and the program name in the java program should use the naming convention of ***CMSC215PROJ3[Last Name] [First Name Initial].java***.

2. The second file is a Word document (PDF is also acceptable) that contains the documentation for the project, which should include the following:
  - a. A UML class diagram that includes all classes you wrote. Do not include predefined classes.
  - b. A test plan that includes test cases that you have created indicating what aspects of the program each one is testing.
  - c. A short paragraph on lessons learned from the project.
  - d. Each of the above elements is tagged and the content inserted into that element.

### **UML Diagrams**

[Insert the various UML diagrams here.]

### **Test Plan**

[Insert the various test Plan tables here.]

[Insert a few screen shot Windows would be helpful.]

### **Lessons Learned**

[Insert the paragraph(s) that identified the various lessons learned in research, design, coding, and documentation.]

- e. The documentation name should use the naming convention of ***CMSC215PROJ3[Last Name] [First Name Initial].docx***. A pdf file is acceptable. It should be a single file.