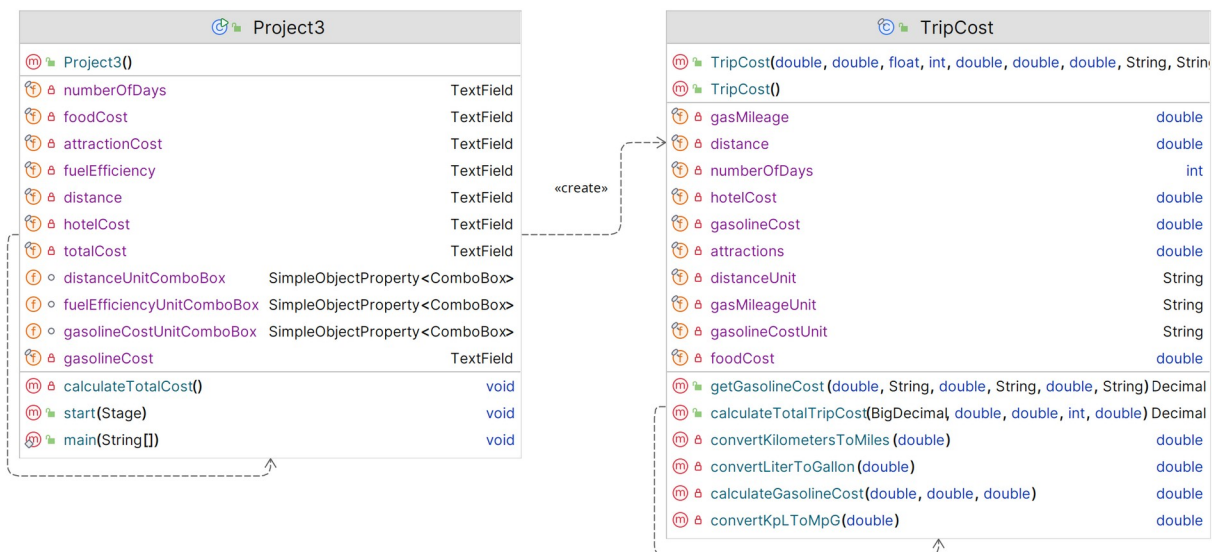


## DESIGN

As with the previous projects, this project was a good exercise in applying the lessons from JavaFX, combined with proper validation of user-inputted data. For the most part, I followed along with the general recommendations in the project description, however, I added in some additional items that were not listed as requirements. I added validation of user input, and the display of an error message if invalid input was detected. I also converted all the inputted units for distance, gasoline cost, and gas mileage to Imperial units so that I could minimize math errors.

### UML

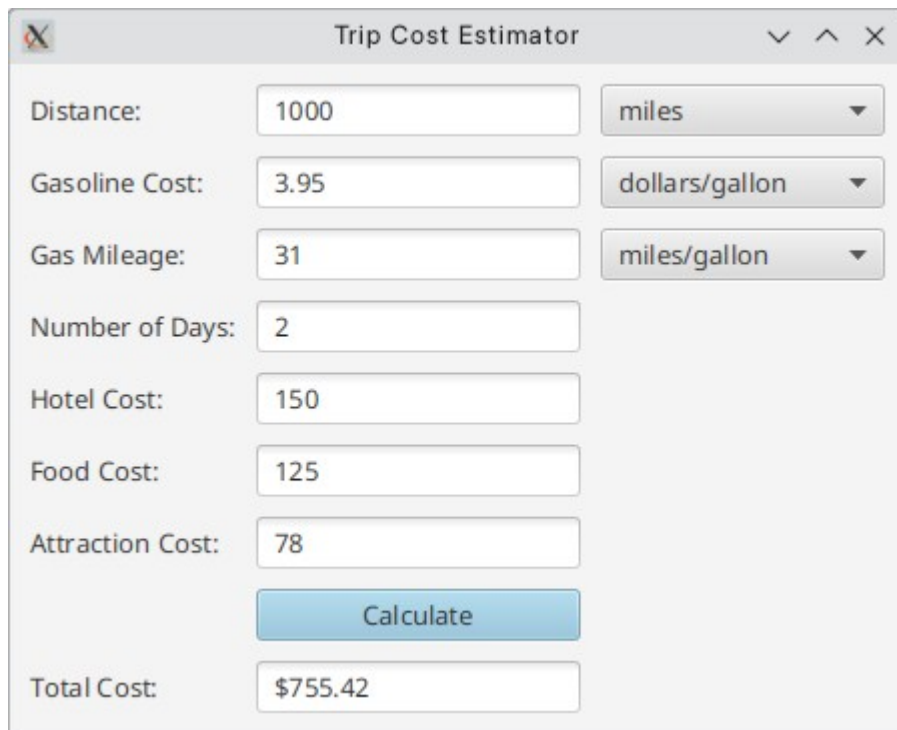


## TEST PLAN

Test #	Input			Expected Output
1	Distance:	1000	Miles	Validate that output matches requirements document  Total Cost: \$755.42
	Gasoline Cost	3.95	Dollars/Gal	
	Gas Mileage	31	Miles/Gal	
	Number of Days	2		
	Hotel Cost	150		
	Food Cost	125		
	Attractions	78		
2	Distance:	1000	Kilometers	Changing distance unit from Miles to Kilometers and Gas Mileage from MPG to KPL provides sane results  Total Cost: \$814.24
	Gasoline Cost	3.95	Dollars/Gal	
	Gas Mileage	31	Km/L	
	Number of Days	2		
	Hotel Cost	150		
	Food Cost	125		
	Attractions	78		
3	Distance:	1000	Kilometers	Provide non-numerical values for several fields. Program should replace fields that contain non-numerical values with "Numbers only please". Fields with numerical values should be retained.
	Gasoline Cost	3.95	Dollars/L	
	Gas Mileage	31	Km/L	
	Number of Days	Apple		
	Hotel Cost	Banana		
	Food Cost	Cherry		
	Attractions	Date		
4	Distance:	1130	Miles	Sample trip to Orlando theme park, based on current fuel cost and MPG.  Total Cost: \$6474.65
	Gasoline Cost	3.64	Dollars/Gal	
	Gas Mileage	33	Miles/Gal	
	Number of Days	7		
	Hotel Cost	250		
	Food Cost	300		
	Attractions	2500		
5	Distance:	1820	Kilometers	Sample trip to Orlando theme park, based on current fuel cost as with #4, but using kilometers for distance and KPL for gas mileage.  Total Cost: \$7041.62
	Gasoline Cost	3.64	Dollars/Gal	
	Gas Mileage	14	Km/L	
	Number of Days	7		
	Hotel Cost	250		
	Food Cost	300		
	Attractions	2500		

# SCREEN SHOTS

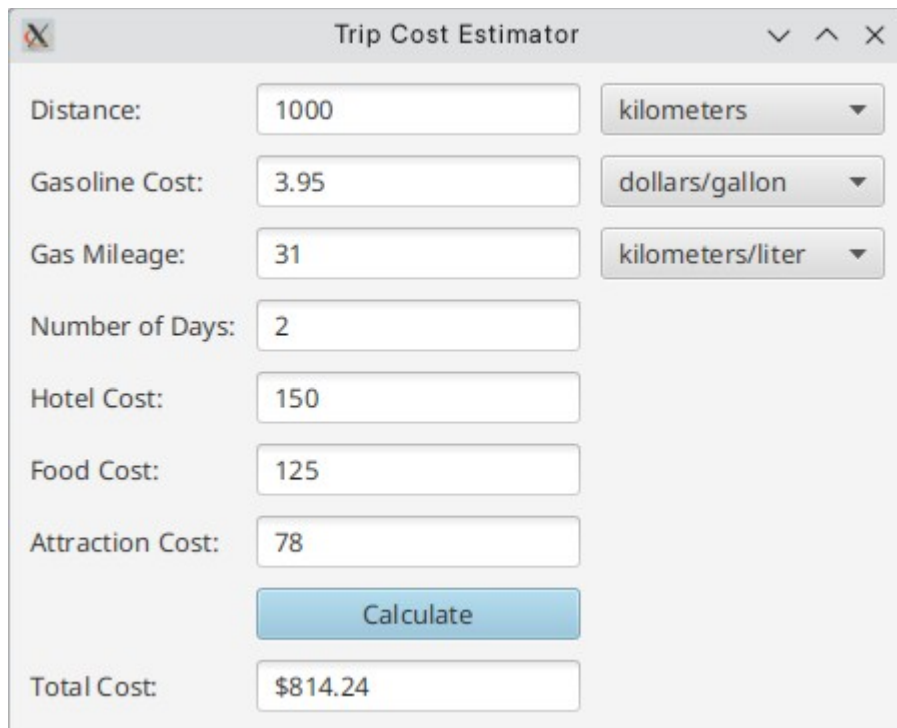
1



A screenshot of a 'Trip Cost Estimator' application window. The window has a title bar with a close button (X), a maximize button (^), and a minimize button (v). The interface includes several input fields for trip details: Distance (1000), Gasoline Cost (3.95), Gas Mileage (31), Number of Days (2), Hotel Cost (150), Food Cost (125), and Attraction Cost (78). Each input field is accompanied by a dropdown menu for units. The units are set to 'miles', 'dollars/gallon', and 'miles/gallon' respectively. A blue 'Calculate' button is positioned below the input fields. At the bottom, the 'Total Cost' is displayed as '\$755.42'.

Field	Value	Unit
Distance:	1000	miles
Gasoline Cost:	3.95	dollars/gallon
Gas Mileage:	31	miles/gallon
Number of Days:	2	
Hotel Cost:	150	
Food Cost:	125	
Attraction Cost:	78	
Total Cost:	\$755.42	

2



A screenshot of the same 'Trip Cost Estimator' application window, but with the units changed to metric. The input fields for Distance, Gasoline Cost, and Gas Mileage remain the same, but the units are now 'kilometers', 'dollars/gallon', and 'kilometers/liter' respectively. The 'Calculate' button is still present. The 'Total Cost' at the bottom is now '\$814.24'.

Field	Value	Unit
Distance:	1000	kilometers
Gasoline Cost:	3.95	dollars/gallon
Gas Mileage:	31	kilometers/liter
Number of Days:	2	
Hotel Cost:	150	
Food Cost:	125	
Attraction Cost:	78	
Total Cost:	\$814.24	

3





**Trip Cost Estimator**

Distance:	1000	kilometers
Gasoline Cost:	3.95	dollars/gallon
Gas Mileage:	31	kilometers/liter
Number of Days:	Numbers only please.	
Hotel Cost:	Numbers only please.	
Food Cost:	Numbers only please.	
Attraction Cost:	Numbers only please.	
<b>Calculate</b>		
Total Cost:	\$814.24	

4

**Trip Cost Estimator**

Distance:	1130	miles
Gasoline Cost:	3.64	dollars/gallon
Gas Mileage:	33	miles/gallon
Number of Days:	7	
Hotel Cost:	250	
Food Cost:	300	
Attraction Cost:	2500	
<b>Calculate</b>		
Total Cost:	\$6474.65	

 Trip Cost Estimator   

Distance:	<input type="text" value="1820"/>	<input type="text" value="kilometers"/> ▼
Gasoline Cost:	<input type="text" value="3.64"/>	<input type="text" value="dollars/gallon"/> ▼
Gas Mileage:	<input type="text" value="14"/>	<input type="text" value="kilometers/liter"/> ▼
Number of Days:	<input type="text" value="7"/>	
Hotel Cost:	<input type="text" value="250"/>	
Food Cost:	<input type="text" value="300"/>	
Attraction Cost:	<input type="text" value="2500"/>	
	<input type="button" value="Calculate"/>	
Total Cost:	<input type="text" value="\$7041.62"/>	

## LESSONS LEARNED

Some specific items that the project reinforced were:

- Always validate user input.

- Do not lose valid input when possible – clear invalid fields but keep valid data

- Double check math for unit conversions – preferably, always convert to a single unit to perform calculations, no matter what the source unit.