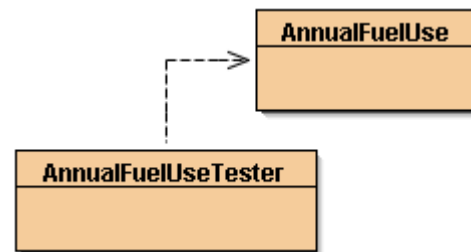


Assessment Instructions

Instructions: Write a program to project your annual fuel usage based on at least three fill ups of your car (or your family car).

1. If you have not yet created the Annual Fuel Use project in the Unit08 Assessment folder, please do so now.
2. Be sure to save a copy of these instructions in the Unit08 Documents folder.
3. Print a copy for your notebook.
4. Read the instructions carefully before you attempt the assessment.
5. Create two classes called AnnualFuelUseTester and AnnualFuelUse in the newly created project folder.
6. Use the fill up data you have been collecting for your car (or the family car) and calculate the total distance, gallons used, and cost of gas.
7. Determine the minimum and maximum values for distance, miles per gallon and price. (Recall the Integer class constants MIN_VALUE and MAX_VALUE. The Double class also has class constants of the same name.)
8. Calculate annual projections for distance, gallons used, miles per gallon, and cost based on the data you collected.
9. Each fill up should be considered an object and your program design should be based on an array of objects. Use the demo program in this lesson as a model for how to create and process an array of objects.



Expected Output: When the program runs correctly, the output will resemble the following screen shot. This student collected data for four fill ups. Your output will differ, but you should have at least three fill ups.

Options									
Fill Up	Days	Start Miles	End Miles	Distance	Gallons Used	MPG	Price	Cost	
1	1	45023	45231	208	10.00	20.8	2.95	29.50	
2	4	45231	45480	249	11.70	21.3	2.99	34.98	
3	8	45480	45659	179	9.30	19.2	3.03	28.18	
4	13	45659	45961	302	14.90	20.3	3.01	44.85	
Minimum:				179		19.2	2.95		
Maximum:				302		21.3	3.03		
Totals:				938	45.90			137.51	
Annual Projection:				26336	1288.73	20.44		3860.89	

Suggestions: This program has several parts; don't try to tackle all of them at once.

1. Compare the Expected Output to the information on your Gas Mileage Record Sheet so you know what data needs to be input. Notice what values you are given and which ones you need to calculate.
2. Then write a pseudocode algorithm to solve the problem breaking the task into sections for input, processing, and output.
3. Once you have the big picture, make a class diagram for the two classes: AnnualFuelUseTester and AnnualFuelUse.
4. For the segments of the program that involve loops, you may want to quickly sketch a flowchart for just those sections (not the whole program).
5. Review the demo program on how to assign objects to an array. Consider each row of fill up data as an object.
6. Build your program in stages. There are three different output sections: 1) the rows of fill up data, 2) the totals, and 3) the annual projections. Work on one section at a time. It may be easiest to work from left to right across the output table testing one column at a time.
7. Use your algorithm and class diagrams as a guide. Modify them as needed as you go through the program.
8. It is important to know how many total days your fill up data represents in order to calculate the annual projections.

Grading: Your assessment will be graded according to the following rubric.

Grading Rubric	Pts
Comments include name, date, and purpose of program	1
Project consists of two separate classes.	2
Constructor written correctly.	1
Private instance variables declared.	1
Private instance variables initialized.	1
Data stored as an array of objects.	4
Comments used appropriately for documentation.	1
Method headers written correctly.	3
Individual methods invoked on an object from main() method.	2
All calculations correct.	1
Output formatted with printf() .	1
No compiler or runtime errors	1
Thoughtful PMR included	1
Total	20

Submission: Submit the AnnualFuelUseTester.java and AnnualFuelUse.java files for a grade.