Example Calculation Question - use with various platforms and frameworks

**QUESTION ONE - Estimate Car Value**

Calculate an estimated value for a used car using the Calculation Formula supplied below:

Inputs are:

* **Kilometres:** Odometer recording eg 81967, 107855.
* **Year** of manufacture. eg 2004, 1998.
* **MfrCode** of the car. "ce" (Celery), "gd" (Gouda), "pi" (Pimento)   
  or "tf" (Truffle). These are imaginary manufacturers.

Output is:

* **Estimated Value** of car in dollars.

Calculation formula is:

**EstValue = (4000 + 720 x (24 – AgeInYears)) x MfrRating   
x (83000/Kilometres)**

Inputs need processing to give the values to use in the formula.

You need to calculate the **AgeInYears** from the **Year** supplied by the user.

**IF** the **AgeInYears** of the car is greater than **20** then stay with a value of **20** for the calculation.  
This is because a car that is 30, 40 or 50 years old can have the same value as one that is 20 years old because ageing can be balanced by classic value.

Manufacturers have different designs and reputations which affect the pricing. You need to work out the **MfrRating** value (type double) from the input **MfrCode** using this data:

|  |  |  |
| --- | --- | --- |
| Manufacturer | MfrCode | MfrRating |
| Celery | ce | 1.6 |
| Gouda | gd | 1.4 |
| Pimento | pi | 0.9 |
| Truffle | tf | 0.7 |

Include code for any relevant validations.  
Return suitable error messages for error conditions.  
Include relevant self-documentation eg comments, helpful variable names, clear constructs.

With your code you need to format and run test input data depending on the framework.

For this example you need to format and run a specific test of:   
Kilometres=114383, Year=2002, MfrCode is "pi"   
--- Estimated Value = 7784.58

Create and test this calculator in the framework and language as specified by the lecturer/parent question. Show your lecturer.

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**QUESTION TWO**

Consume the above remote public method or function with a client app as specified by the lecturer/parent question.

This web page will take user input of: **Kilometres**, **Year** and **Manufacturer**   
and use the remote method from Question One to calculate an **Estimated Value**

Follow this design**:**

Used Car Estimated Value

|  |  |
| --- | --- |
| Kilometres:  Year of manufacture: | [textbox]  [textbox] |
| Manufacturer: | [select list] |
|  | [Submit] (button) |
| Estimated Value: | [readonly textbox OR label] |

Create this as a client app that communicates with the remote method   
from QUESTION ONE and displays the remote function **Estimated Value**   
for any **Kilometres**, **Year** and **Manufacturer** that users may input**.**

Your code needs to VALIDATE in some way that these inputs are valid.

Include relevant self-documentation eg comments, helpful variable names, clear constructs.