The Bid Calculation

Objective

The purpose of the following exercise is to assess a programmer's ability to develop a minimum viable product. Note that this exercise does not simulate a real work situation. The aim is to develop a complete software without using large templates.

Important: The programming language to use is the one specified in the job description.

Evaluation Criteria

The final solution will be evaluated according to the following criteria:

* Code clarity
* Algorithm and calculation result
* Use of Object-Oriented Programming principles
* Implementation of good software architecture practices (Clean Code, SOLID, KISS, DRY, etc.)
* Proper use of frameworks, tools, and libraries related to the programming language used

Task Description

Develop an application that will allow a buyer to calculate the total price of a vehicle at a car auction. The software must consider several costs in the calculation. The buyer must pay various fees for the transaction, all of which are calculated on the base price amount. The total amount calculated is the winning bid amount (vehicle base price) plus the fees based on the vehicle price and vehicle type. Fees must be dynamically computed.

Requirements

* There is a field to enter the vehicle base price
* There is a field to specify the vehicle type (Common or Luxury)
* The list of fees and their amount are displayed
* The total cost is automatically computed and displayed every time the price or type changes

List of Fixed and Variable Costs

* Basic user fee: 10% of the price of the vehicle
  + Common car: minimum $10 and maximum $50
  + Luxury car: minimum 25$ and maximum 200$
* The seller's special fee:
  + Common car: 2% of the vehicle price
  + Luxury car: 4% of the vehicle price
* The added costs for the association based on the price of the vehicle:
  + $5 for an amount between $1 and $500
  + $10 for an amount greater than $500 up to $1000
  + $15 for an amount greater than $1000 up to $3000
  + $20 for an amount over $3000
* A fixed storage fee of $100

Calculation Example

* Vehicle Price (Common): $1 000
* Basic fee: $50 (10%, min: $10, max. $50)
* Special fee: $20 (2%)
* Association fee: $10
* Storage fee: $100
* **Total**: $1 180 = 1 000$ + 50$ + 20$ + 10$ + 100$

Test Cases

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Vehicle Price ($)** | **Vehicle Type** | **Fees ($)** | | | | **Total ($)** |
| **Basic** | **Special** | **Association** | **Storage** |
| 398.00 | Common | 39.80 | 7.96 | 5.00 | 100.00 | **550.76** |
| 501.00 | Common | 50.00 | 10.02 | 10.00 | 100.00 | **671.02** |
| 57.00 | Common | 10.00 | 1.14 | 5.00 | 100.00 | **173.14** |
| 1 800.00 | Luxury | 180.00 | 72.00 | 15.00 | 100.00 | **2 167.00** |
| 1 100.00 | Common | 50.00 | 22.00 | 15.00 | 100.00 | **1 287.00** |
| 1 000 000.00 | Luxury | 200.00 | 40 000.00 | 20.00 | 100.00 | **1 040 320.00** |