

*Windows and Mobile Programming (PROG2120)*  
*Assignment 02*

Teams of two people

*Objectives*

- Become familiar with object oriented programming in C#
- Demonstrate good object oriented design practices demonstrating concepts like (at least) abstract classes, inherited classes, concrete classes, overloaded methods and overridden methods

*Requirements*

Develop a Windows application in C# to meet the following requirements:

1. The application is a console application written in C#.
2. The application keeps track of the vehicle inventory in a small company. The inventory consists of motorcycles, automobiles and small trucks.
3. The information maintained for a motorcycle is:
  - a. Manufacturer
  - b. Model
  - c. Model Year
  - d. Initial Purchase Price
  - e. Purchase Date
  - f. Current odometer reading (in kilometers)
  - g. Size of engine (in cubic centimeters)
  - h. Type of motorcycle (Sport, Motocross, Cruiser, etc.)
4. The information maintained for an automobile is:
  - a. Manufacturer
  - b. Model
  - c. Model Year
  - d. Initial Purchase Price
  - e. Purchase Date
  - f. Current odometer reading (in kilometers)
  - g. Size of engine (in cubic centimeters)
  - h. Number of doors (2, 3, 4 or 5)
  - i. Type of fuel (Electric, Gas, Diesel)
5. The information maintained for a small truck is:
  - a. Manufacturer
  - b. Model
  - c. Model Year
  - d. Initial Purchase Price
  - e. Purchase Date
  - f. Current odometer reading (in kilometers)
  - g. Size of engine (in cubic centimeters)
  - h. Cargo capacity (pounds)
  - i. Towing capacity (pounds)

6. The current value of a vehicle is calculated as follows:
  - a. Motorcycle: Value depreciates by 15% of the original cost per year. The minimum value of the used motorcycle is \$1,500.
  - b. Automobile: Value depreciates by 15% of the original cost per year as long as the average annual distance travelled is 20,000 kilometers or less. If more than 20,000 kilometers average per year, there is an additional depreciation of \$0.10 per kilometer. The minimum value for an automobile is \$500.
  - c. Small truck: Value depreciates by 20% of the original cost per year as long as the average annual distance travelled is 25,000 kilometers or less. If more than 25,000 kilometers average per year, there is an additional depreciation of \$0.18 per kilometer. The minimum value for a small truck is \$0.
7. The application will manage, at most, 10 vehicles of each type.
8. The user can enter the information for a new vehicle of any of the three types. All data fields are required.
9. The user can modify the current odometer reading for any of the vehicles. If the requested vehicle does not exist, the user should be notified.
10. The user can query the list of vehicles based on type or model year. The application will display all of the records of information that meet the criteria.
11. The user could view all of the records.
12. The application validates the data that is entered by the user.
13. The user can delete a specific record. When a deletion is requested by the user, the data is checked to ensure the record exists. If it exists, the user is asked to verify that the deletion is to take place.
14. The data should be stored in a file and loaded each time the application is started. While the application is running, new data can be kept in memory. However, it must be written to the file when the application closes.
15. This application can be menu driven, command line driven or a combination of the two.
16. You must create one or more input files for testing. These will be used as redirected input to the program. At the very least, consider these test files as a way to populate your data in your database.

Hand in:

1. A class diagram representing the classes used in the system described above.
2. The full solution (files and folders) to the system described above.
3. The test input files used as redirected input to test the solution.
4. Only 1 person in the group needs to hand in the assignment. Please make sure you follow SET coding/submission standards, making it clear who is in the group.

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