Fleet Management System for Car-Rental business

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I. Main functionalities

F01 Manage and control information about the fleet of the company (Business Layer)

F01.1 Add new cars in the database

Whenever the company acquires a new car it needs to be inserted in the database.

The insertion is done only by "employee" user type.

The insertion is triggered by clicking on the "Add new car" button and redirects the user to a page with a form that request the following mandatory information about the care:

- car manufacturer
- car model
- VIN
- model year

- registration number
- fuel type
- fuel consumption
- trunk volume
- transmission type (manual, automatic)
- body type
- body color
- tires type (winter, summer, all seasons)

F01.2 Delete cars from database

F01.3 Update information about cars

F01.4 Book cars for clients

F01.5 Schedule cars for service.

F01.6 Check rental status of car.

F02   Database with vehicles of the company – the fleet (Database Layer)

F02.1 The database shall store all the information mentioned in F03.1 and F03.2;

- to check transaction processing;

F03   User interface to get info about vehicles from database and update the info in the database (Presentation Layer)

F03.1 A company employee should be able to do the following in the UI:
- all the info visible for the customer;
- last technical inspection date of the car and the next scheduled one;
- current mileage;
- rental history (by whom, when, where, for how long);
- future bookings;
- damage and repair history;
- VIN;
- schedule for service;

F03.2 A potential client should see in the user interface:
- a catalog of cars for rental ;
- cars should be categorized by types (Vans, SUVs, compact class, business class etc.);
- relevant info about car for customer:
    - fuel economy;
    - number of seats / passengers capacity;
    - trunk volume;
    - manual/automatic gearbox;

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        - fuel type (petrol, diesel, LPG, hybrid, electrical etc.)
        - color;
        - horse power;
        - maximum speed;
        - comfort (navigation, A/C, electrical windows/mirrors, radio/cd player etc.)
    - safety systems (ABS, ESP, airbags, etc)

F04   Usage data about each vehicle is updated by a technician after reception of it

F04.1: (to define) live data: mileage, ~~DTCs~~
F04.2: ~~to find how to emulate a telematic box;~~
F04.3: ~~synchronization strategy between database and TBs;~~

II.   Classes and their properties

Vehicle

Vehicle class is containing all the properties that are common to vehicles.

Properties

Property name	Type	Values	
brand	Enum CarManufacturers		
model	Enum <OEM>Models		
modelYear	Integer		

fuel	Enum	1. Petrol
		2. Diesel
		3. Hybrid
		   3.1 Petrol + LPG
		   3.2 Petrol + electric
		   3.3 Petrol + LPG + el
		   3.4 Diesel + electric
		4. Electric	

NoOfSeats	Enum	1. 1 + 1 2. 1 + 3 3. 1 + 4 4. 1 + 7	
HP	Integer		
MaxSpeed	Integer		
FuelConsumption	(aggregation) enum and int	1. urban 2. mixed	

		3. extraurban	
TrunkVolume	Integer		
VIN	String		
License plate	String		

Table II.1: Properties of Vehicle Class

Employee

Client