Universidad Distrital Francisco José de Caldas

UNIVERSIDAD DISTRITAL
FRANCISCO JOSÉ DE CALDAS

Faculty of Engineering

Technical Report Workshop 3

Advanced Programming

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1. Project Description:

This is a program to define a catalog of vehicles, with the next requeriments:

Each vehicle has at least engine, chasis (A or B), model, gas consumption, and year.

Depending on the vehicle type, you should define additional propeties.

There are different vehicle vehicle types: car, truck, yacht, motorcycle.

Each engine has type, potency, weight.

To calculate the vehicle gas consumption you could créate a method based on:

1.1 * engine.potency + 0.2 * engine.weight – (0.3 if chassis == A or 0.5 if chasssis == B).

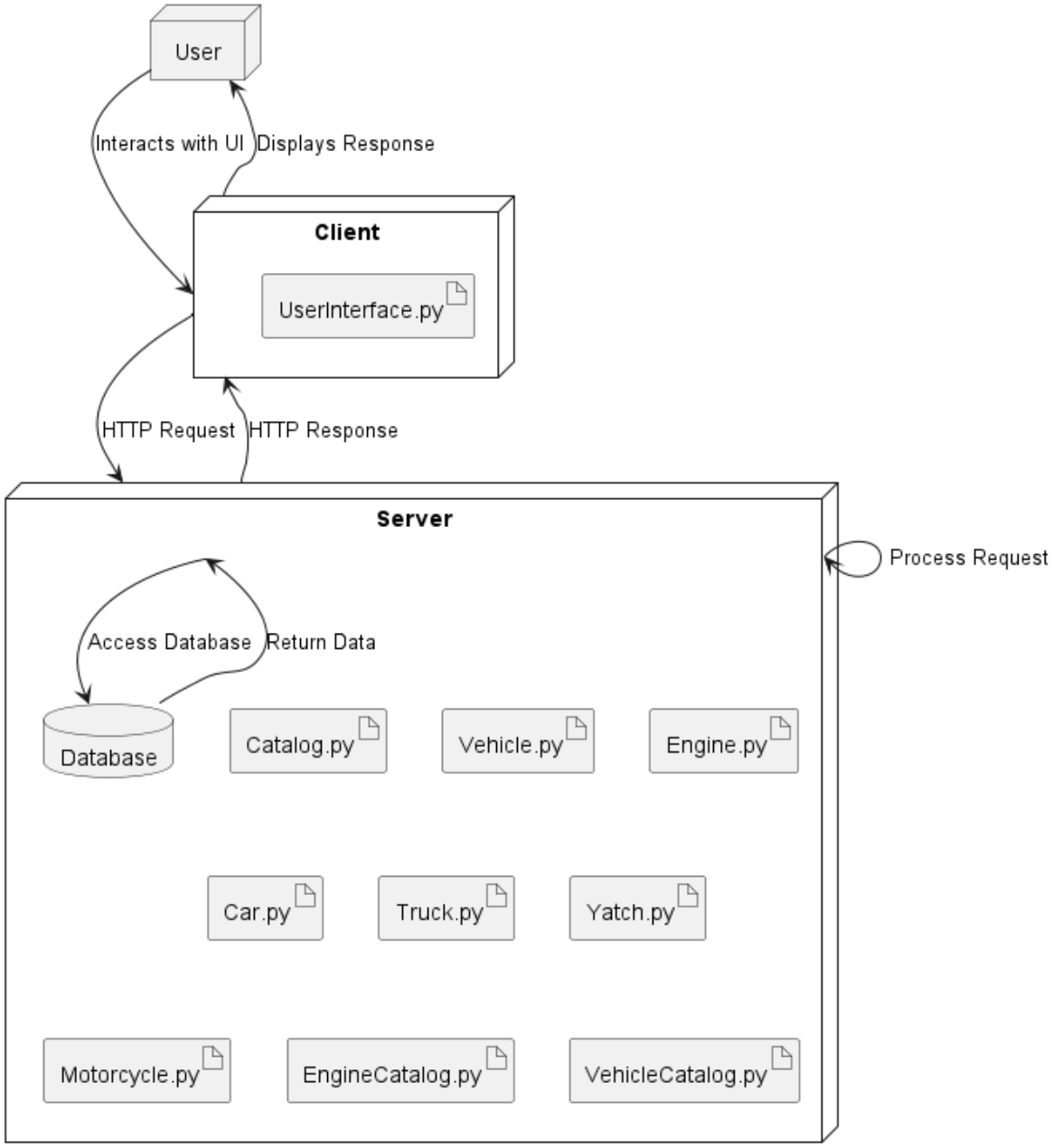
2. User Stories:

1. As a user, I want to view the entire catalog of vehicles so that I can see all available options.
2. As a user, I want to filter vehicles by type (Car, Truck, Yacht, Motorcycle) to narrow down my search.
3. As a user, I want to add a new vehicle to the catalog, providing details such as type, chassis, model, year, engine type, potency, weight, and specific attributes like number of doors or payload capacity.
4. As a user, I want to edit the details of an existing vehicle in the catalog, including its attributes like model, year, engine details, and specific attributes like number of doors or payload capacity.
5. As a user, I want to delete a vehicle from the catalog if it's no longer relevant or available.
6. As a user, I want to search for vehicles by specific attributes such as model, year, or engine type to find vehicles that meet my criteria.
7. As a user, I want to see detailed information about a specific vehicle in the catalog, including all its attributes and specifications.
8. As a user, I want the application to save the catalog data so that I can access it in future sessions.
9. As a user, I want to load previously saved catalog data to resume my work from where I left off.
10. As a developer, I want to have a modular and well-structured architecture to facilitate code maintainability and scalability.
11. As a developer, I want to implement unit and integration tests to ensure the quality and reliability of the software.
12. As a developer, I want to document the code clearly and provide detailed comments to facilitate understanding and collaboration among the team.
13. As a developer, I want to use modern technologies and tools that improve efficiency and productivity in the project development.
14. As a buyer, I want to have access to a complete and updated catalog of vehicles to compare prices and features before making a purchasing decision.
15. As a buyer, I want to filter vehicles by different criteria, such as price, fuel type, and payload capacity, to find the vehicle that best suits my needs and budget.
16. As a buyer, I want to receive notifications about special offers or discounts on vehicles that may be of interest to me.
17. As a buyer, I want to be able to make purchase transactions securely and safely, with convenient and flexible payment options.
18. As a designer, I want to create an intuitive and user-friendly interface that allows users to navigate the vehicle catalog efficiently and effortlessly.
19. As a designer, I want to design a consistent and attractive user experience across all platforms and devices to ensure a uniform experience for all users.
20. As a designer, I want to use user-centered design principles to ensure that the workflow and interaction with the application are intuitive and satisfactory.
21. As a designer, I want to conduct usability testing and gather user feedback to iterate and continuously improve the user experience of the application.

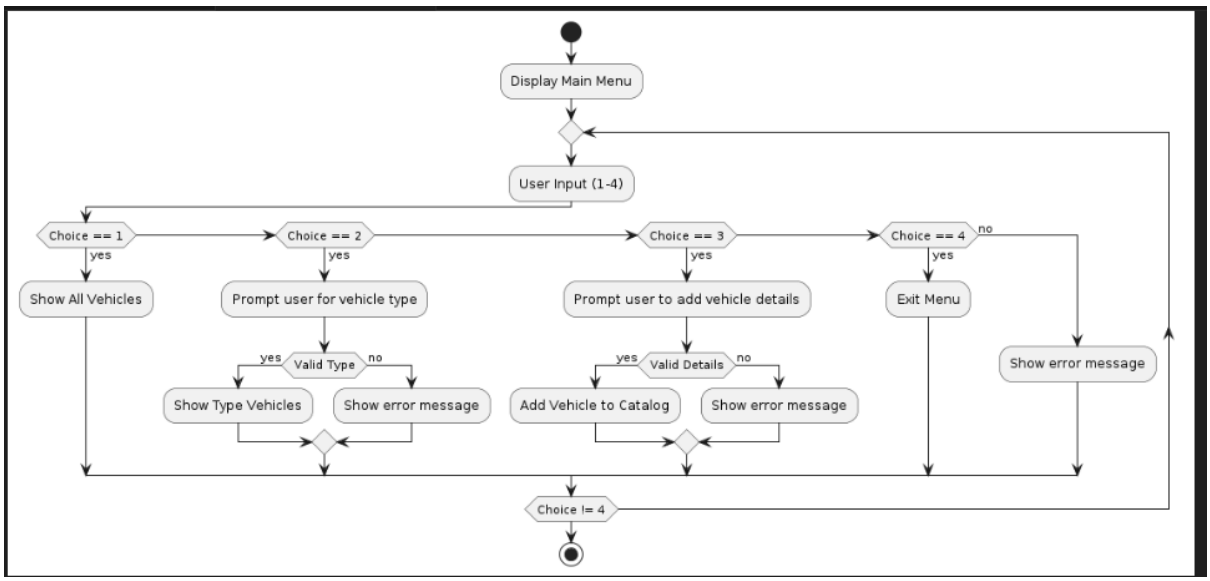
22. As a user, I want to add a new engine to the application, providing its type, potency, and weight.
23. As a user, I want to add a new vehicle to the application, specifying its chassis type, model, gas consumption, year, and associated engine.
24. As a user, I want to view all engines currently registered in the application.
25. As a user, I want to view all vehicles currently registered in the application.

Uml Diagrams

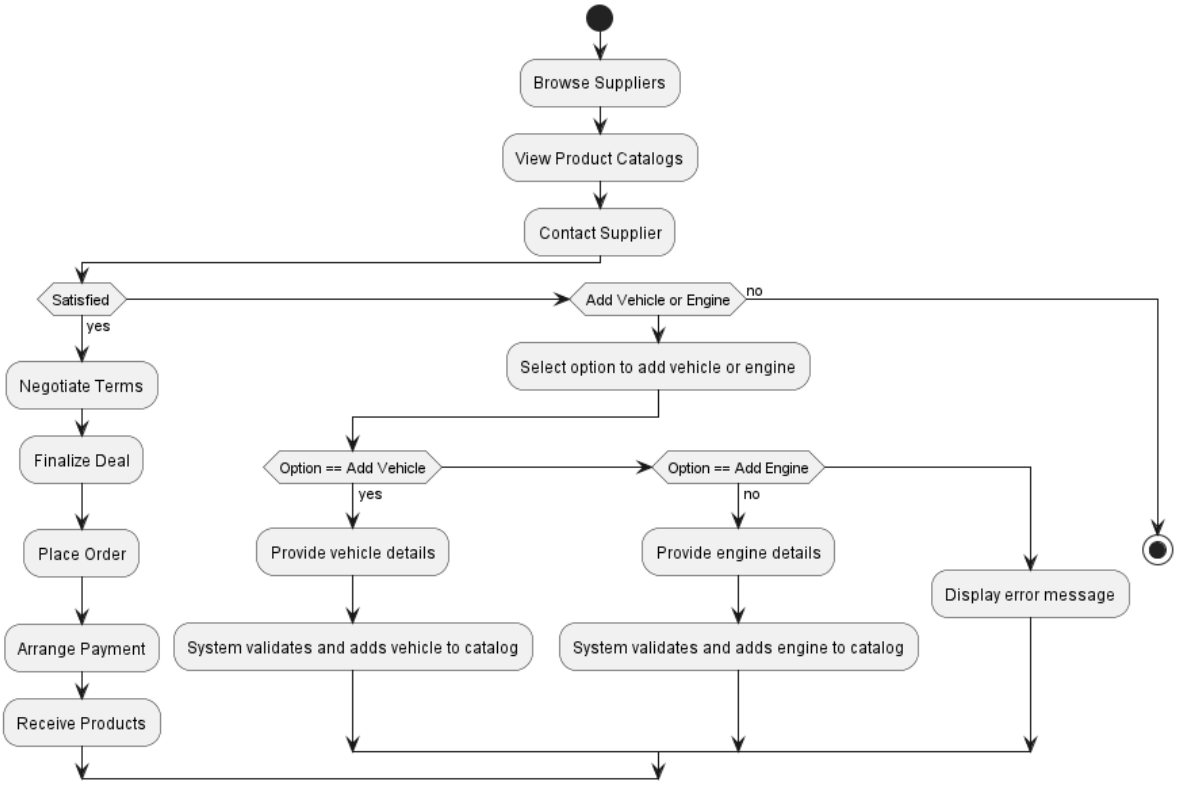
- **Deployment Diagram:**



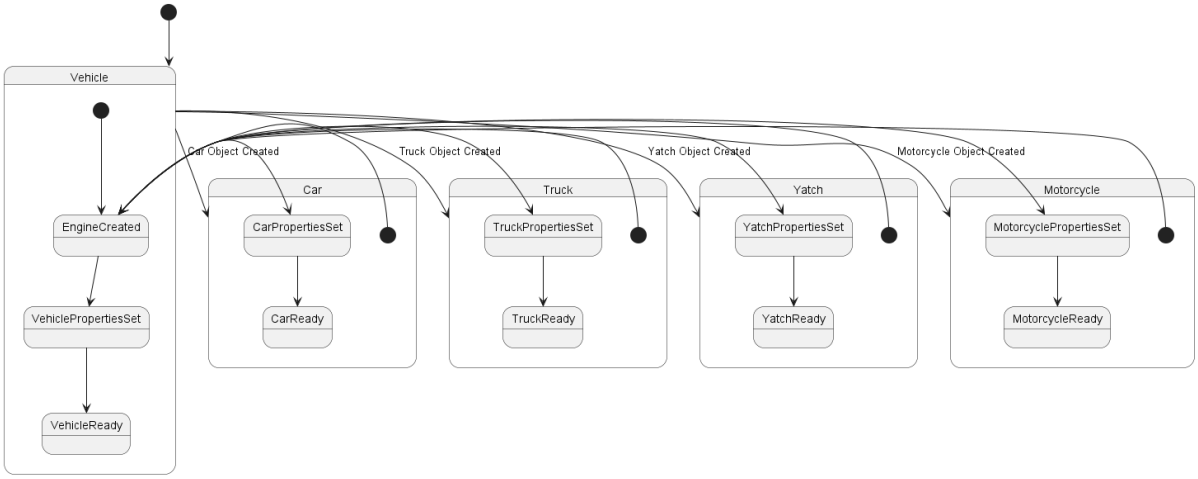
- **Activities Diagrams:**
  - **Menu:**



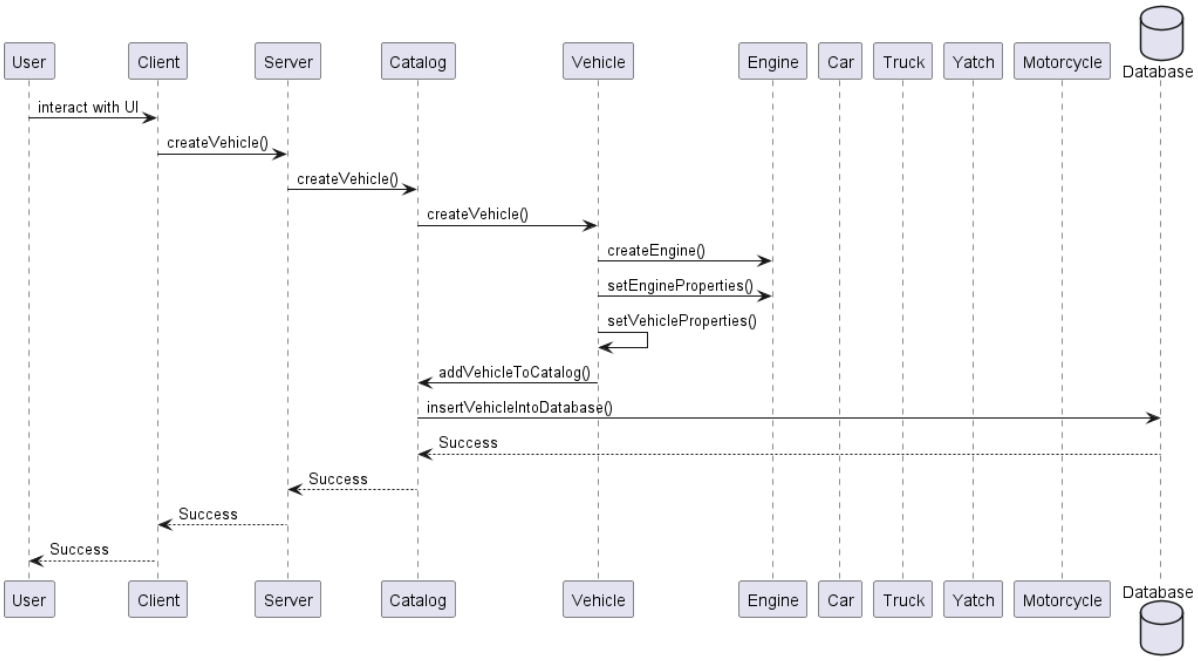
  - **Add:**



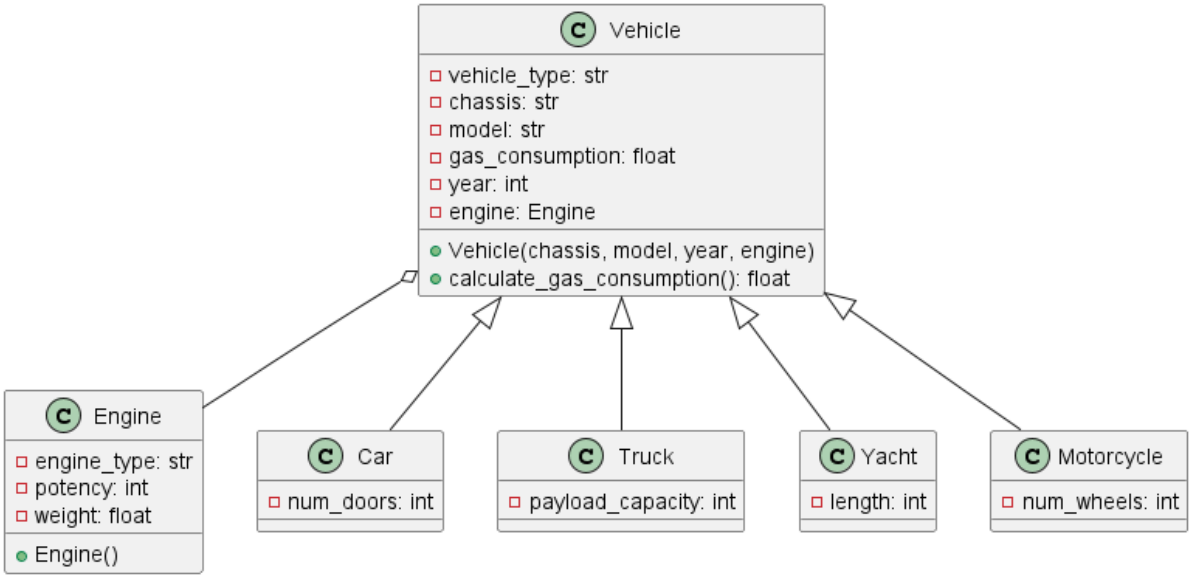
- **Sequence Diagram**



- **State Diagrams**



- **Class Diagram**



- **CRC Cards**

Class Vehicle	
-Know its type, chassis, model, year, gas consumption, and engine details. -Calculate gas consumption. -Provide information about vehicle.	-Engine

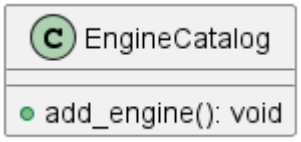
Class Engine	
-Know engine potency, type and weight.	-None

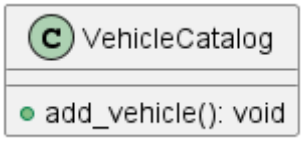
Class Car(Subclass of Vehicle)	
-Know number of doors.	-None

Class Motorcycle(Subclass of Vehicle)	
-Know numbers of wheels.	-None

Class Truck(Subclass of Vehicle)	
-Know payload capacity.	-None

Class Yatch(Subclass of Vehicle)	
-Know length.	-None





Rules of business

Vehicle Catalog Requirements:
1.1. The catalog should include vehicles with the following minimum attributes: engine, chassis (either A or B), model, gas consumption, and year.

Vehicle Types:
2.1. Define different types of vehicles: car, truck, yacht, motorcycle.

Additional Properties Based on Vehicle Type:
3.1. Depending on the vehicle type, define additional properties specific to that type. For example:
- Car: Number of doors, seating capacity, etc.
- Truck: Cargo capacity, number of axles, etc.
- Yacht: Length, maximum speed, number of cabins, etc.
- Motorcycle: Engine type, maximum speed, etc.

Engine Characteristics:
4.1. Each engine should have the following attributes: type, potency, weight.

Gas Consumption Calculation:
5.1. Create a method to calculate gas consumption based on the following formula:
- gas_consumption = engine.potency + 0.2 * engine.weight - (0.3 if chassis == A or 0.5 if chassis == B).

Adding Engine and Vehicle:
6.1. Implement functionality to add engines with their respective attributes.
6.2. Implement functionality to add vehicles with their attributes, including engine, chassis, model, gas consumption, and year.