Car Rental System

What is this project about?

We are building a simple car rental system that lets people rent cars easily using a computer program. This program will help two types of users: regular customers (called Clients) and managers (called Admins). Customers can rent cars, return them, and check their rental history. Managers can add new cars, update car details, and see all rental records. The program will store all information in a database, so everything is safe and organized.

Why are we doing this?

This project will make renting cars easier and faster. Right now, renting a car can be slow because people need to talk to someone at a desk, and records can get lost. Our system will:

- Let customers rent cars quickly using a computer.
- Keep track of all cars and rentals in one place.
- Help managers add or remove cars easily.
- Make sure no one can cheat the system by keeping all data secure.

What will the system do?

For Customers (Clients):

- **Login**: Customers can sign in with their email and password.
- **Create Account**: New customers can make an account to start renting.
- **View Cars**: See a list of cars they can rent.
- **Rent a Car**: Pick a car and say how many hours they want it for.
- **Return a Car**: Give the car back when they're done (it will tell them if they're late and owe a fine).
- **Check My Rentals**: See a list of all the cars they've rented before.
- **Update My Info**: Change their name, email, or phone number.
- **Change Password**: Pick a new password if they want.
- **Quit**: Exit the program when they're done.

For Managers (Admins):

- **Login**: Sign in to manage the system.
- **Add New Car**: Add a new car to the list (like its brand, model, and price).
- **Update Car**: Change details of a car (like its price or color).
- **Delete Car**: Remove a car if it's not needed anymore.
- **Add New Manager**: Create an account for another manager.
- **View All Rentals**: See all the rentals that have happened.
- **Check One Customer's Rentals**: Look at the rental history of a specific customer.
- **View Cars**: See the list of all cars.
- **Update My Info**: Change their own details.
- **Change Password**: Pick a new password.
- **Quit**: Exit the program.

How will the system work?

- The program will run on a computer and use a simple text menu (you type numbers to pick what you want to do).
- It will connect to a database (a safe place to store information) to keep track of users, cars, and rentals.
- We'll use Java (a programming language) to build the program.
- The database will be MySQL, which is good for storing and finding information quickly.

What do we need to finish this project?

- **People**:
    - 1-2 programmers to write the code.
    - 1 person to test the program and make sure it works.
- **Tools**:
    - A computer with Java installed (to write the program).

    - MySQL database software (to store the data).
- **Time**:
    - Planning and writing the code: 2 weeks.
    - Testing the program to fix problems: 1 week.
    - Making final changes and finishing: 1 week.
    - **Total Time**: About 1 month.

What steps will we take?

1. **Plan the Program**:
    - Decide exactly what features we need.
    - Make a list of all the menus and options.
2. **Set Up the Database**:
    - Create tables to store users, cars, and rentals.
    - Make sure the database is ready to use.
3. **Write the Code**:
    - Build the login and account creation part.
    - Add features for customers (like renting and returning cars).
    - Add features for managers (like adding new cars).
4. **Test the Program**:
    - Try renting cars, returning them, and using all features.
    - Fix any problems we find (like errors or crashes).
5. **Finish and Share**:
    - Make sure everything works perfectly.
    - Write a short guide on how to use the program.
    - Share the program with users.

What might go wrong?

- The program might have bugs (like crashing when someone types something wrong). We'll test a lot to catch these.
- The database might not connect properly. We'll double-check the setup.
- It might take longer than 1 month if we find big problems. We'll keep extra time just in case.

Who will use this system?

- **Customers**: People who want to rent cars easily.
- **Managers**: People who run the car rental business and need to keep track of cars and rentals.

Why will they like it?

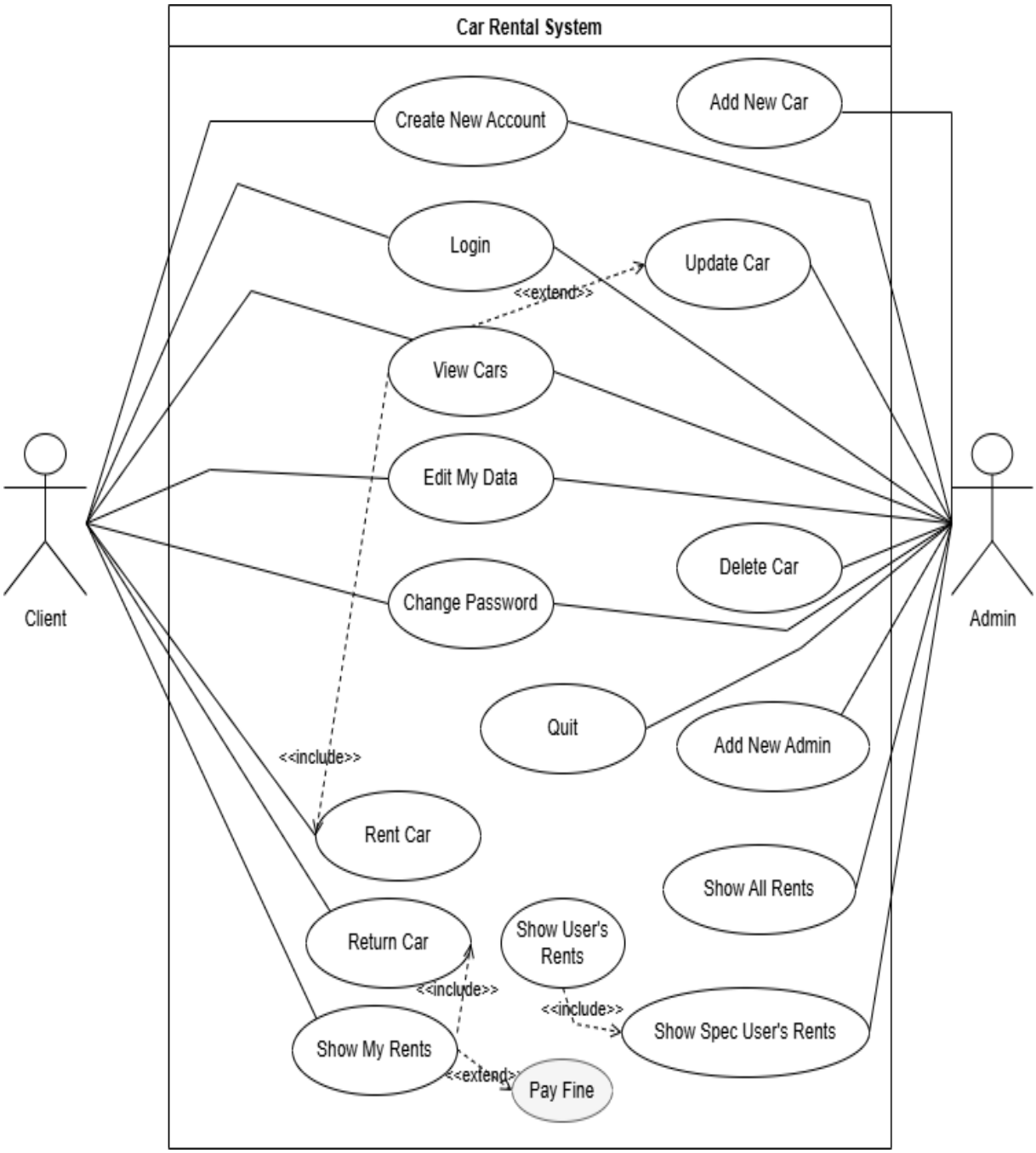
- It's easy to use—just type numbers to pick what you want.
- It's fast—no waiting in lines or filling out paper forms.
- It's safe—all information is stored securely in the database.

How will we know it's successful?

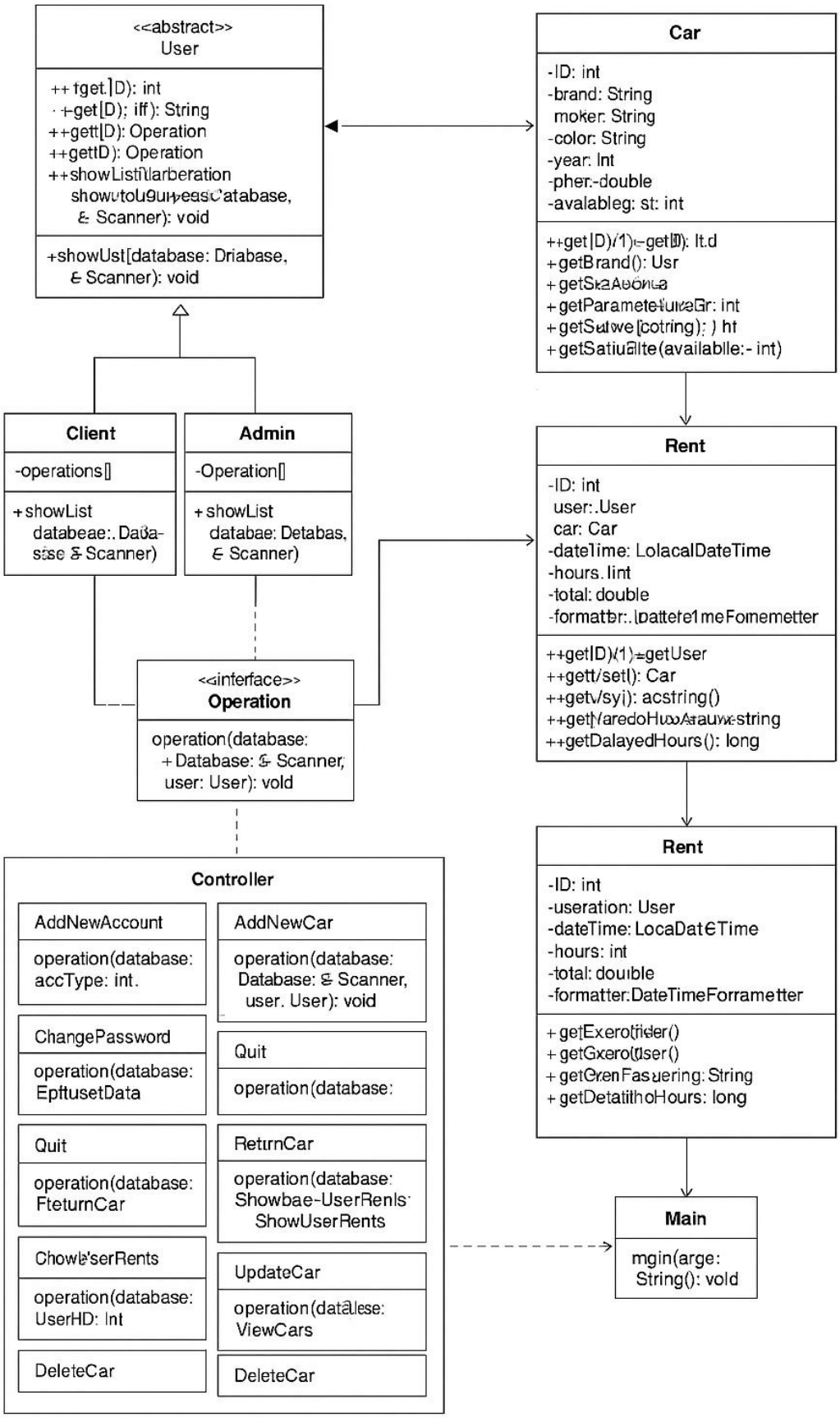
- Customers can rent and return cars without any problems.
- Managers can add cars and check rentals easily.
- The program doesn't crash or lose any data.
- People say they like using it because it saves them time.

We hope this project will make renting cars simple and quick for everyone! If you have any questions, please let us know.

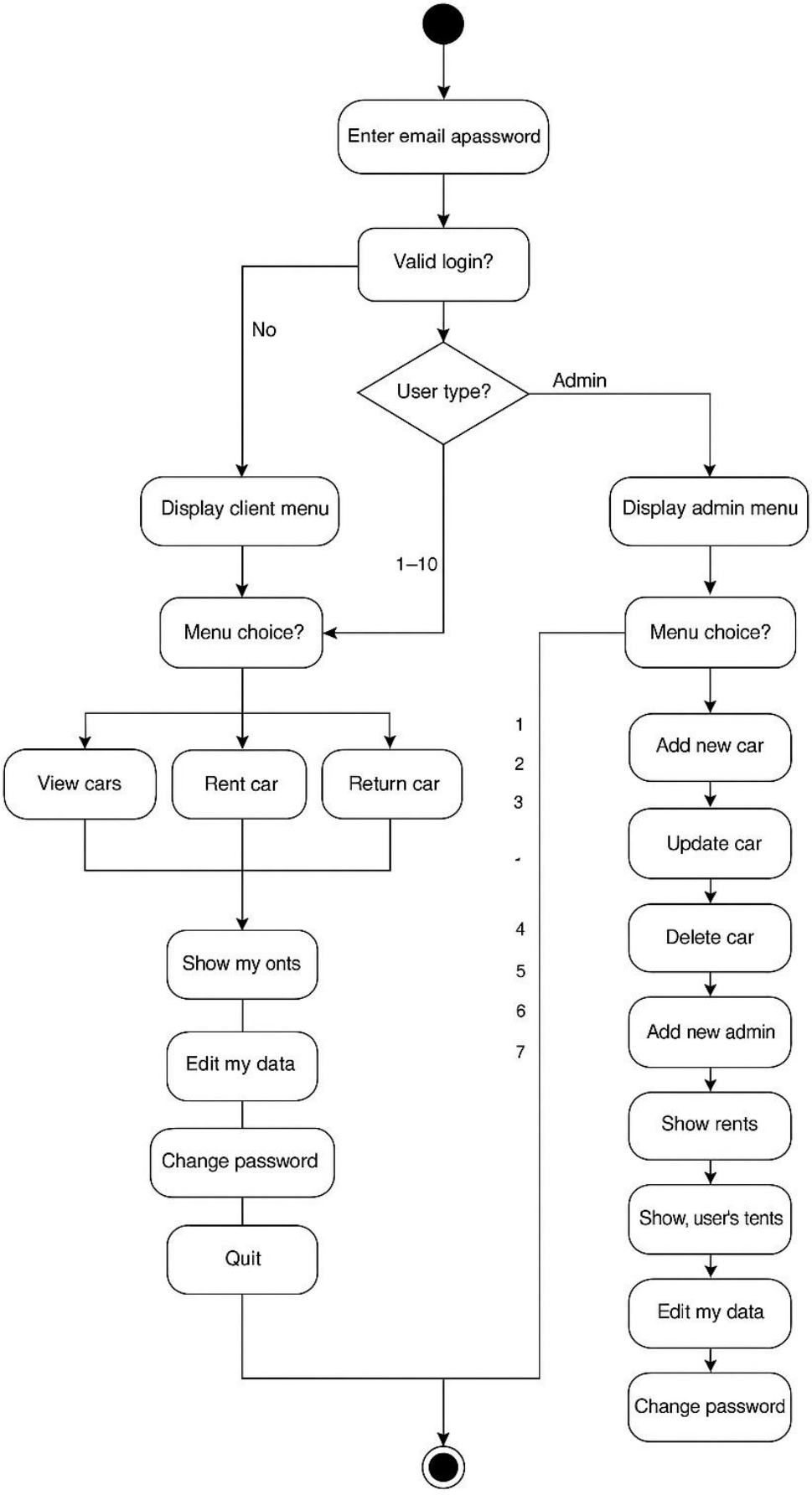
1. Use Case Diagram:



1. Class Diagram:



3. Activity Diagram:



Conclusion:

In conclusion, the car rental system project successfully outlines its functionality through key diagrams. The use case diagram shows how Clients and Admins interact with features like renting and managing cars. The class diagram details the structure, connecting classes like User, Car, and Rent. The activity diagram maps the flow from login to operations, ensuring smooth user navigation. These diagrams provide a clear blueprint for building an efficient and user-friendly system.

GitHub Repo Link: https://github.com/raofun/OOD-Car-Rental-Sytem