2025/2026

MOBILE PROGRAMMING PROJECT

Major: Computer and Telecommunications Engineering

Car Rental Project

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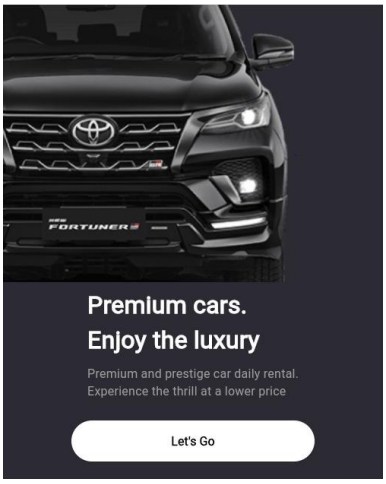
I- Introduction

RentApp is a mobile car rental application developed using Flutter for the frontend and MongoDB for data storage. The application follows the principles of Clean Architecture to ensure a clear separation of concerns and maintainable code structure. State management is handled using the Bloc pattern, allowing efficient control of user interactions and application flow. The application provides an intuitive interface for browsing available vehicles, making reservations, and managing rentals. Although primarily designed for car rental services, the system can be easily adapted for other types of rental applications.

II- Structure

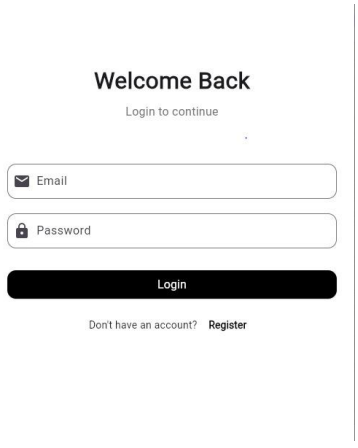
II.1- Home Page



The application starts with a home page that serves as the main entry point for users. It presents a clean and simple interface allowing users to easily navigate through the different sections of the application. From the home page, users can login and registration page.

Figure 1 – Home Page

II.2- Authentication (Login and Registration)



Login Page

The login page allows existing users to access their accounts by entering their credentials. The system verifies the information using the MongoDB database and Bloc state management to handle loading, success, and error states.

Figure 2 - Login Page

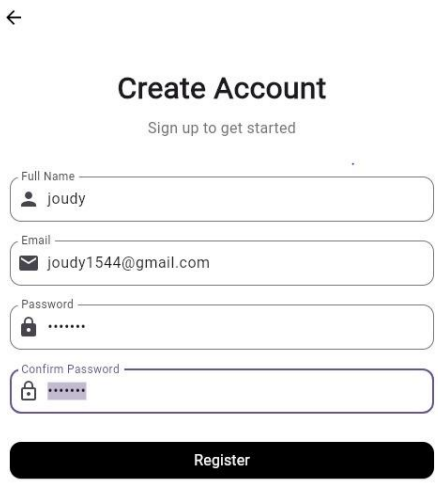


Figure 3- Registration Page

Registration Page

The registration page enables new users to create an account by providing basic personal information. The entered data is stored securely in the database, allowing users to log in and use the application features.

II.3- Car Listing and Booking

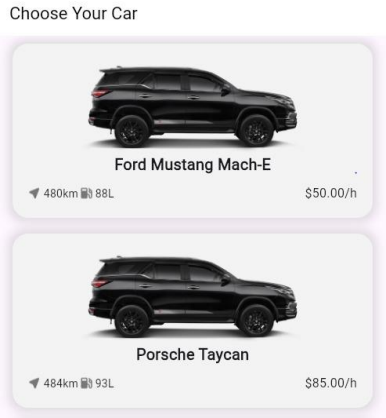


Figure 4- Car Listing Page

Car Listing Page

After logging in, users can access the main page displaying all available cars for rent. Each car is presented with its basic information, including the model and the rental price per hour. This allows users to quickly browse and compare available vehicles. This is a small sample.

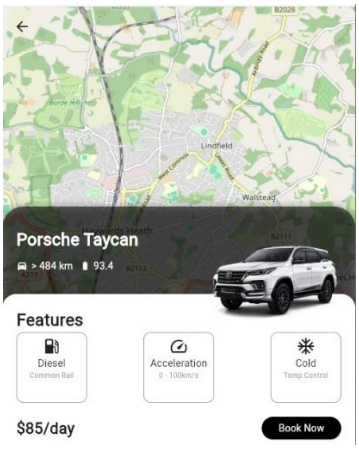
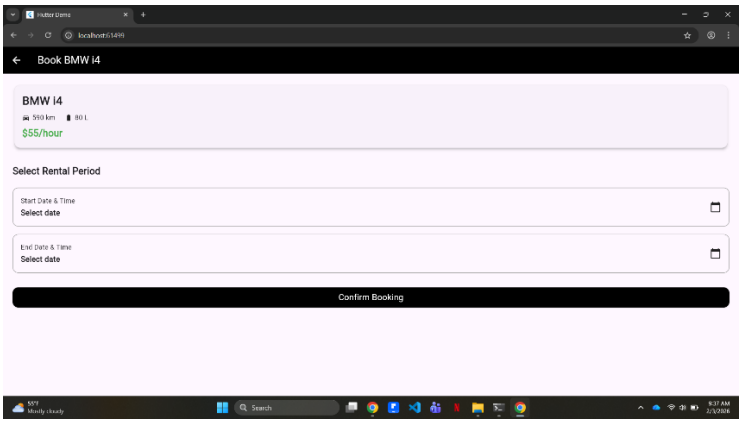


Figure 5- Car Details and Booking

Car Details and Booking

By selecting a car from the list, users are redirected to a detailed page showing additional information about the chosen vehicle. From this page, users can proceed to book the car by selecting the rental duration and confirming the reservation. The booking data is then saved in the database.

II.4- Rental Period Selection and Booking



After selecting a car, users are directed to a booking page where they can choose the rental start date and the rental period.

Figure 6- Booking's Details

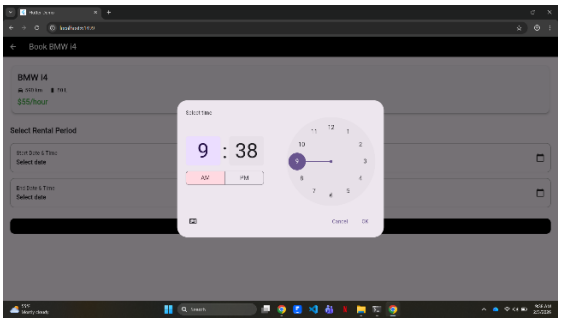


Figure 7- Time Selection

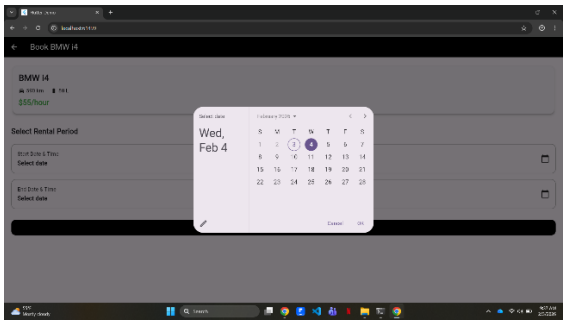
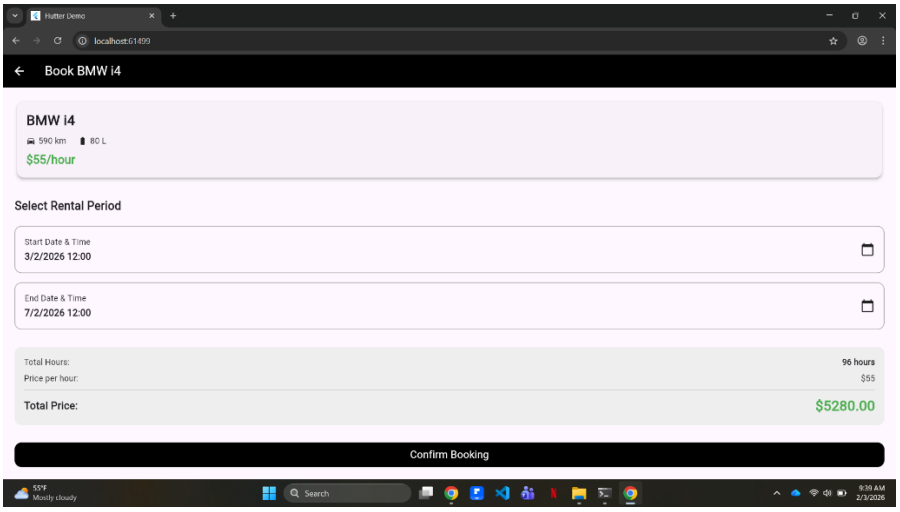


Figure 8- Date Selection

II.5- Booking Confirmation and Management



Once the user selects the rental date and period, the application automatically calculates the total rental cost based on the hourly price of the selected car and the chosen duration.

Figure 9- Total Calculation

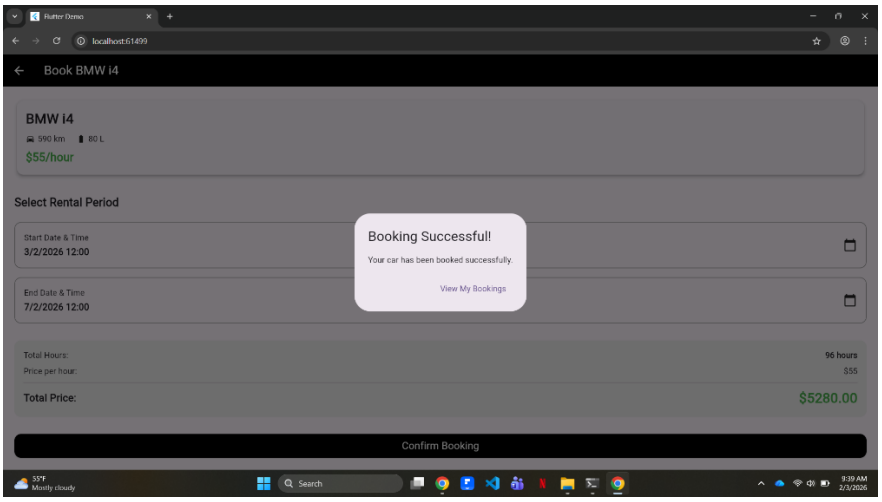


Figure 10- Booking Car

The user then confirms the reservation, and all booking details are stored in the MongoDB database for future management.

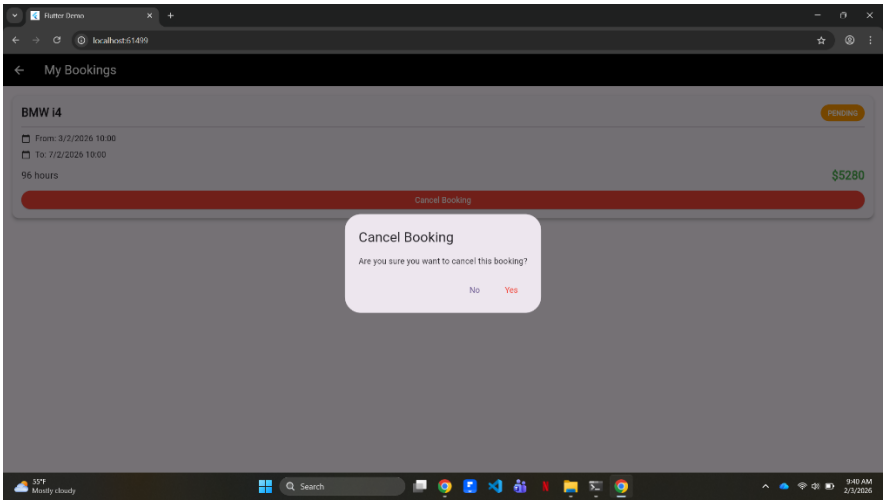


Figure 11- Booking Cancelation

Users also have the ability to view and cancel their reservations if needed, allowing flexible rental management.

III- Conclusion

RentApp is a complete mobile car rental application developed using Flutter and following Clean Architecture principles. The use of Bloc for state management ensured smooth interaction between different parts of the application, while MongoDB provided a flexible and efficient database solution for storing user and booking information.

The integration of OpenStreet Maps enhanced the user experience by offering location-based features. Overall, the project successfully delivers an intuitive and scalable rental platform that can be adapted to other rental services in the future.