

SECP3723 SYSTEM DEVELOPMENT TECHNOLOGY Faculty of Computing 2023/2024 SESSION

Mini Project Report ABC Car Rental System

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Lecturer Name:

Prof. Madya. Dr. Haza Nuzly Bin Abdull Hamed

Prepared By:

Name: Nur Arini Fatihah Binti Mohd Sabir

Matrics Number: A22EC0244

Section: 01

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1. System Introduction

1.1 Overview

ABC Car Rental System is mainly the system where customers can rent a car easily by opening the system and choosing the car they want by looking at the vehicle details. Additionally, they also get the opportunity to manage their booking easily. This system is far more beneficial than the old system where customers need to contact the car rental staff to manage their booking. They can use the system anytime, the system is 24 hours on service which is flexible for car rental customers. Moreover, this system is also safe for customers where their details will be stored safely.

For admins who need to manage the booking, it is also convenient for them as the system has an auto-approve function that doesn't need them to check the booking record. They also can see the sales summary on the dashboard which helps them to count total sales and others.

1.2 Purpose

The purpose of the ABC Car Rental System is to provide customers with a convenient and flexible platform for renting cars. By allowing customers to easily access vehicle details and manage their bookings at any time, the system eliminates the need for direct contact with car rental staff. For administrators, the system streamlines the booking process with an auto-approve function and provides a sales summary on the dashboard for efficient tracking of total sales. Overall, the system aims to enhance the rental experience for both customers and administrators. Additionally, the purpose of the ABC Car Rental System includes the development of a high-security framework that ensures the protection of user credentials from malicious activities, enhancing the overall trust and confidence of users in the system.

1.3 Scope

The scope of the ABC Car Rental System primarily focuses on providing a user-friendly and efficient platform for customers to rent cars. It emphasizes features such as easy access to vehicle details, convenient booking management, and 24/7 availability. The system also caters to the needs of administrators by automating the approval process and offering a sales summary for effective tracking. While the system aims to enhance the car rental experience, it does not extend to other aspects beyond the rental process, such as vehicle maintenance or customer support beyond booking management.

1.4 Definitions, Acronyms and Abbreviations

1. Car Rental System:

A software application that facilitates the process of renting vehicles to customers by providing features such as vehicle selection, booking management, and payment processing.

2. Vehicle Details:

Information about a specific car available for rent, including its make, model, year, mileage, features, and any other relevant specifications.

3. Booking Management:

The process of handling and organizing customer reservations, including checking availability, confirming bookings, managing modifications or cancellations, and generating rental agreements.

4. Auto-approve:

Refers to the automatic approval feature in the system that allows bookings to be approved without manual intervention from administrators.

Dashboard:

A visual interface that provides an overview of important information and key performance indicators, allowing administrators to monitor and analyze data at a glance.

Malicious: Refers to activities or intentions that are harmful, malicious, or with ill intent, such as unauthorized access, data breaches, or attempts to compromise the security of the system.

2. System Design

2.1 Use Case

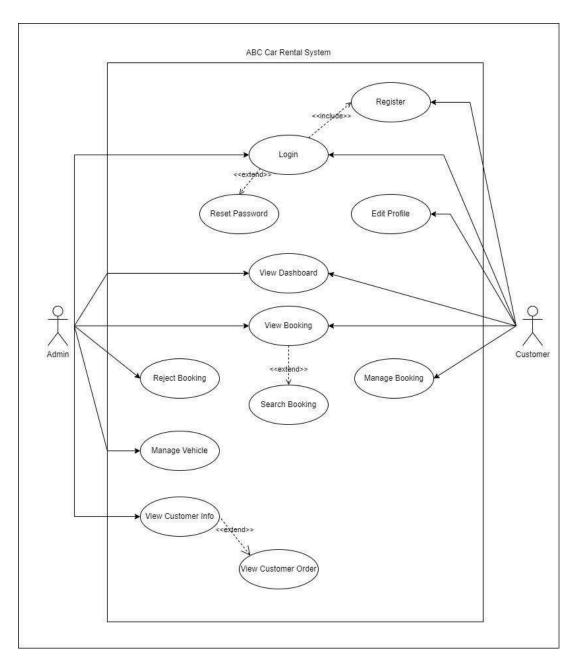


Figure 2.1 - Usecase Diagram ABC Rental Car System

2.2 Conceptual Entity Relationship Diagram (ERD)

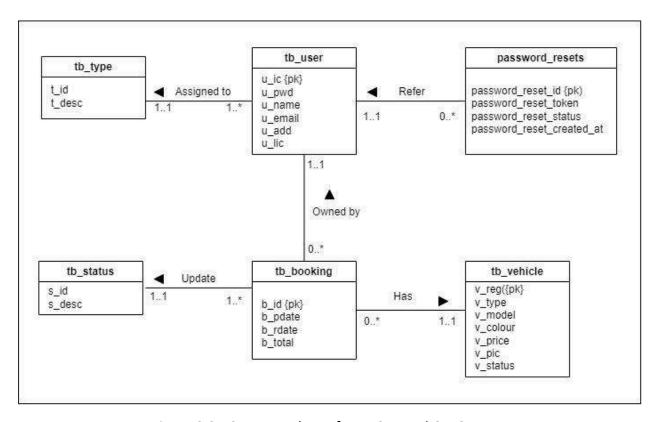


Figure 2.2 - Conceptual ERD for ABC Rental Car System

Figure 2.1 presents the use case diagram I constructed based on the existing physical ERD and the system. This diagram effectively illustrates the interactions between use cases within the system. By visually representing the relationships and dependencies between various use cases, it provides an overview of how different functionalities and user actions are interconnected.

Additionally, Figure 2.2 showcases the conceptual ERD I derived from the underlying physical ERD. This conceptual representation captures the relationships and multiplicities among all entities involved. By incorporating these relationships into the ERD, a comprehensive understanding of the system's functionality and data flow is achieved.

Combining the use case diagram and the conceptual ERD allows for a holistic view of the system, as it illustrates both the high-level interactions between use cases and the underlying relationships among the entities. This integrated approach aids in identifying dependencies, optimizing system design, and ensuring the successful implementation of the desired functionality.

3. Development Software, Language, Technology and Tools

Development Software:

1. Sublime Text: A text editor used for writing and editing code. https://www.sublimetext.com/

Technologies and Languages:

- 1. HTML: Used for structuring the email content.
- 2. CSS: Used for styling the email layout and appearance.
- 3. JavaScript: Used for adding interactivity to the email, if applicable.
- 4. PHP: Used for server-side scripting and handling email sending functionality.
- 5. XAMPP: A local server package that includes Apache, MySQL, and PHP, used for local development and testing. https://www.apachefriends.org/
- 6. 00webhost: A web hosting service used for hosting the website and PHP scripts. https://www.000webhost.com/

Tools and Libraries:

1. Composer: A dependency management tool for PHP that is used to install and manage PHPMailer and its dependencies.

https://getcomposer.org/doc/03-cli.md

4. Database Design

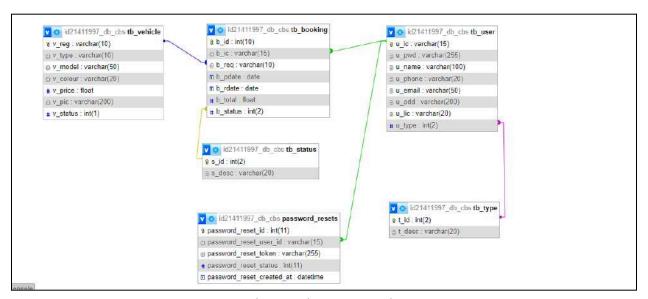


Figure 4 - phpMyAdmin Screenshot

Based on figure 4, this is the physical ERD that I improved from the old version of ABC Rental Car that was created in class. I added password resets table to manage forgot password, add v_pic column in tb_vehicle to allow admin upload car image and include v_status in tb_vehicle to allow admin to see if the vehicle is deleted/inactive or available.

5. Development Steps

1. Requirement Analysis:

- Understand the project requirements and objectives based on the instruction given in e-learning.
- Gather and document functional and non-functional requirements.
- Clarify any ambiguities and seek additional information.

2. Design:

- Create a system architecture based on the requirements.
- Break down the system into smaller components.
- Define the data structures, algorithms, and interfaces.

3. Development:

- Set up the development environment, including the necessary software and tools.
- Write code based on the design specifications.
- Follow coding best practices and coding standards.
- Implement the desired features and functionality.

4. Testing:

- Develop and execute test cases to verify the correctness of the code.
- Perform unit testing to ensure individual components work as expected.
- Conduct integration testing to validate the interaction between different modules.
- Identify and fix any bugs or issues discovered during testing.

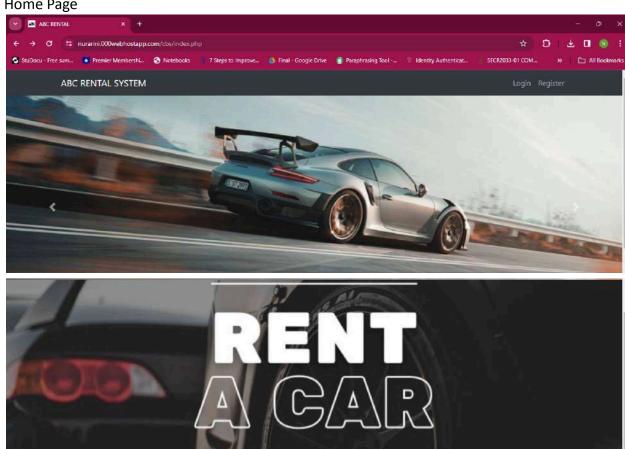
5. Deployment:

- Configure the necessary infrastructure, servers and databases.
- Package the system and its dependencies for deployment.
- Deploy the system to the webhost.
- Perform any required post-deployment tasks, database migrations and configuration updates.

System Interface for All Users 6.

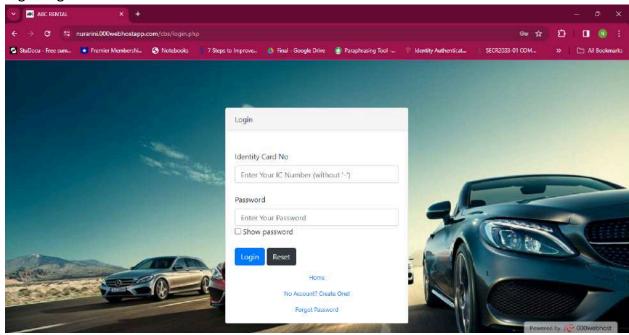
6.1 Interface for both Admin and Customer

1. Home Page

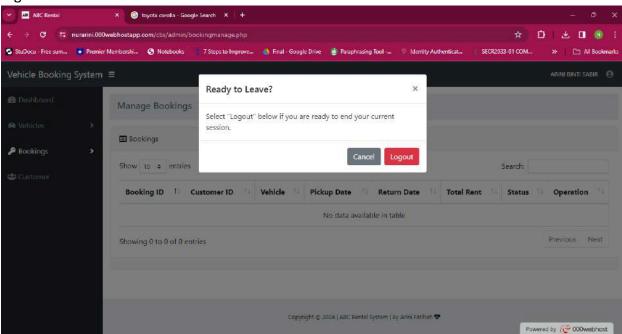


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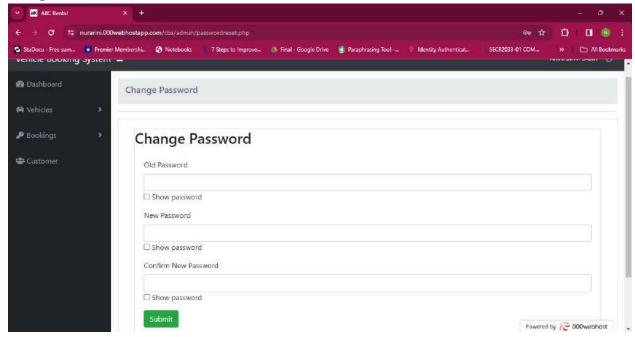
2. Login Page



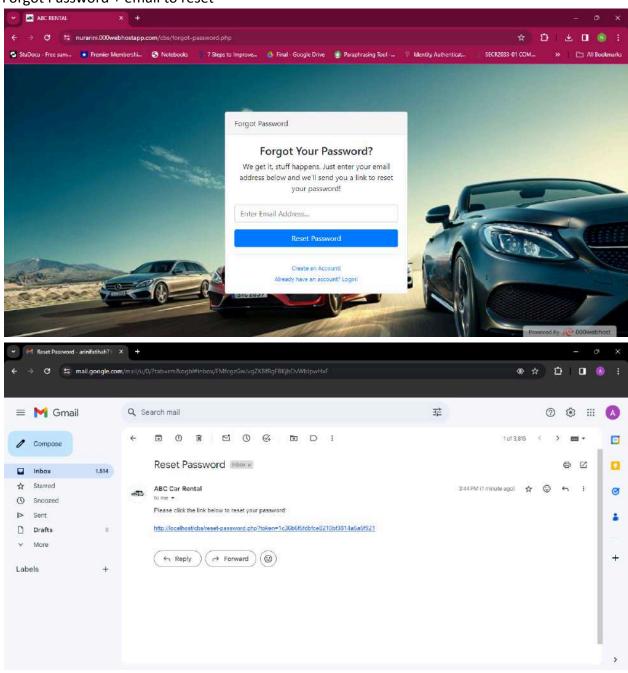
3. Logout Alert



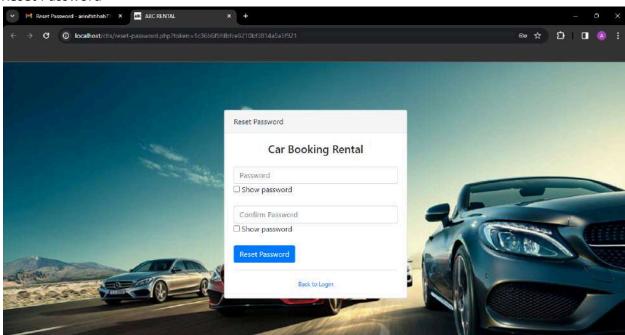
4. Change Password



5. Forgot Password + email to reset

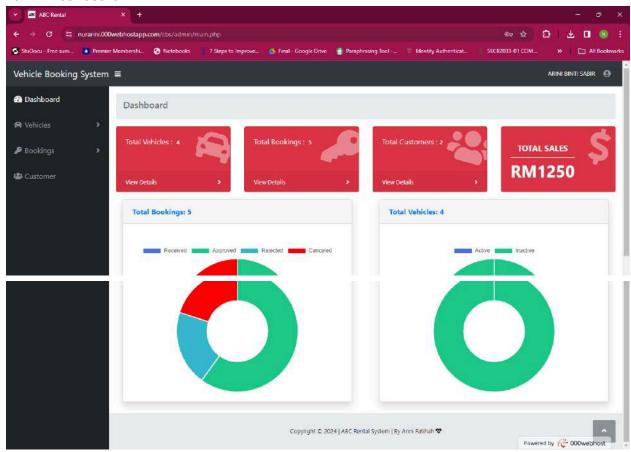


6. Reset Password

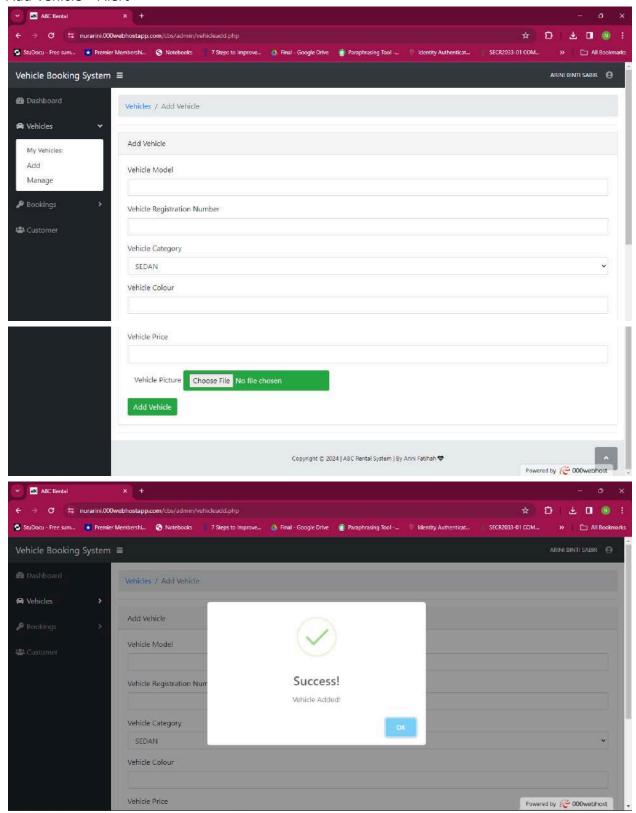


6.1 Admin Interface

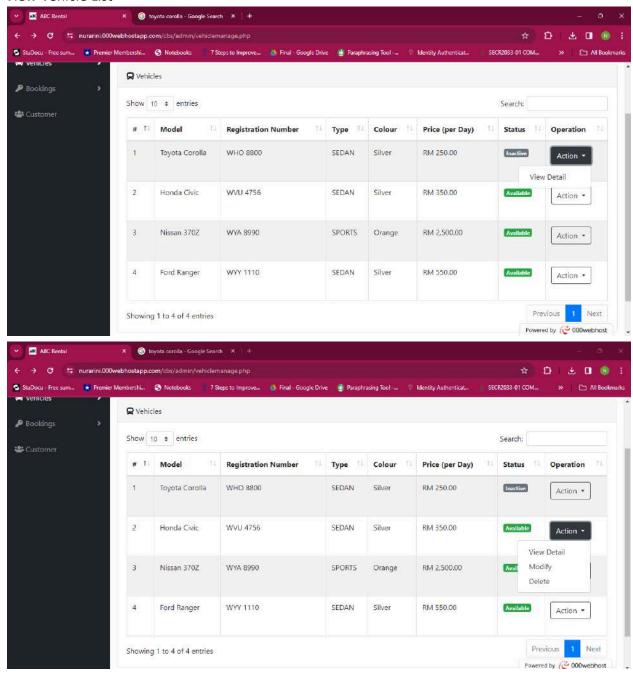
1. Admin Dashboard



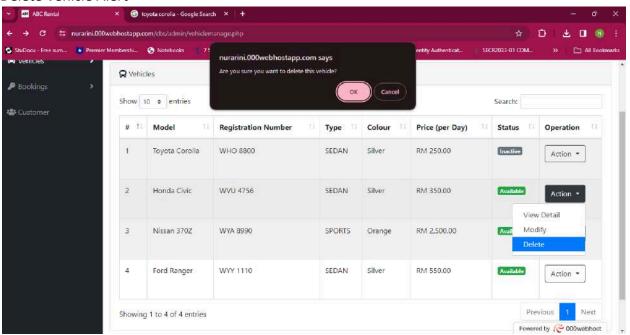
2. Add Vehicle + Alert



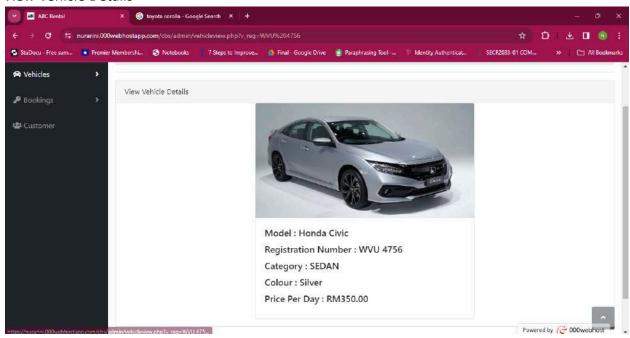
3. View Vehicle List



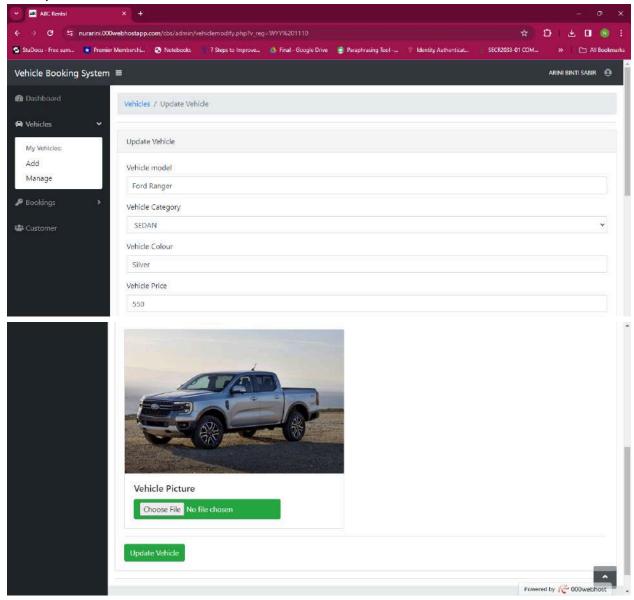
4. Delete Vehicle Alert

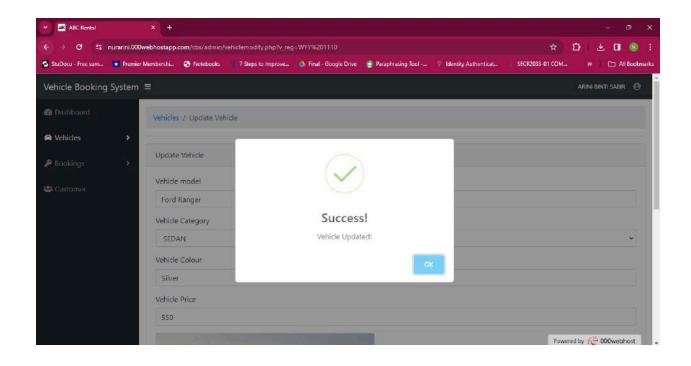


5. View Vehicle Details

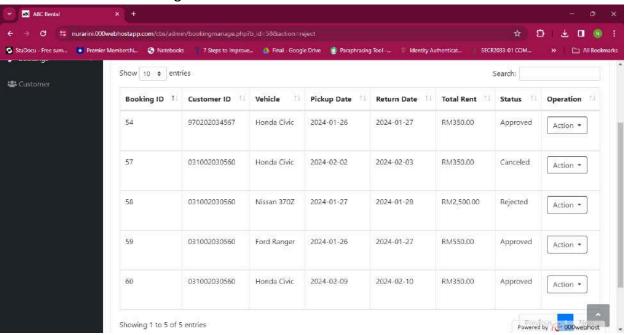


6. Modify Vehicle +Alert

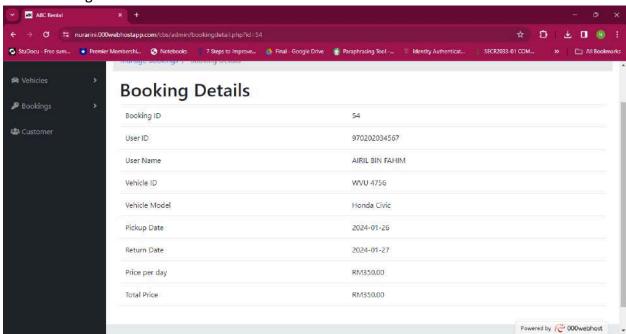




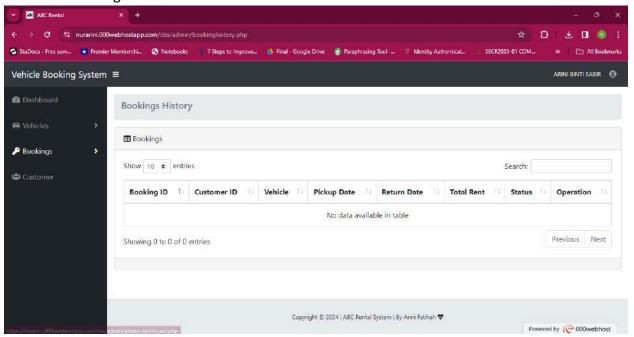
7. View List of Current Booking



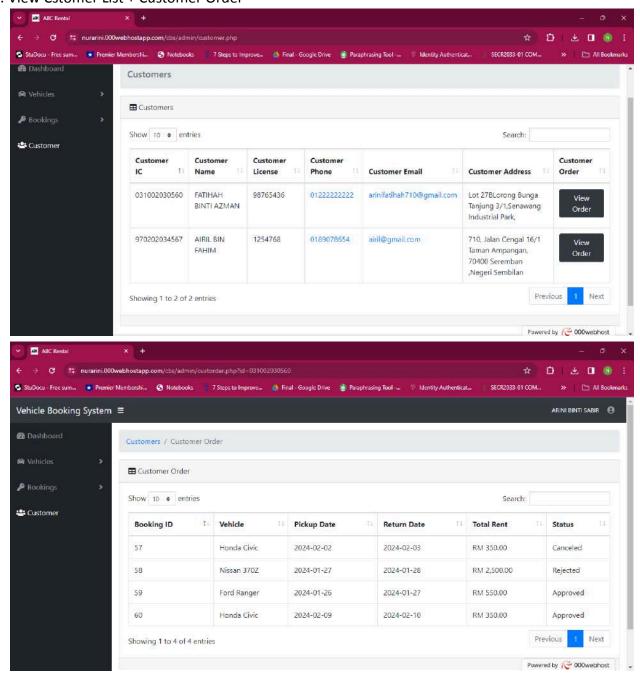
8. View Booking Details



9. View Past Booking

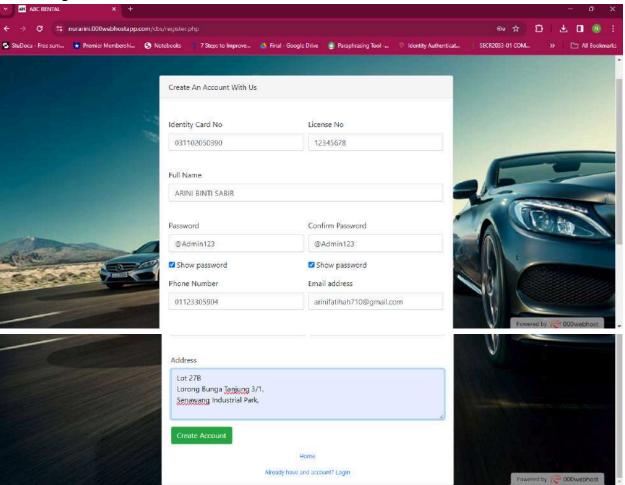


10. View Cstomer List + Customer Order

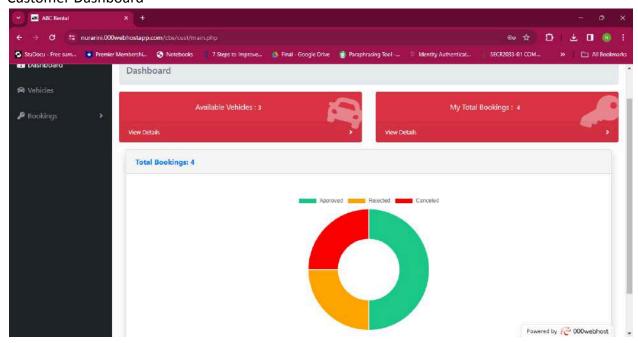


6.2 Customer Interface

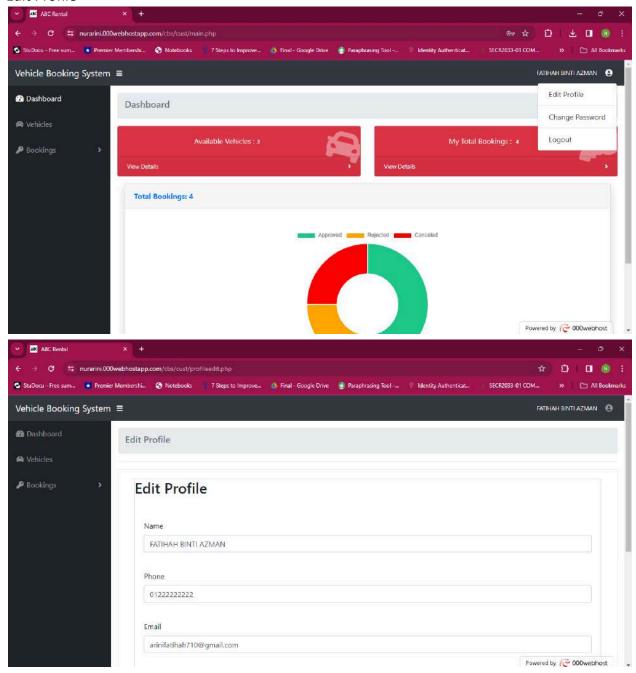
1. Register



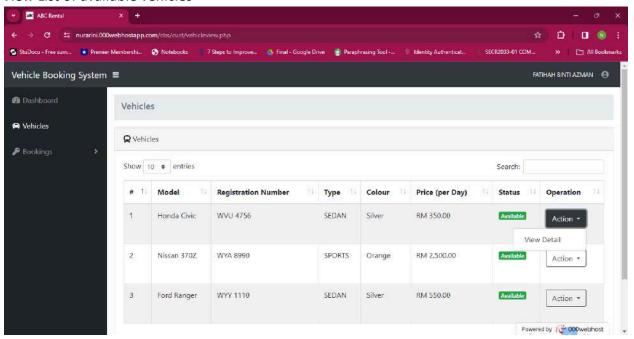
2. Customer Dashboard



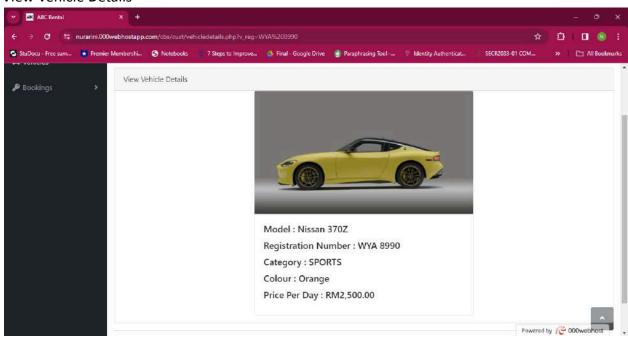
3. Edit Profile



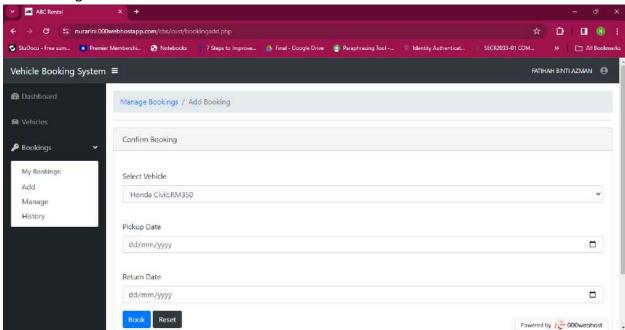
4. View List of available vehicles



5. View Vehicle Details

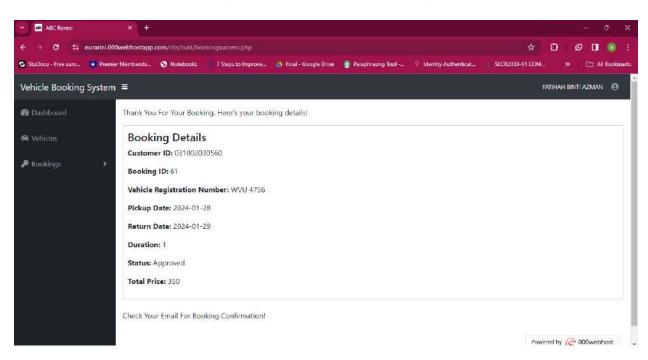


6. Add booking

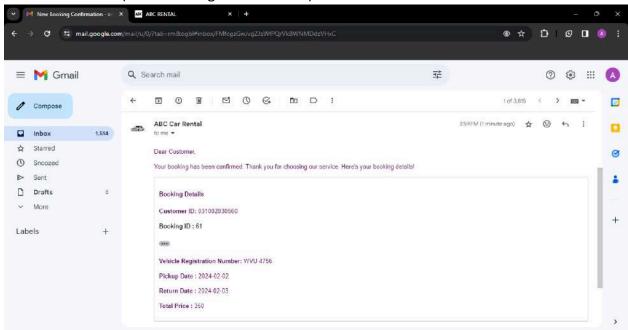


7. After Added booking

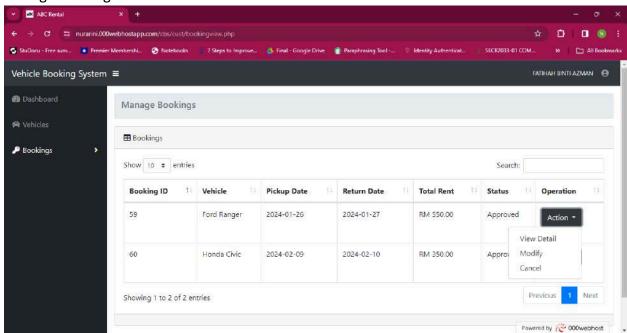




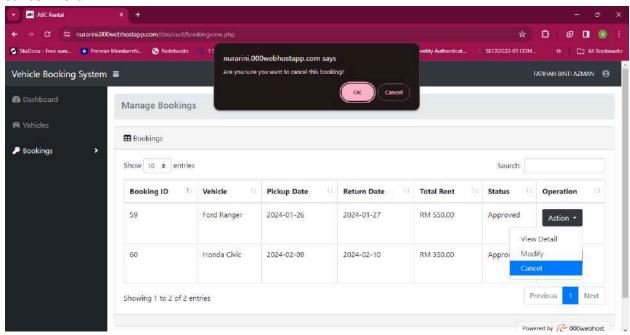
8. Email Notification (New Booking Confirmation)



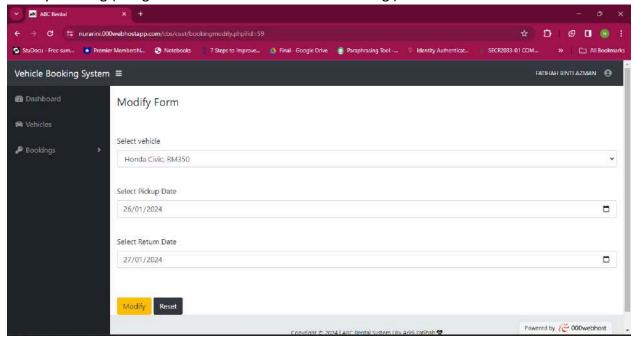
9. Manage Bookings



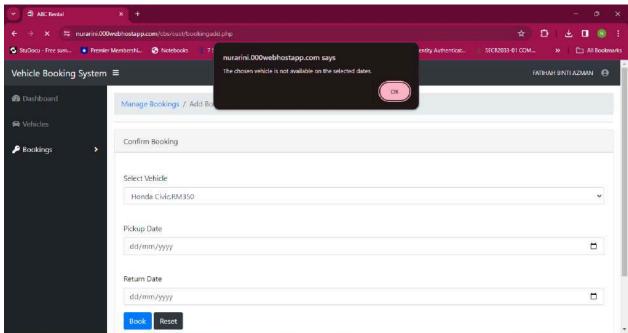
10. Cancel Alert



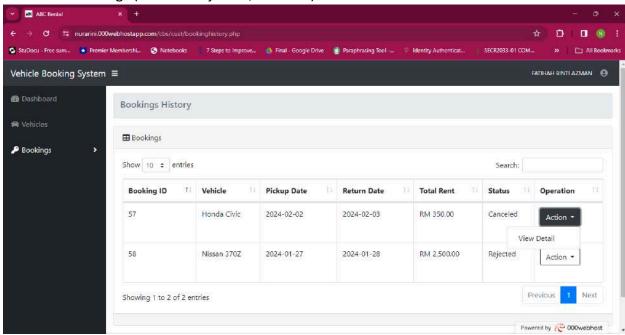
11. Modify Booking (will get email notification like add booking)



12. Alert if vehicle not available at selected date



13. View Past Bookings (Includes rejected,canceled)



7. Localhost Setup

1. Install Sublime Text:

- Download and install Sublime Text from the official website (<u>https://www.sublimetext.com/</u>)
- Follow the installation instructions provided on the website.
- Once installed, open Sublime Text to start using it as your code editor.

2. Install XAMPP:

- Download XAMPP from the official website (<u>https://www.apachefriends.org/index.html</u>)
- Choose the windows version for my operating system.
- Run the installer and follow the on-screen instructions to complete the installation.

3. Start the XAMPP Server:

- Launch XAMPP from the installed location

("C:\xampp\xampp-control.exe" on Windows)

- Start the Apache and MySQL modules by clicking the "Start" button next to each module.
- Verify that both modules are running by checking the corresponding status indicators.

4. Configure Document Root:

- Open the XAMPP Control Panel and click on the "Explorer" button.
- The explorer window opens, navigate to the "htdocs" directory ("C:\xampp\htdocs").
- Create a new folder(cbs) for my mini project inside the "htdocs" directory.
- Place my project files, including HTML, PHP, CSS, and JavaScript, within this folder.

5. Access myLocalhost:

- Open my web browser (Chrome)
- In the address bar, enter "localhost" or "127.0.0.1" to access the XAMPP server.
- To access my project, I append the folder name I created in the "htdocs" directory to the URL ("localhost/cbs").

6. Develop and Test:

- Open Sublime Text and navigate to my project folder.
- Write my code files using Sublime Text.
- Save the changes and refresh my browser to see the updated output.

8. URL

ABC Car Rental System

9. User Credentials

Admin

IC Number: 031102050390 Password: @Admin123

Staff

IC Number: 031003030560

Password: @cust123