

The Semosemo: Vehicle Rental Application in Manado City

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Abstract

In everyday human life, there are many aspects that cause a decision to be made. Agreements can be made in writing or unwritten, reciprocal agreements and unilateral agreements, obligatory agreements and one of them is a lease agreement. The lease agreement can help the parties, both from the leaser and the lessee. Car Rental is one of the businesses providing transportation services that involves the use of mobile devices to find out information about the services provided by the company. Car Rental is closely related to transportation services to help people who need car rental for various purposes. To use rental services in Manado City, usually the tenant must go to the rental place, and that is less efficient to do. Therefore, the problem found is how to make the Semosemo Vehicle Rental Application in Manado City. With the aim of making the Semosemo Vehicle Rental Application in the City of Manado. This research uses the prototype method and is also assisted by software such as React Native, Figma, and Visual Studio Code. The result is that the Semosemo application can be made to help rent vehicles in the city of Manado and the application can run accordingly.

Keywords: Car Rental, Manado City, Application.

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1. Introduction

In the daily lives of humans, there are numerous aspects that lead to the making of contractual decisions [1]. Agreements can be made either in written or unwritten form, reciprocally or unilaterally, obligatory agreements, and one of them is the lease agreement. The lease agreement can assist parties involved, whether it's the lessee or the lessor [2]. Research [3] also states that vehicle rental applications can facilitate users in easily renting cars without physically visiting a location, and research by [4] mentions that with the existence of this car rental application, customers can easily book a car [5].

For instance, renting vehicles, such as using SMS or utilizing social media applications like Facebook, instant messaging apps like WhatsApp, and other messaging applications [6]. This process might consume a lot of time when the desired type of vehicle is not readily available for rent, leading to waiting for the lessor to find the preferred type of vehicle [7]. Issues that may arise concerning existing rental systems include the time-consuming process of searching for available vehicles and inconsistent rental pricing information [8]. Utilizing third-party applications such as Facebook, WhatsApp, and others might potentially invite criminal activities such as fraud, premeditated robbery, and more, as these actions may occur due to unofficial rental transactions [9].

Car Rental is one of the transportation service businesses involving the use of mobile devices as a means to acquire information about services provided by the company [10]. Car Rental is closely associated with the renting of transportation equipment to aid individuals in need of vehicle rentals for

various purposes. Despite the advancements in technology today, there are still challenges related to design, usability, functionality, and implementation aspects [11]. Renting a vehicle involves leasing a mode of transportation. In terms of payment, half of the rental fee is usually paid at the beginning of the lease period, with the remainder settled after the vehicle is returned [12]. Hence, vehicle rental service applications can be utilized by consumers needing vehicles in urgent situations like weddings, holidays, long-distance travels for motorcycles, or even bicycles for specific needs [13]. For future users of rental services, they need not worry about vehicle maintenance or cleanliness as these aspects are handled by the rental service, which is advantageous for the users, presenting an alternative for those requiring transportation. Research conducted by [10] indicates that many individuals from diverse backgrounds are now leveraging information and communication technology as a vital component that can enhance the value of their business operations [14].

From this background, the researcher will design an Android-based vehicle rental application that will facilitate society by providing two types of transportation: cars and motorcycles [15].

2. Research Method

2.1. Prototype Model

In carrying out a development, a development model is required. In this research, the researcher utilizes the prototype model [16].

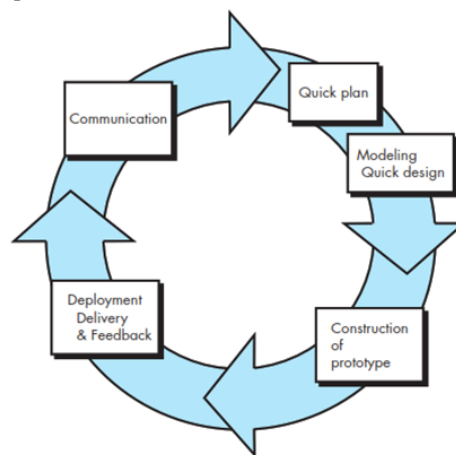


Figure 1. Prototype Model

Based on Figure 1. The process conducted is as follows:

1. Communication: At this stage, the researcher will engage in communication with the school to determine the overall objectives of the software and identify every requirement needed by the school for the development of the software [17].
2. Quick Plan: Following the communication phase, the researcher will plan the objectives and requirements discussed [18].
3. Modeling Quick Design: An advanced stage of the quick plan, designing all aspects previously planned, such as the user interface, database, and others [19].
4. Construction of Prototype: Creating a prototype based on the design made in the previous stage [20].
5. Deployment & Feedback: In this stage, the software can be handed over to users. The users will review and evaluate the created software, providing feedback that will be used for further improvements [21].

2.2. Conceptual Framework

The explanation of the Conceptual Framework in this research is divided into two parts: the Research Conceptual Framework and the Application Conceptual Framework [22].

2.2.1. Research Conceptual Framework

The research is divided into 5 stages: information & data gathering, quick plan, building prototype, testing, and application deployment [23].

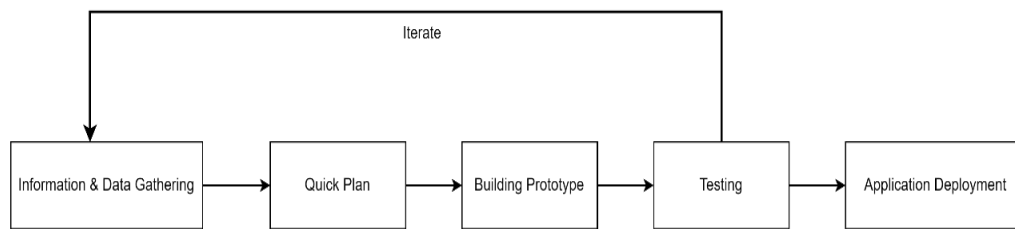


Figure 2. Research Conceptual Framework

Based on Figure 2. The following is an explanation of each stage:

1. **Information & Data Gathering:** The researcher collects information and data used as the basis for designing the application [24][25]. Information is gathered from questionnaires provided to customers and interviews conducted with rental owners [26][27].
2. **Quick Plan:** In this stage, the researcher plans the application based on the results obtained from the questionnaires and interviews [28][29]. Then, the researcher determines the research boundaries and gathers tools to assist the research, such as Android Studio, Adobe Photoshop CC, Visual Studio Code [30].
3. **Building Prototype:** Subsequently, the researcher starts developing the application based on previously acquired data [31]. At this stage, the researcher designs the system and the user interface of the application being developed [32].
4. **Testing:** This stage involves testing the prototype created using the black-box method to assess the functionality of the developed application [33]. If the developed application does not meet the requirements, an iterative process returns to the initial stage until the application aligns with the needs [34].
5. **Application Deployment:** At this stage, the developed application meets the users' requirements [35].

2.2.2. Conceptual System Framework

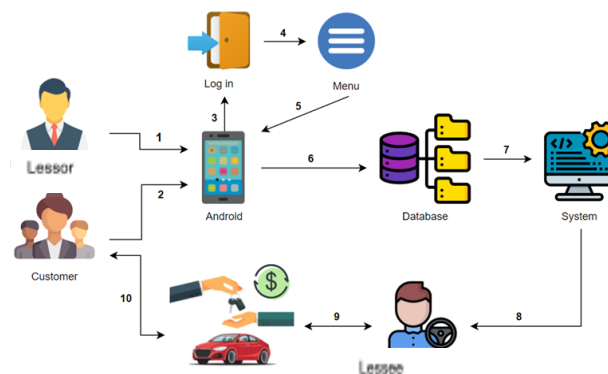


Figure 3. Conceptual Application

Explanation of Figure 3. Is as follows:

a) Rental

1. Rental has the following processes: the vehicle rental process, vehicle delivery process, and transaction process. Here is the explanation:
2. Rental downloads the application through the Play Store, registers to create an account, and then logs in.
3. After successful login, Rental can immediately rent vehicles by selecting and adding the type and model of the vehicle they wish to rent out.
4. Once the vehicle details are entered, Rental can wait and monitor incoming orders from customers.

5. Subsequently, Rental will receive rental requests from customers containing the customer's details.
6. Rental will then decide whether to confirm or reject the customer's request.
7. After the verification process, if the entered data is complete and clear, the order will be accepted and processed according to the requested vehicle delivery time. If the entered data is incomplete or unclear, Rental will reject the request.

b) Customer

1. Customers have the following processes: vehicle rental process, vehicle pick-up process, and payment process. Here is the explanation:
2. Vehicle rental process:
3. Customers download the application through the Play Store, register to create an account, and then log in.
4. After successful login, customers can directly proceed with renting by selecting the type and model of the vehicle they want to rent.
5. After choosing the vehicle, customers select the rental duration.
6. After successfully choosing the vehicle and rental duration, the data is received by Rental.
7. Subsequently, Rental will confirm or reject the customer's request.
8. If Rental rejects the customer's request, the system will display a window stating "the selected vehicle is not available."
9. If confirmed, customers will be provided with rental terms and conditions, including an agreement that if the vehicle suffers damage, the customer will be charged according to the level of damage. If approved by the customer, the system will provide the customer with a digital receipt as proof of the chosen vehicle reservation and agreement to the terms and conditions.
10. Customers then select the vehicle pick-up point to be delivered by Semosemo.
11. Once the reserved vehicle arrives at the designated point, the customer presents the digital receipt as proof of the vehicle's rental and pays according to the digital receipt.
12. Customers can then use the rented vehicle and return it at the agreed-upon time.
13. If the vehicle incurs any damage, the customer will be held responsible.

3. Result and Analysis

3.1. System Analysis

In this case, the researcher used UML or Unified Modeling Language as a tool.

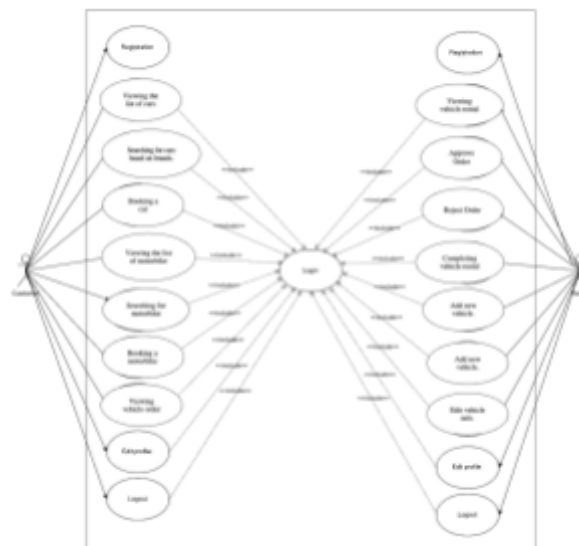


Figure 4. Use Case Diagram

In Figure 4. Here is an overview of interactions that users can perform within the application, including:

3.2. Implementation

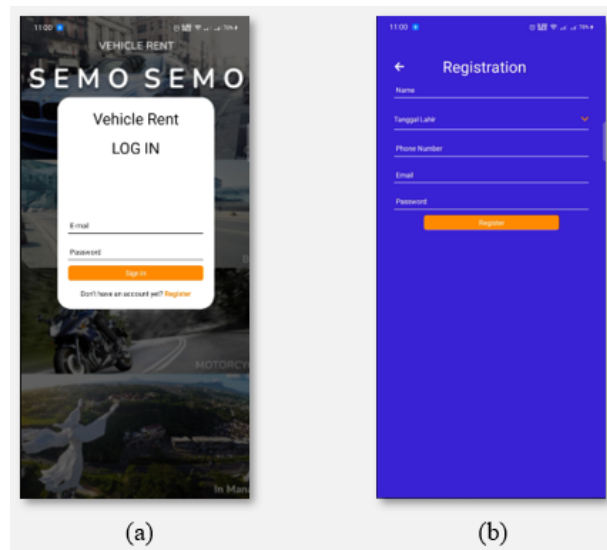


Figure 5. Login & Registrasi

Figure 5 (a), shows the application's user login interface. When users intend to access the application, they need to input their email and password. Figure 5 (b) shows the registration interface for the application users.

a) Customer

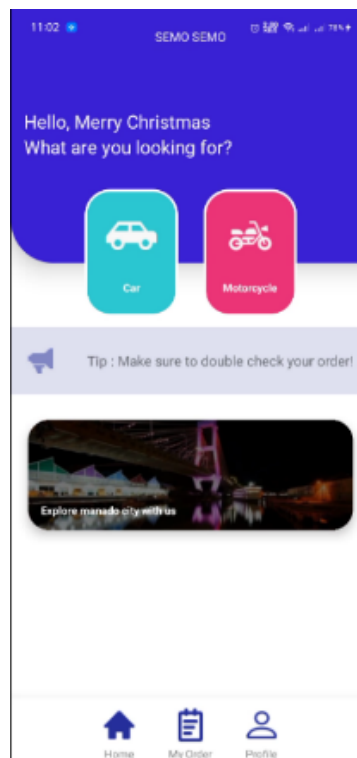


Figure 6. Home Page for Customers.

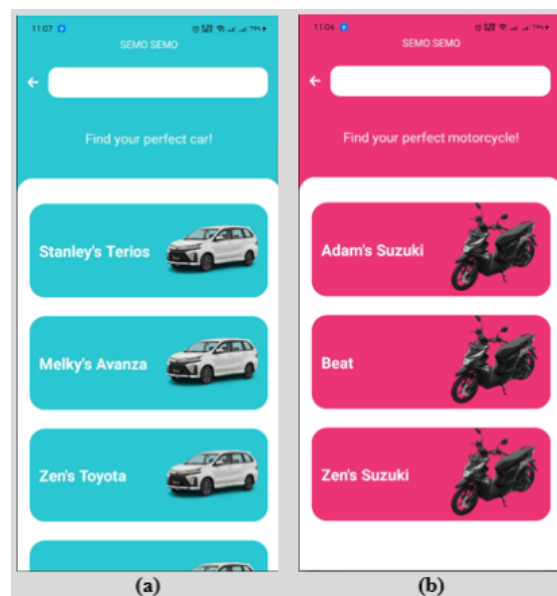


Figure 7. Car and Motorcycle List

In Figure 7 (a), it displays the list of cars. On this page, the customer can choose which car they want to book or can search for cars based on the car's brand.

In Figure 7 (b), it shows the list of motorcycles. On this page, the customer can choose which motorcycle they want to book or can search for motorcycles based on the motorcycle's brand.

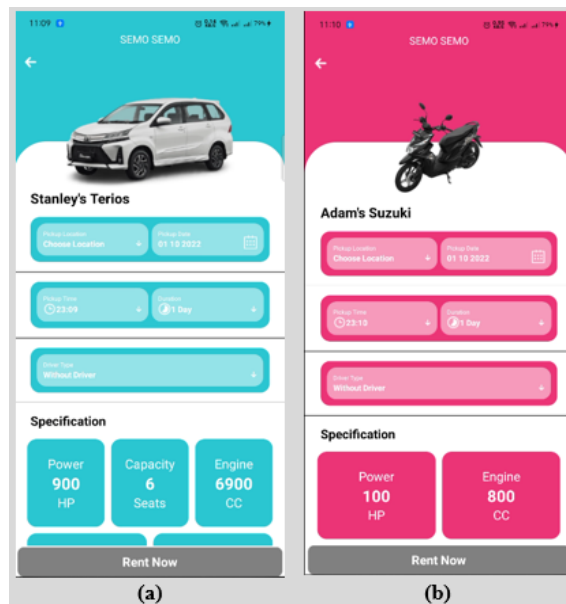


Figure 8. Vehicle Details

In Figure 8 (a) and Figure 8 (b), it shows the vehicle details. On this page, the customer can view the vehicle specifications. If they want to make a reservation, customers can select the delivery location and date, choose the required time and duration for the vehicle rental.

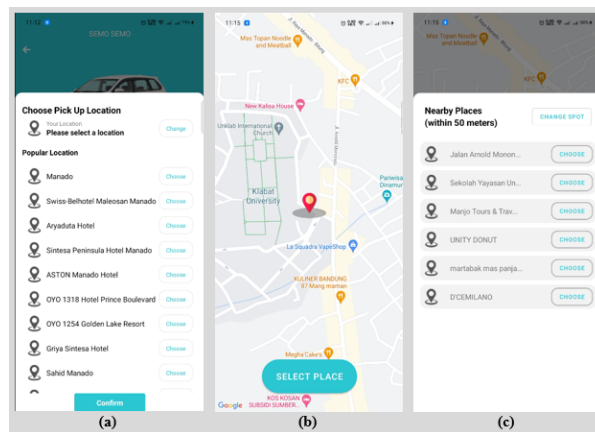


Figure 9. Delivery Location Selection

In Figure 9. It shows the display when the customer selects the delivery location for the reserved vehicle.

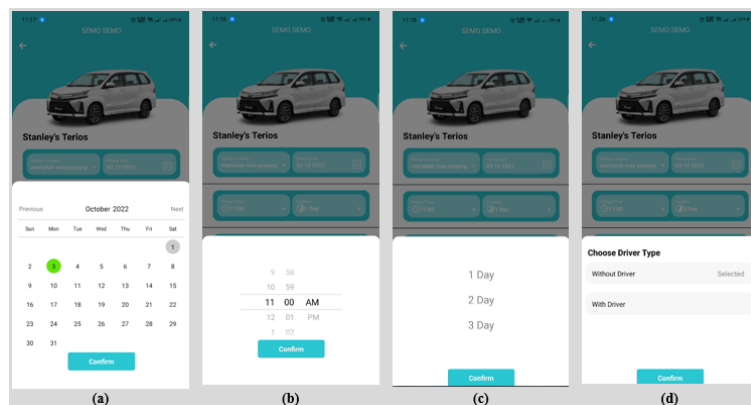


Figure 10. Rental and Delivery Time

In Figure 10. It displays the interface where the customer selects the delivery date, the time they intend to use the vehicle, the rental duration, and decides whether they want to use a driver or not.

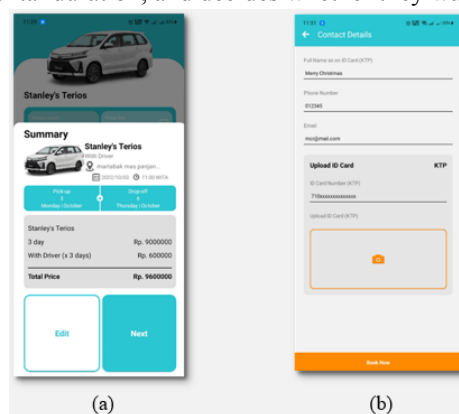


Figure 11. Rental Summary & Contact Details

In Figure 11 (a), it shows the summary of the rental. In Figure 11 (b), it displays the contact details of the Customer after finalizing the vehicle selection. On this page, the Customer is prompted to enter personal details such as full name, phone number, email, and a photo of their ID card (KTP).

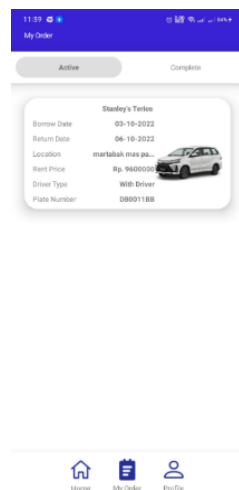


Figure 12. He currently reserved vehicle orders as well as the history of vehicle rentals.

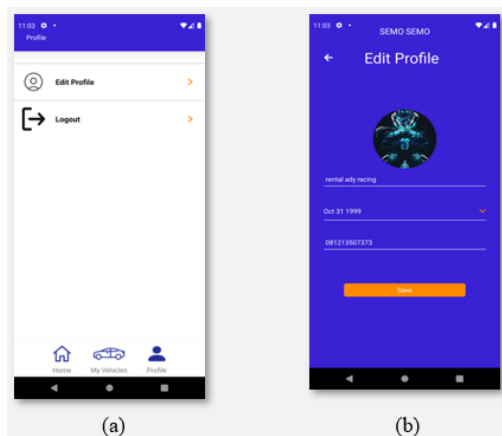


Figure 13. Customer Profile

In Figure 13. It represents the profile view. This page contains two features: Edit Profile and Logout. Within the Edit Profile feature, the Customer can update their name, date of birth, and date of birth.

b) Rental

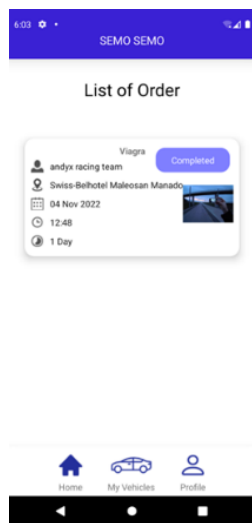


Figure 14. Vehicle Rental List

In Figure 14. It displays the list of vehicle rentals. On this page, Rental can view the rental status. Without a status means the vehicle rental hasn't been accepted, "active" indicates that the vehicle rental is ongoing, and "completed" means the Customer has finished the rental and returned the vehicle to the Rental.

3.3. Test Result

Table 1. represents the system functionality test results for all users, providing output in accordance with the given input.

Table 1. Test Results for Customer Features

Scenario	Testing	Test Result
Registration	Customer successfully registers an account	Successful
Login	Customer successfully logs into the application	Successful
Viewing the list of cars	Customer successfully views the list of cars	Successful
Searching for cars based on brands	Customer successfully searches for cars by car brand	Successful
Booking a car	Customer successfully books a vehicle	Successful
Viewing the list of motorbike	Customer berhasil melihat daftar motor	Successful
Searching for motorbike	Customer successfully searches for motorcycles by motorcycle brand	Successful
Booking a motorbike	Customer successfully books a motorcycle	Successful
Viewing the vehicle order	Customer successfully views the ordered vehicle list	Successful
Edit <i>Profile</i>	Customer successfully edits the profile	Successful
Logout	Customer successfully logs out of the application	Successful

Table 2. Test Results for Rental Features

Scenario	Testing	Test result
Registration	Rental successfully registers an account	Successful
Login	Rental successfully logs into the application	Successful
Viewing vehicle list	Rental successfully views the list of vehicles	Successful
Accepting vehicle rental	Rental successfully accepts vehicle rentals	Successful
Rejecting vehicle rental	Rental successfully rejects vehicle rentals	Successful
Completing rental	Rental successfully completes vehicle rentals	Successful
Adding new vehicle	Rental successfully adds new vehicles	Successful
Deleting vehicle data	Rental successfully deletes vehicle data	Successful
Editing vehicle data	Rental successfully edits vehicle data	Successful
Edit profile	Rental successfully edits profile	Successful
Logout	Rental successfully logs out of the application	Successful

4. Conclusion and Recommendations

The conclusions drawn from this research are as follows:

1. The Semosemo Application can be developed to facilitate vehicle rentals in Manado City.
2. The application's functionalities operate as intended.
3. React Native proves to be effective for developing vehicle rental applications.

Regarding the researcher's awareness of the shortcomings in this study, the recommendations applicable for future research are as follows:

1. Expand the application's scope to cover one or more provinces.
2. Update the testing methods to include white box testing.
3. Employ alternative development models for comparison against the Prototype model.

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