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Faculty of Engineering information technology
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Cars Rental

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Disclaimer Statement

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Abstract:

In Palestine, the car rental application plays a significant role in providing convenient and reliable transportation solutions to individuals and businesses. With its comprehensive platform and user-friendly features, the application contributes to the accessibility and efficiency of car rental services in the region. By leveraging the application, users in Palestine can easily explore a diverse selection of cars from various rental companies. The advanced search functionality allows them to find the ideal vehicle based on specific criteria such as price, fuel type, and seating capacity. This empowers users to make informed decisions that meet their unique transportation needs.

The application streamlines the entire rental process, enabling users to seamlessly book cars by selecting rental dates, providing necessary documentation, and making secure payments through PayPal. Such streamlined procedures save time and effort for users, enhancing their overall experience and satisfaction.

Additionally, the application's notification system ensures that users, rental companies, repairmen, and admins receive important updates and alerts in a timely manner. This feature enhances communication and ensures that all parties involved stay informed about bookings, changes, and other relevant information. The messaging feature within the application further facilitates communication and engagement between users, rental companies, repairmen, and admins. This enables quick and efficient resolution of inquiries, concerns, or any issues that may arise during the rental process. Effective communication contributes to a seamless and reliable car rental experience. Moreover, the application provides robust management tools for rental companies and admins, enabling them to efficiently handle bookings, advertisements, branch operations, and overall rental management. It empowers companies to effectively manage their car fleet, monitor rental periods, and optimize their business operations. Admins have the necessary control and oversight to approve new rental companies, review reports, and ensure compliance with regulations.

Chapter 1: Introduction

1.1 Statement of the problem:

- **Limited Accessibility:** Accessing car rental services in Palestine can be challenging due to the lack of a centralized platform that connects multiple rental companies. Users often must individually search for rental companies, which leads to a fragmented and time-consuming process.
- **Inefficient Booking Process:** The traditional process of booking cars involves manual paperwork, lengthy procedures, and limited payment options. This not only creates inconvenience for users but also increases the chances of errors and delays in the booking process.
- **Lack of Information:** Users often struggle to find comprehensive and accurate information about available cars, pricing, discounts, car details. This lack of transparency makes it challenging for users to make informed decisions and compare rental options effectively.
- **Inefficient Management for Rental Companies:** Rental companies face difficulties in managing their car fleets, monitoring rental periods, and optimizing their operations. The absence of a centralized management system leads to inefficiencies, such as difficulties in tracking car returns, imposing late fees, and managing branch operations.

1.2 Project Objective:

The goal is to provide users with a centralized platform that offers seamless access to diverse car options, simplifies the booking process, enhances communication between users and rental companies, and ensures transparency in pricing and car details. By achieving these objectives, the application aims to revolutionize the car rental industry, improve customer satisfaction, and contribute to the overall convenience and efficiency of car rentals in Palestine.

1.3 Project importance:

The car rental app is important as it provides a convenient and efficient solution for individuals to access and rent cars. It offers a wide selection of cars from various rental companies, allowing users to find the perfect vehicle based on their specific needs. The app streamlines the rental process, making it quick and easy to book cars, provide necessary details, and make secure payments. It enhances communication between users and rental companies, facilitates document verification, and improves overall accessibility to car rental services. The app significantly improves the convenience and flexibility of transportation options for individuals, making it an essential tool in the modern world.

Chapter 2: Constraints and Earlier coursework

2.1 Constraints:

- Learning new language:

We face the challenge of working with Flutter especially since it's the first time dealing with it.

- Dealing with Mobile Emulator:

We face the challenge of working with Mobile Emulator especially like slow performance and compatibility issues

2.2 Earlier coursework:

Our experience with Node.js from our Advanced Software Engineering course has significantly enhanced our ability to build our application with greater efficiency and effectiveness.

Chapter 3: Literature Review

In order to identify the optimal service and develop a highly effective application, we conducted a thorough analysis of prominent car rental providers such as Enterprise Rent-A-Car, Hertz, and Turo. We carefully examined their features, functionalities, and user experiences, taking comprehensive notes to inform the design of our application. By identifying areas where these existing applications may have limitations, we aimed to differentiate ourselves and create a more impactful and user-centric solution.

- Enterprise Rent-A-Car: Enterprise Rent-A-Car is a renowned car rental service offering a wide selection of vehicles for short-term and long-term rentals. Their application allows users to easily browse available cars, make reservations, manage bookings, and access additional services such as roadside assistance.
- Hertz: Hertz is a leading car rental company known for its global presence and diverse fleet of vehicles. The Hertz application enables users to search for and book rental cars, manage reservations, and access features like Hertz Connect for faster pick-up and return processes.
- Turo: Turo is a peer-to-peer car sharing platform that connects car owners with individuals in need of rentals. The Turo application allows users to search for available cars in their area, directly book rentals from private car owners, and communicate with owners to coordinate pick-up and drop-off details.

Our app sets itself apart by offering an exceptional user experience through an elegant and intuitive interface. We prioritize effective communication by providing powerful messaging features, ensuring seamless interaction between users, rental companies, repairmen, and administrators. In addition, our advanced search function enables users to quickly find the ideal rental car based on their specific preferences, thus enhancing convenience and satisfaction.

Chapter 4: Methodology

4.1 Tools, Methods and Programming Languages:

4.1.1 programming language:

Our application was built using three different languages:

- Flutter for the frontend.
- Node-JS for the backend.

4.1.2 Tools:

- Visual Studio Code.
- Xampp.
- Flutter 3.0.1.
- Node-JS 16.14.0.
- Android studio to use the emulator.

4.1.3 Database:

We used MySQL database, and the needed tables are as follows:

- For each user we stored some information like email, username, phone number, and password.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	username	varchar(80)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 2	email	varchar(80)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 3	phonenumber	varchar(80)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 4	password	varchar(80)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 5	address	varchar(300)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 6	image	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 7	id	int(100)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 8	rate	float			No	None			Change Drop More
<input type="checkbox"/> 9	agree	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 10	reason	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 11	token	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More

Figure 1.Users table

- For each company we stored information like the table below show

<input type="checkbox"/>	1	id	int(200)		No	None	AUTO_INCREMENT	Change	Drop	More
<input type="checkbox"/>	2	companyName	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	3	companyNumber	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	4	address	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	5	email	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	6	image	varchar(200)	utf8mb4_general_ci	Yes	NULL		Change	Drop	More
<input type="checkbox"/>	7	image2	longblob		Yes	NULL		Change	Drop	More
<input type="checkbox"/>	8	password	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	9	agree	varchar(100)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	10	reason	varchar(200)	utf8mb4_general_ci	No	None		Change	Drop	More
<input type="checkbox"/>	11	ratio	int(100)		No	None		Change	Drop	More
<input type="checkbox"/>	12	advprice	int(100)		No	None		Change	Drop	More

Figure 2.Companies table

- For each repairman we stored information like the table below show

1	idrepairman	int(100)		No	None	AUTO_INCREMENT
2	name	varchar(100)	utf8mb4_general_ci	No	None	
3	email	varchar(100)	utf8mb4_general_ci	No	None	
4	password	varchar(80)	utf8mb4_general_ci	No	None	
5	phone	varchar(100)	utf8mb4_general_ci	No	None	
6	image	longblob		No	None	
7	location	varchar(200)	utf8mb4_general_ci	No	None	
8	latitude	double		No	None	
9	longitude	double		No	None	

Figure 3.Repairmans table

- For each admin we stored information like the table below show

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	id	int(100)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2	name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3	email	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	4	pass	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More

Figure 4.Admin table

- All the cars details are sorted in this table

<input type="checkbox"/>	1	id	int(200)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2	CarName	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3	image	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	4	rentalName	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	5	features	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	6	Maxpower	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	7	Maxspeed	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	8	Motor	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	9	seats	int(200)			No	None			Change Drop More
<input type="checkbox"/>	10	seatsMaterial	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	11	fuelType	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	12	Airconditioning	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	13	Drivingtype	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	14	bluetooth	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	15	Music	varchar(200)	utf8mb4_general_ci		No	None			Change Drop More

Figure 5.Cars details table

<input type="checkbox"/>	16	description	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	17	specs	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	18	image1	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	19	image2	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	20	image3	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	21	image4	varchar(200)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	22	pricePerDay	int(200)		No	None	Change	Drop	More
<input type="checkbox"/>	23	ratings	int(200)		Yes	NULL	Change	Drop	More
<input type="checkbox"/>	24	idcompany	int(11)		No	None	Change	Drop	More
<input type="checkbox"/>	25	agree	varchar(100)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	26	added	varchar(100)	utf8mb4_general_ci	No	None	Change	Drop	More
<input type="checkbox"/>	27	discount	varchar(100)	utf8mb4_general_ci	No	0	Change	Drop	More

Figure 6.Cars details 2 table

- This table is for advertisement details

1	iddev	int(11)		No	None
2	idcompany	int(11)		No	None
3	idcar	int(11)		No	None
4	off	varchar(100)	utf8mb4_general_ci	No	None
5	startday	date		No	None
6	endday	date		No	None
7	paid	int(100)		No	None
8	added	varchar(100)	utf8mb4_general_ci	Yes	NULL

Figure 7.Advertisement table

- This booking table sorted all the user booking details including their license and identity

1	idbook 🗝️	int(100)		No	None	AUTO_INCREMENT
2	iduser 🗝️	int(100)		No	None	
3	idcar	int(11)		No	None	
4	idcompany	int(100)		No	None	
5	timestart	time		Yes	NULL	
6	timeend	time		No	None	
7	startlocation	varchar(200)	utf8mb4_general_ci	No	None	
8	endlocation	varchar(200)	utf8mb4_general_ci	No	None	
9	daystart	date		Yes	NULL	
10	dayend	date		Yes	NULL	
11	name2	varchar(200)	utf8mb4_general_ci	No	None	
12	userlocation	varchar(200)	utf8mb4_general_ci	No	None	
13	phonenumber	varchar(200)	utf8mb4_general_ci	No	None	
14	email	varchar(200)	utf8mb4_general_ci	No	None	
15	paid	int(200)		No	None	
16	linoec	varchar(200)	utf8mb4_general_ci	No	None	
17	identity	varchar(200)	utf8mb4_general_ci	No	None	
18	send	varchar(100)	utf8mb4_general_ci	No	None	
19	available	varchar(100)	utf8mb4_general_ci	No	None	
20	late	varchar(100)	utf8mb4_general_ci	No	None	

Figure 8.Booking table

- The reports table is for sending messages between all sides

1	id 🗝️	int(100)		No	None
2	fromm	varchar(100)	utf8mb4_general_ci	No	None
3	too	varchar(100)	utf8mb4_general_ci	No	None
4	time	datetime		No	None
5	msg	varchar(500)	utf8mb4_general_ci	No	None

Figure 9.Reports table

- This table is for notification details

1	id 	int(11)		No	None
2	id22	int(100)		No	None
3	type	varchar(200)	utf8mb4_general_ci	No	None
4	message	varchar(200)	utf8mb4_general_ci	No	None
5	seen	varchar(100)	utf8mb4_general_ci	No	false
6	timesend	timestamp		No	current_timestamp()

Figure 10.Notification table

- This table is for favorites for user the user picks the car that interested in it so it added to this table then he can rental it later




#	Name	Type	Collation	Attributes
1	idfavorite 	int(100)		
2	iduser 	int(100)		
3	idcar 	int(100)		

Figure 11.Favorites table

- The table event specifies both the booking days for the user and the busy days for companies' side if the company wants to add days for repair the car


1	id 	int(11)	
2	name	varchar(255)	utf8mb4_general_ci
3	fromThisDay	date	
4	toThisDay	date	
5	idCar	int(100)	

Figure 12.Event table

- This table views the other branches for the company

1	idcomp	int(200)		No	None
2	name	varchar(200)	utf8mb4_general_ci	No	None
3	latitude	double		No	None
4	longitude	double		No	None
5	address	varchar(200)	utf8mb4_general_ci	No	None
6	idmak 🔑	int(200)		No	None
7	details	varchar(200)	utf8mb4_general_ci	No	None

Figure 13.Branches table

- This table for repairman it shows the cars he wants to repair

1	id 🔑	int(100)		No	None
2	iduser 🔑	int(100)		No	None
3	idcar 🔑	int(100)		No	None
4	idrepairman 🔑	int(100)		No	None

Figure 14.Repairman car table

4.2 Features of the Application :

- OTP verification: Users can reset their password if they forget it. using OTP verification for enhanced security.
- View Cars: Users can view cars from different companies, along with any available.
- Attractive Advertisement: The application displays advertisements on the homepage with an appealing design to engage users.
- Advanced Car Search: Users can search for cars based on various categories such as name, seating capacity, material, fuel type, etc.
- Favorites List: Users can add cars to their favorites list, allowing them to easily access and book them later.
- Interactive Map: The application features a map that displays all company locations and branches. Users can find the nearest branch and view the cars available there.
- View Bookings: Users can see their bookings and have the option to cancel them if needed.
- Chat System: The application includes a chat system that enables communication between users, admins, and companies.
- Notifications: The application provides a notification system to keep users updated on important information, such as booking confirmations or new messages.
- Rating System: Users can provide ratings and reviews for both the application and the rented cars.
- Dark Mode: The application offers a dark mode option for improved visibility and reduced eye strain.
- Booking Calendar: Users can view a calendar that shows the booked days for a particular car, ensuring they are aware of its availability.
- PayPal Integration: The application allows users to make payments for car rentals through PayPal.
- Car Management for Companies: Companies can add, edit, and delete cars from their inventory.
- Car Repair Scheduling: Companies can allocate a day for repairing a car and mark it as unavailable for bookings.
- Rental Count Overview: The application provides an overview chart that displays the rental count for cars based on their names.
- Company Access to User Bookings: Companies can view user bookings, cancel them if necessary, and review user details such as licenses and identification.
- Branch Management for Companies: Companies can add, delete, and edit their branches' information.
- Car Rental Management: The application includes a car rental management system for companies, displaying cars that need to be delivered, cars to be returned, and late bookings.
- Admin Functions: The admin has the authority to block users or companies, review and approve new company requests, verify rental licenses, and access an overview chart and reports for all sides.
- Advertising Management: The admin can determine the profit from companies, set advertisement prices, and generate overview charts and reports.

4.3 Implementation

4.3.1 Mobile Application

- Welcome screen: Welcome the user for using the app

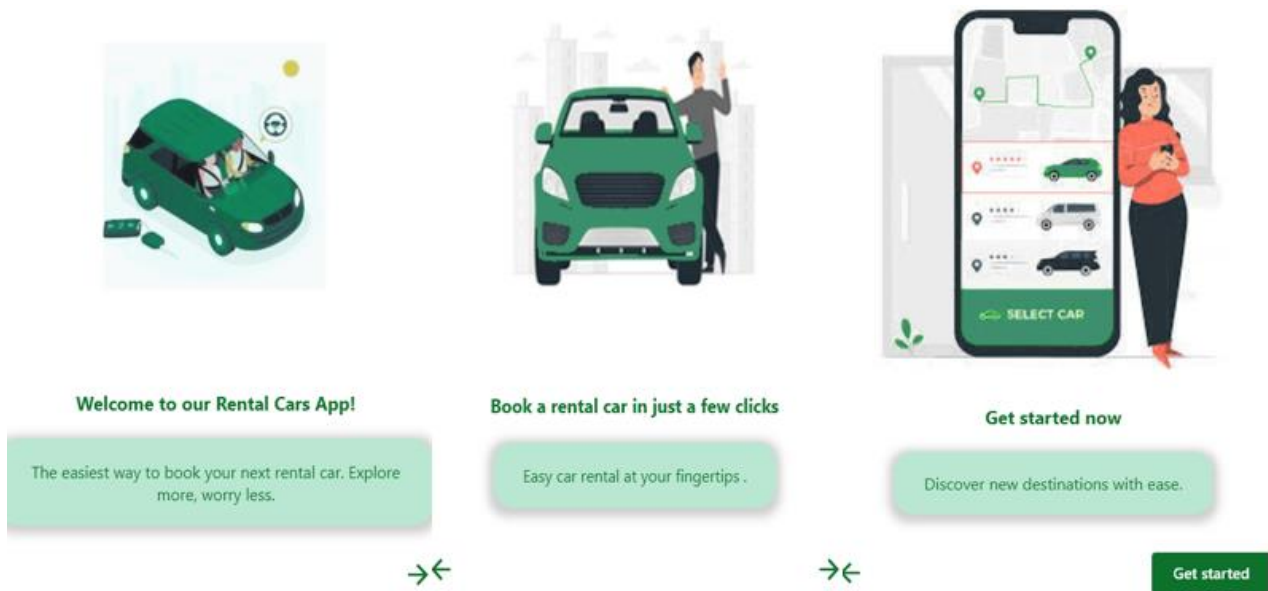


Figure 15. Welcome page

- This chose screen is to choose enter the application as user or admin or repairman or company

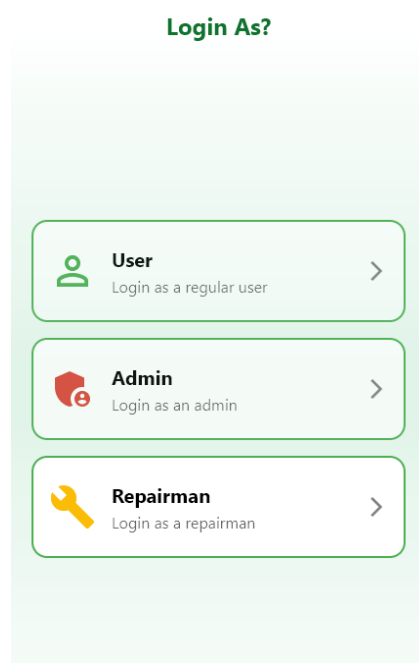
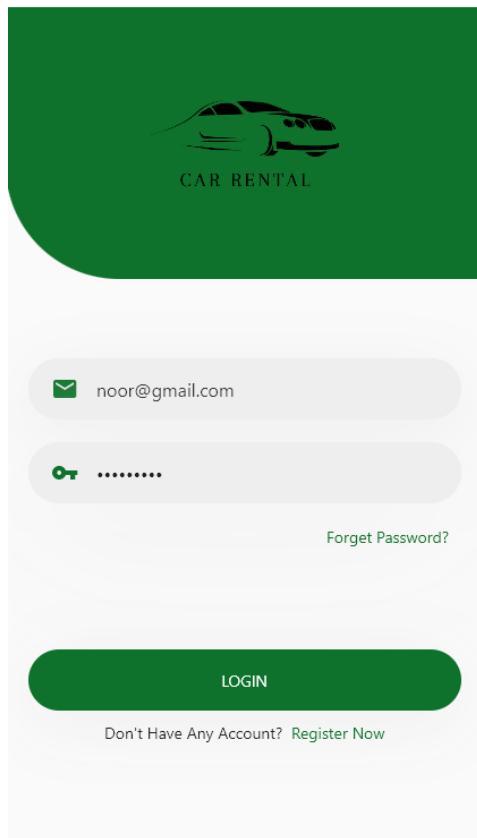


Figure 16. Chose page

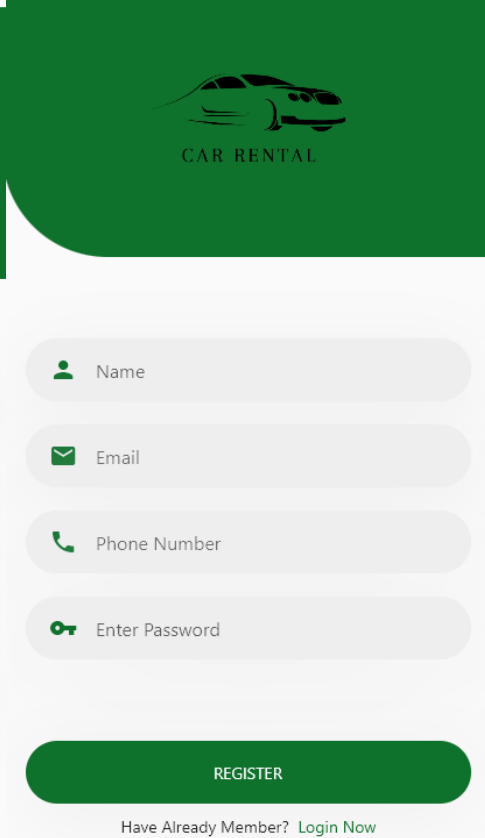
4.3.1.1 User Side

The user enters its email and password to log in to the application successfully. In the signup process, the user inserted his details.



The sign-in page features a dark green header with a car icon and the text "CAR RENTAL". Below the header, there are two input fields: one for email (containing "noor@gmail.com") and one for password (masked with dots). A "Forget Password?" link is positioned below the password field. At the bottom, there is a green "LOGIN" button and a link that says "Don't Have Any Account? Register Now".

Figure 17. User sign in page



The sign-up page features a dark green header with a car icon and the text "CAR RENTAL". Below the header, there are four input fields: "Name", "Email", "Phone Number", and "Enter Password". At the bottom, there is a green "REGISTER" button and a link that says "Have Already Member? Login Now".

Figure 18. User sign up pages.

- ShowPage
- This page serves as a showcase for users to view car listings and their details. If a user wishes to book a car, they will be required to log in.



Figure 19.Show page

- User homepage

This page have all the cars that are available to rent and a favorite icon , when click on it , it will added to favorite list so user can book it later also car advertisement at the top

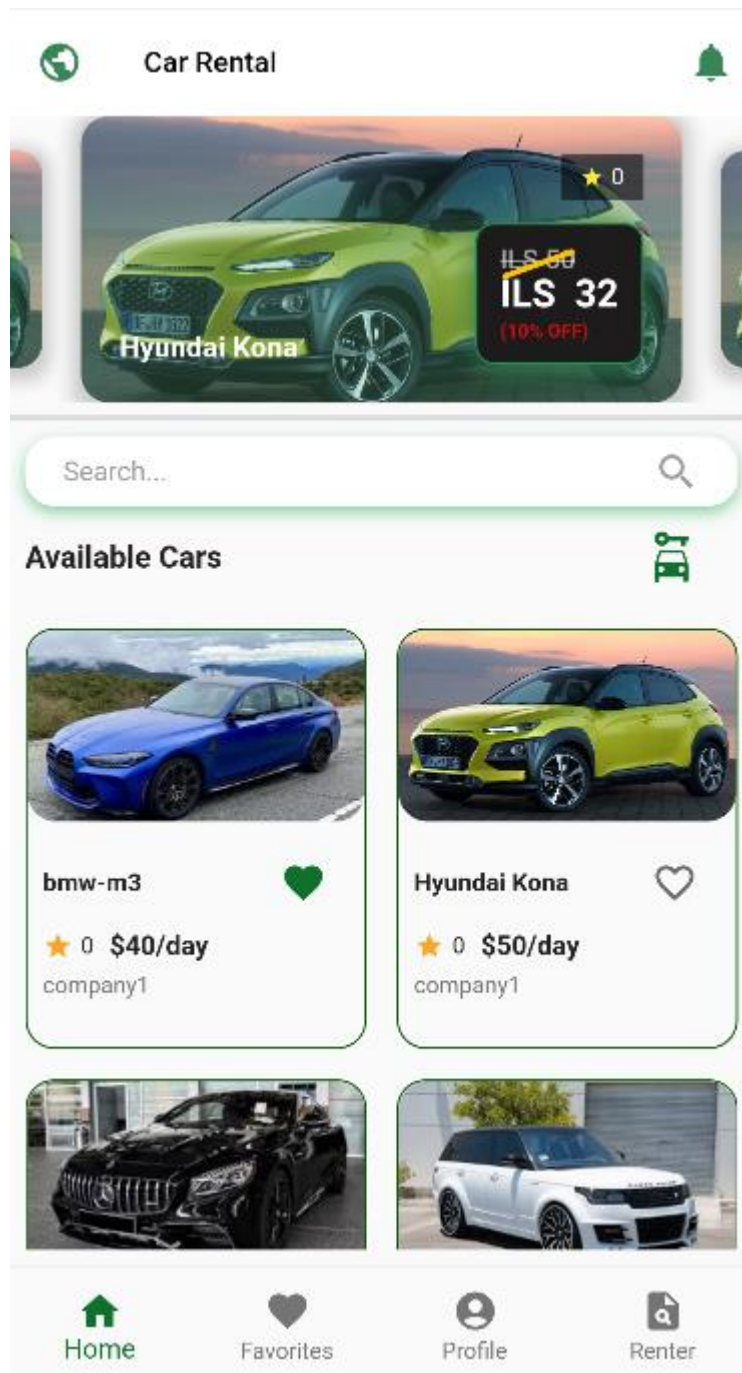


Figure 20. User home page

- Favorites page
views the cars that user interested on them , also the ability to remove it

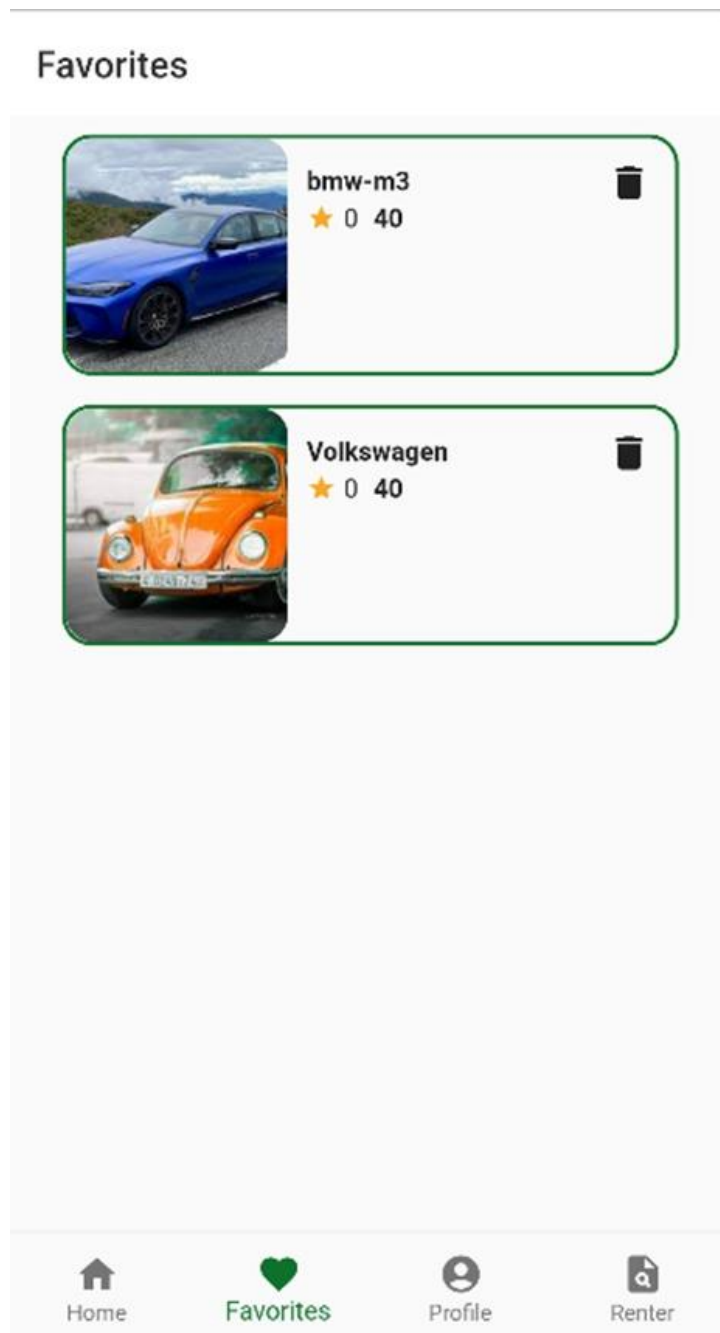


Figure 21.Favorites page

- User booking page
view the bookings for the user and the ability to cancel booking

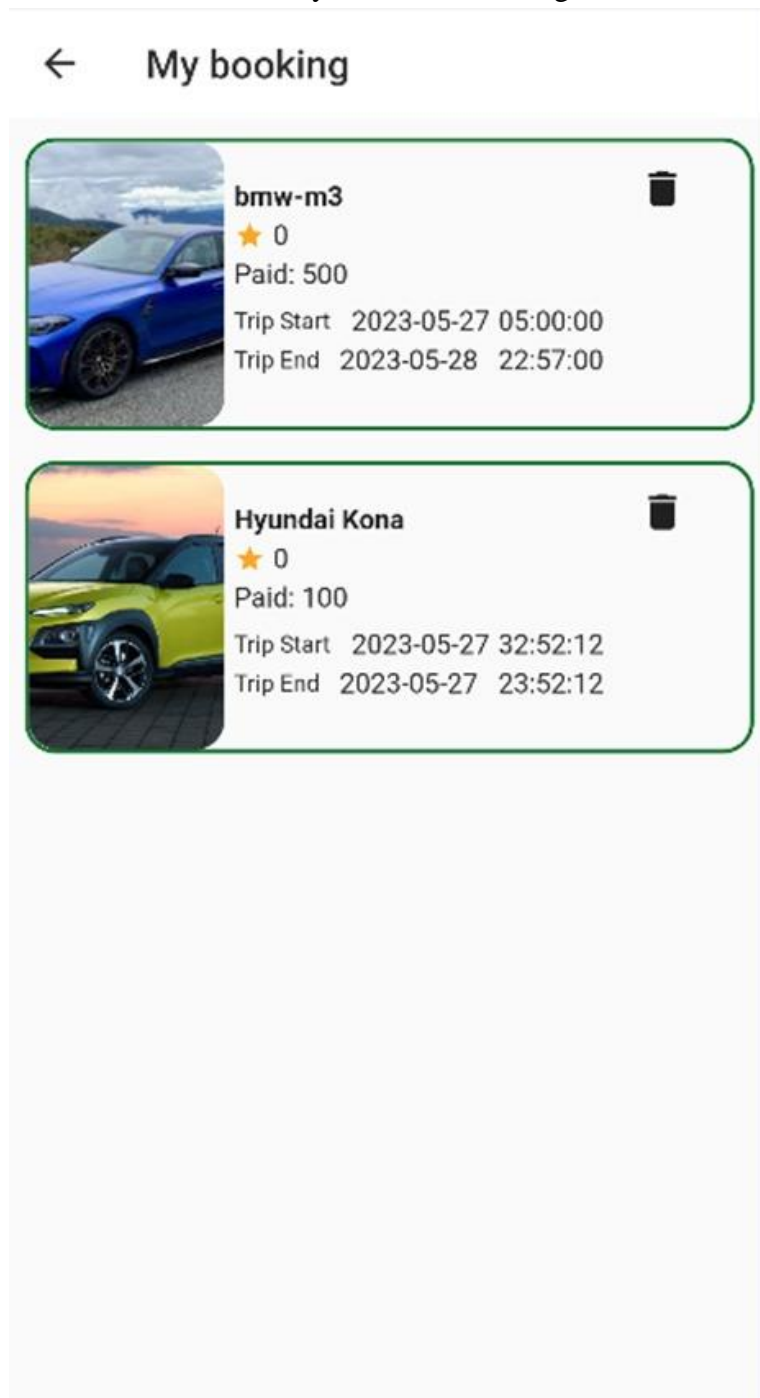


Figure 22. User booking page

- profile page

this pages view the information for the user and the ability to edit his profile

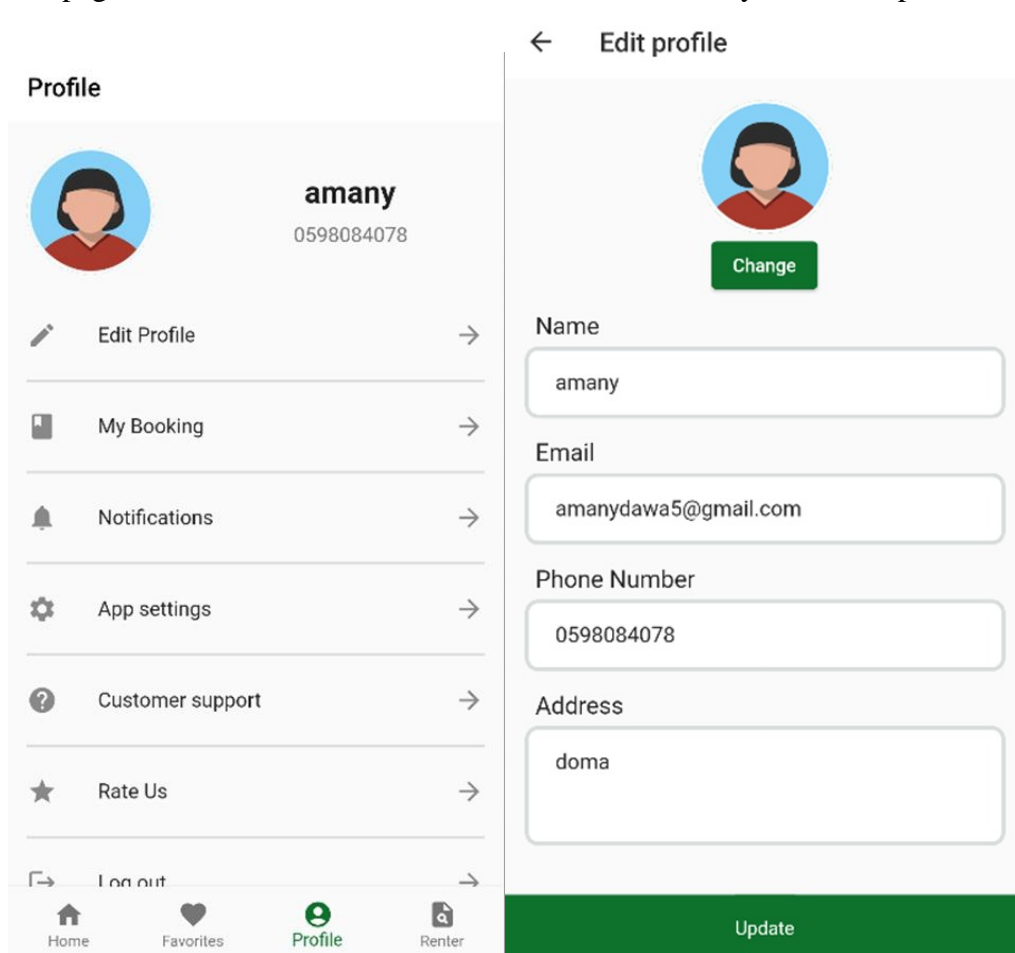


Figure 23.Profile page

Figure 24.Edit profile page

- App settings like dark mode

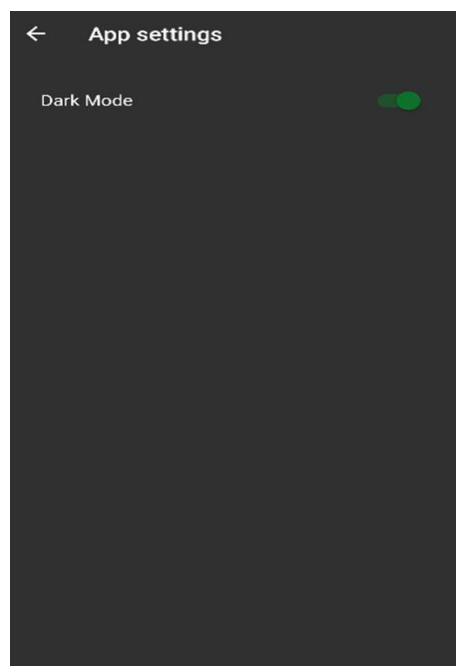


Figure 25.App settings page

- Rating system

all the sides can rate the application , and a report of ratings will appear to admin

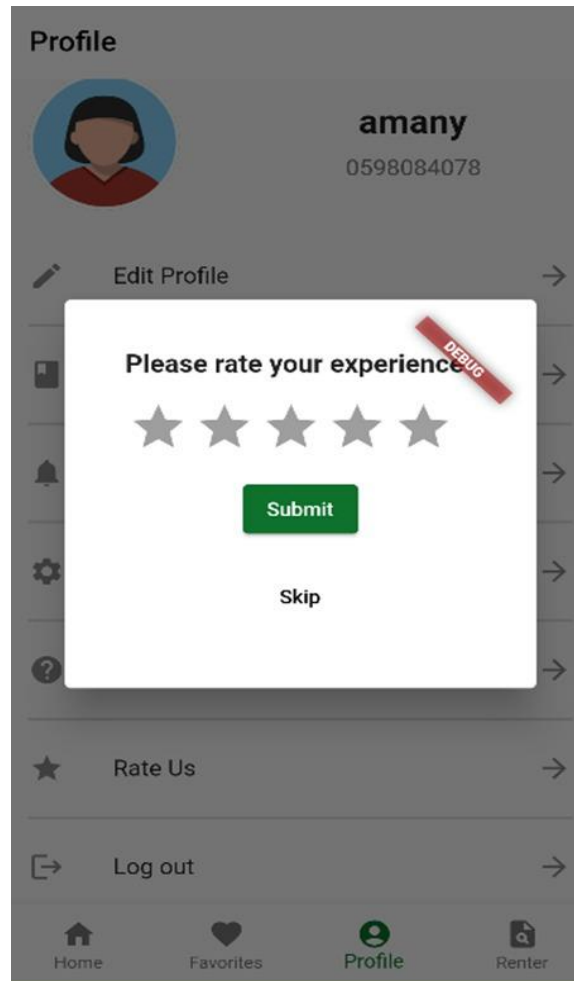


Figure 26.Rating page

- Messaging page

this page provides messaging system to all side , every side pick to which side wants to connect , all they can see the incoming messages with ability to delete the message.

← Customer Support

To Admin To Company incoming messages

Select an option
carRental223@gmail.com

Message
hi

Send

Figure 27.Messaging page

← Customer Support

To Admin To Company incoming messages

From: CarsRental@gmail.com
gg
2023-05-15

From: CarsRental@gmail.com
aaaaaaaaaaaaaaaaaaaaa
2023-05-23

From: CarsRental@gmail.com
ssssssssssssssssssssssssssssss
ssssssssssss fff
2023-05-23

Figure 28.Incoming messages page

- Car details page

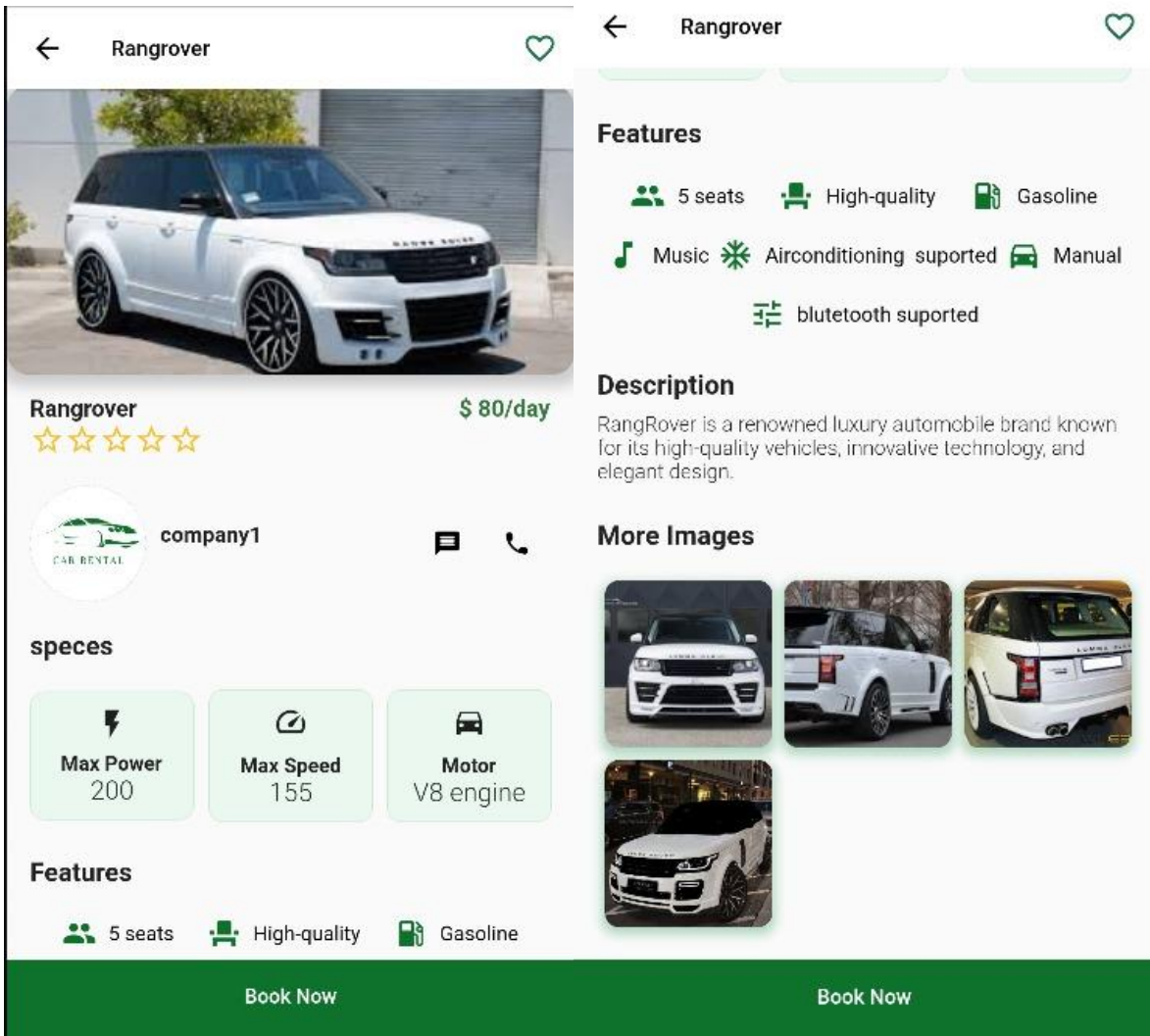


Figure 29.Car details page

- The Map

on the map it help user to detect the closest company according to its position , also the user can click on the company and view their cars

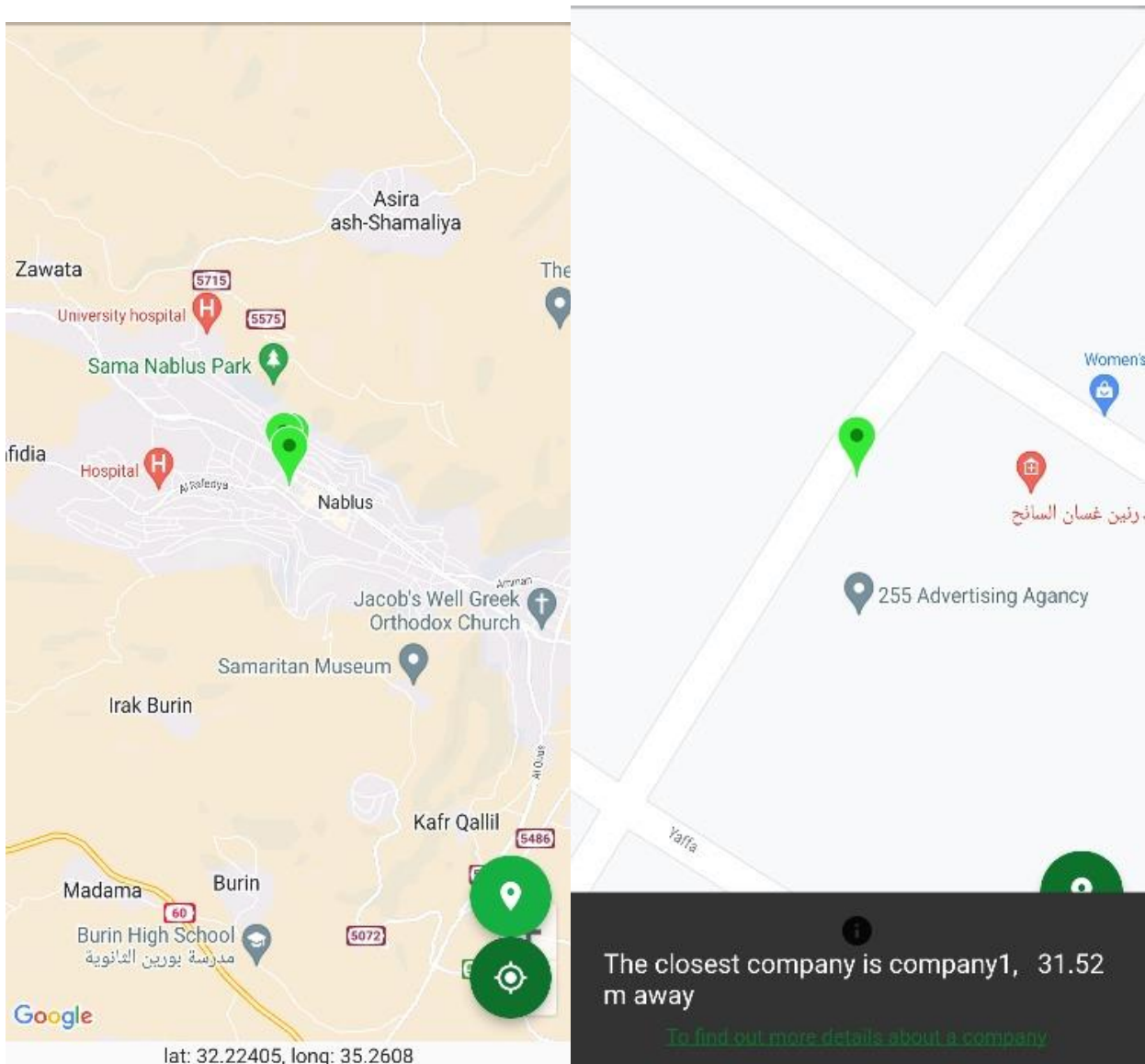
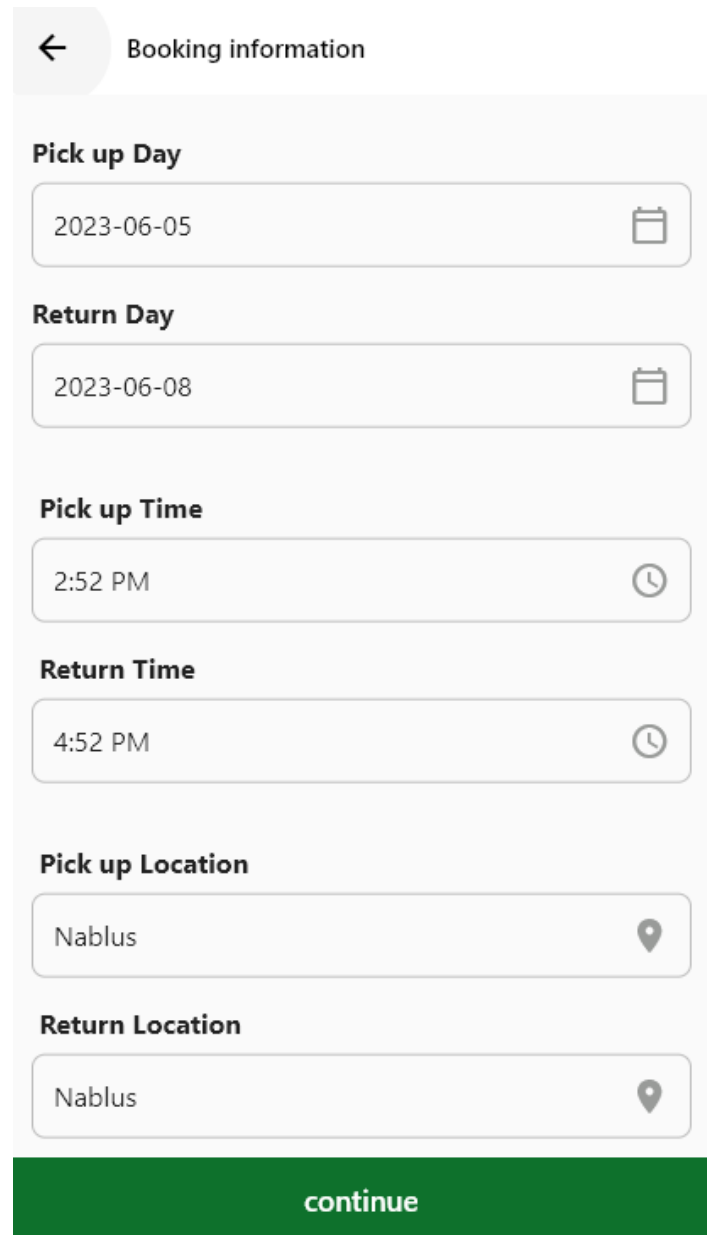


Figure 30.Map page

- Book a car

First, the user needs to input the details of the booking, including the start date (daystart) and end date (dayend) of the rental period. They also need to provide the receiving location (pickup location) and the return location for the car. These details are necessary for initiating the booking process.



The image shows a mobile application screen titled "Booking information". At the top left is a back arrow icon. Below the title, there are six input fields arranged vertically. Each field has a label above it and a corresponding icon on the right side of the input box. The fields are: "Pick up Day" with a calendar icon, "Return Day" with a calendar icon, "Pick up Time" with a clock icon, "Return Time" with a clock icon, "Pick up Location" with a location pin icon, and "Return Location" with a location pin icon. The first four fields have pre-filled values: "2023-06-05", "2023-06-08", "2:52 PM", and "4:52 PM" respectively. The last two fields have the value "Nablus". At the bottom of the screen is a green button with the text "continue" in white.

Field	Value
Pick up Day	2023-06-05
Return Day	2023-06-08
Pick up Time	2:52 PM
Return Time	4:52 PM
Pick up Location	Nablus
Return Location	Nablus

Figure 31.Booking information page

When a user wants to select a day for booking, the calendar will display the dates that have already been booked for the car. This helps the user to avoid selecting those already booked days, ensuring they cannot choose unavailable dates for their booking.

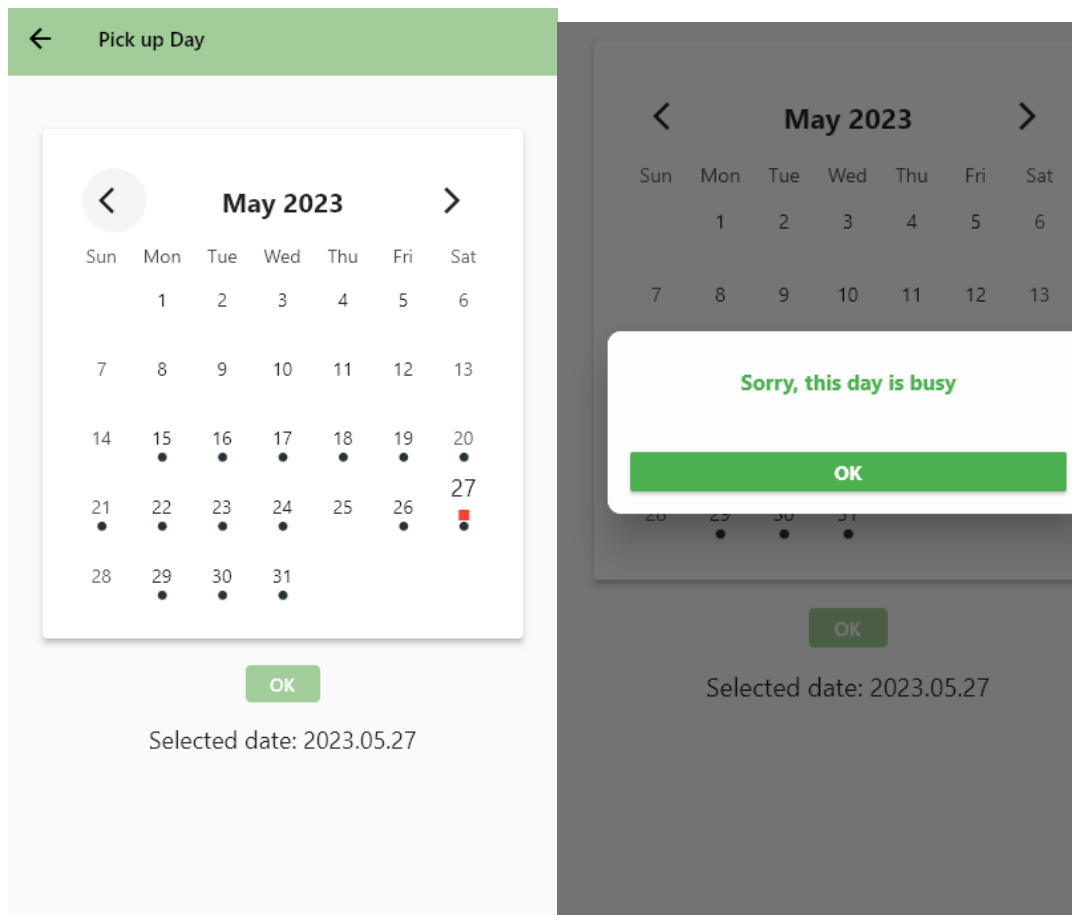


Figure 32. Calendar page

- Personal information page
the user is also required to provide their personal information when making a booking

← Personal information

Name

amany

Email

amany@gmail.com

phone number

0599876543

Address

Nablus

continue

Figure 33. Personal information page

- Then the user should upload his identity card and driving license

← booking information

Identity Card

upload your Identity card

Driving Lincese

upload your driving lincese

continue

Figure 34. Upload identity card and driving license page

- The Summary page provides a comprehensive overview of the booking details that the user has entered.

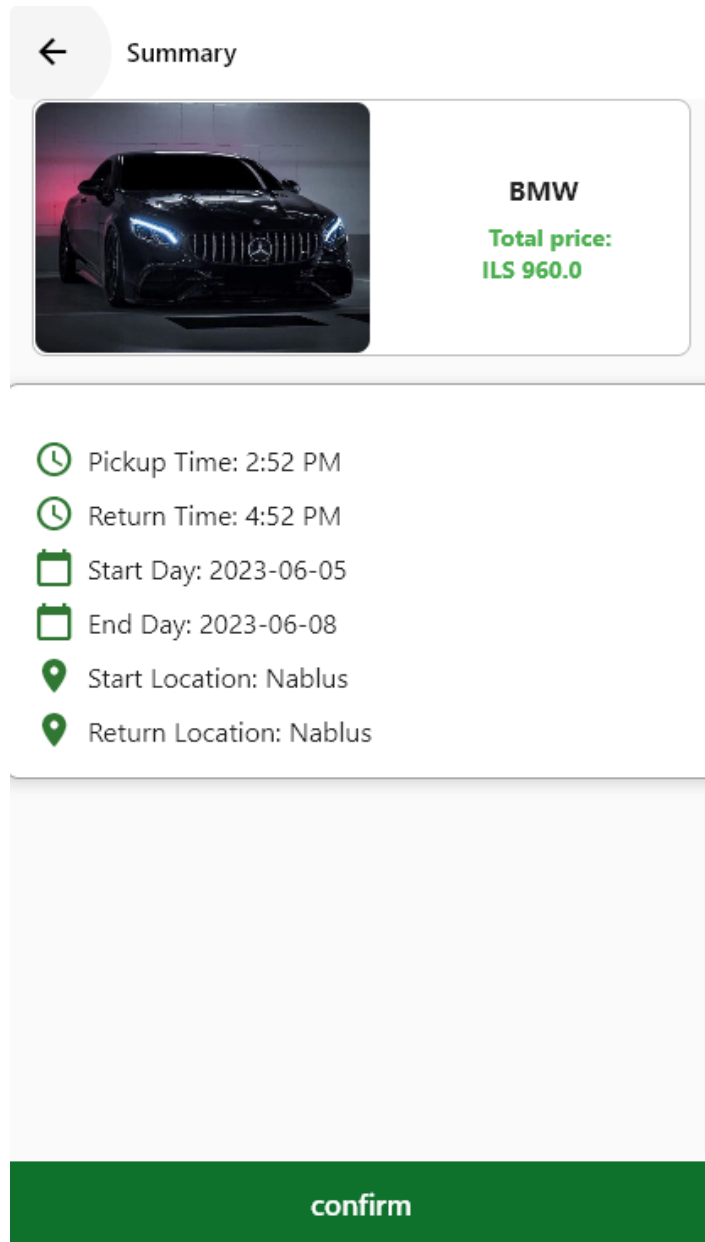


Figure 35. Summary page

- Rules Page

Then the user must agree to the booking rules before proceeding.




← Rules


- Keep the car safe and undamaged
- Return the car on time
- Follow all traffic rules and regulations
- No smoking or vaping in the car
- No pets allowed in the car
- Refuel the car before returning
- Report any accidents or damages immediately
- Clean the car before returning
- Do not lend or sublease the rented car
- Pay for any tolls or fines incurred during the rental period

✓ Acknowledge

Figure 36.Rules Page

- Payment using paypal

 Payment



Sender Email

Sender Password

Receiver Email

Credit Card Number

Expiration Date (MM/YY)

CVV

Pay 960

Figure 37. Paypal payment page

The sender side after pay 960

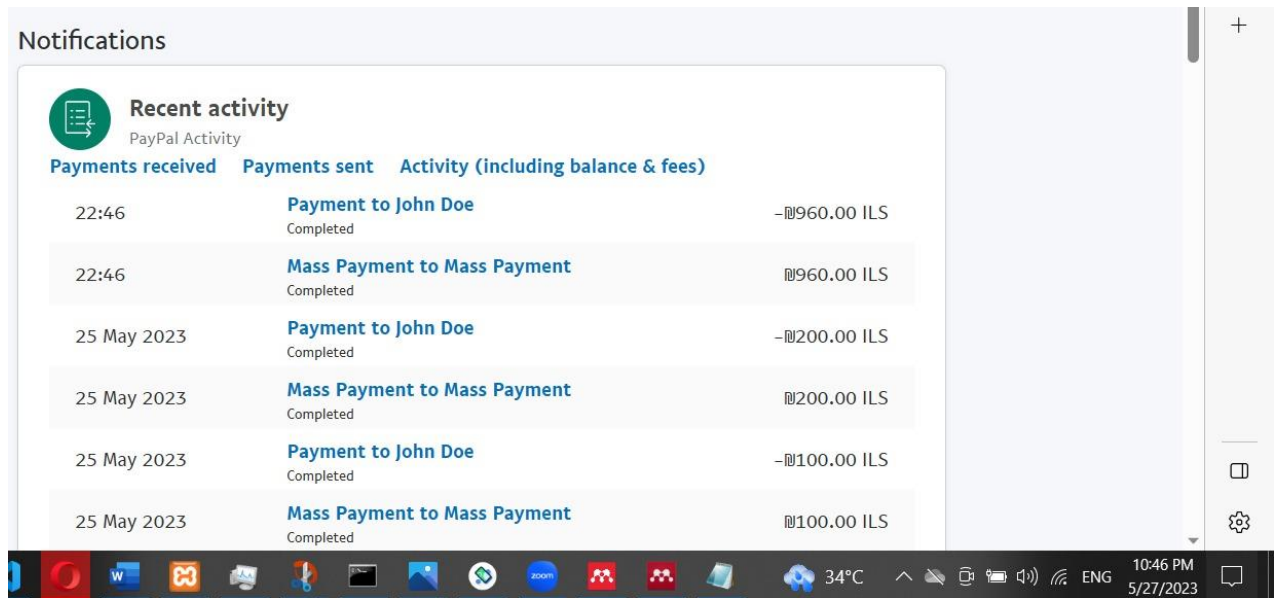


Figure 38. Paypal sender page

The receiver side after gain 960

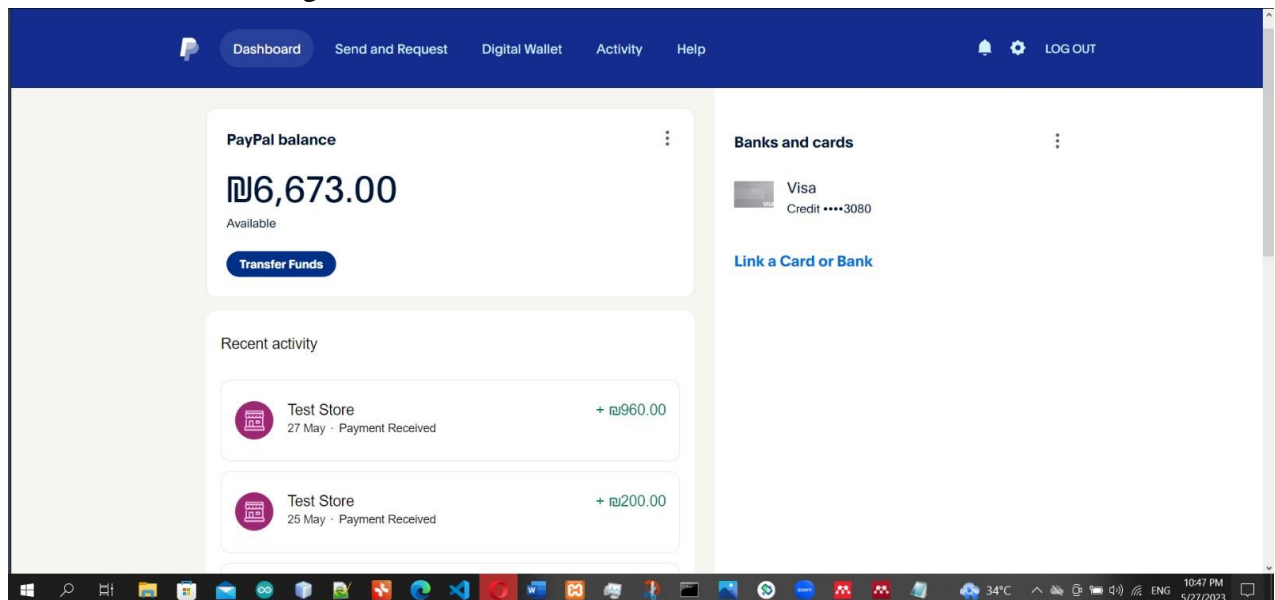


Figure 39. Paypal recipient page

- Filtering based on the location
the user determines the city he would pick from it a car and the city will back the car and view the company that have branches to those cities so he can rental from it

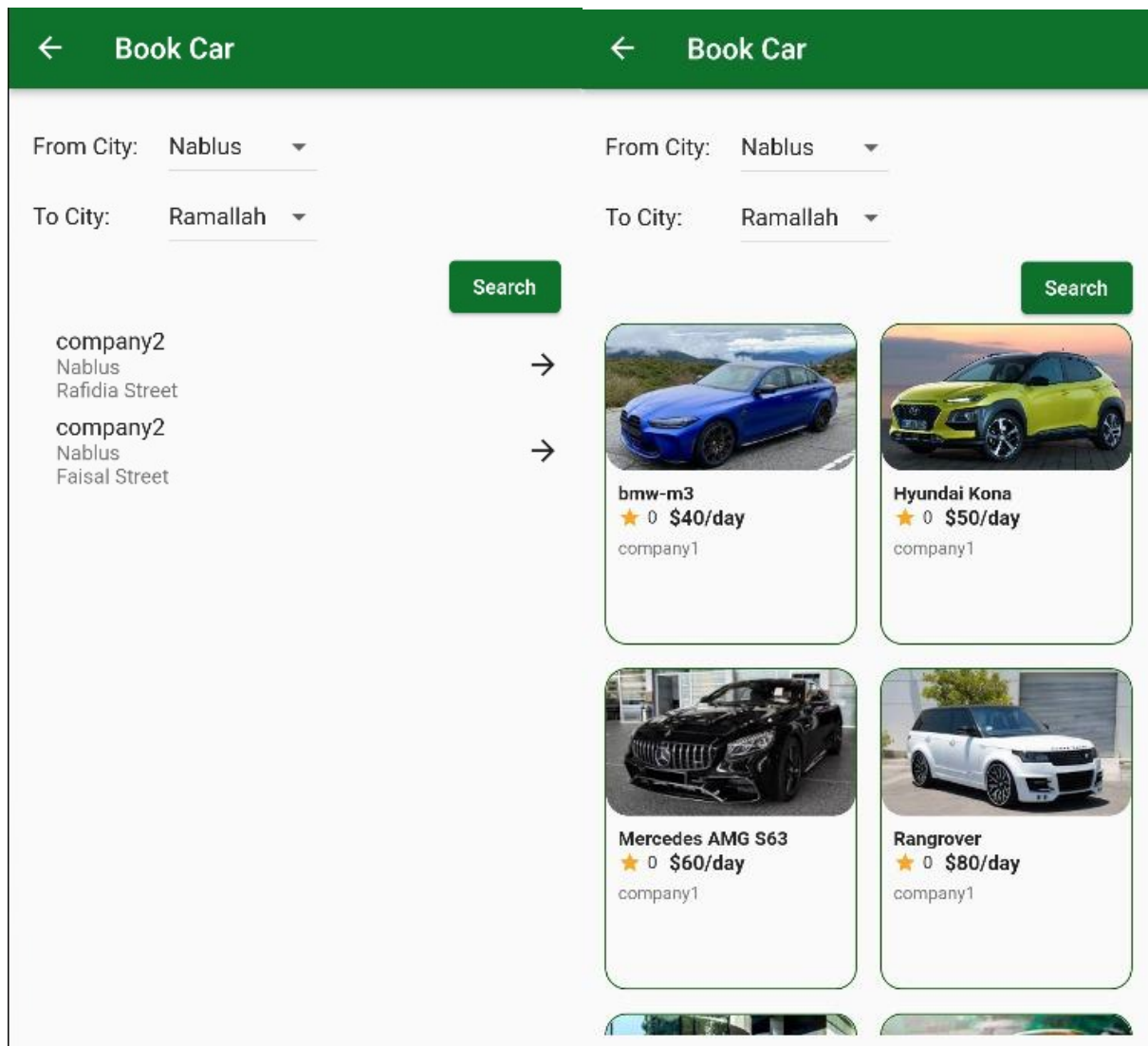


Figure 40. Filtering companies

- Advertisement in the user side
the user can see the ads for the companies and view its details when click on it

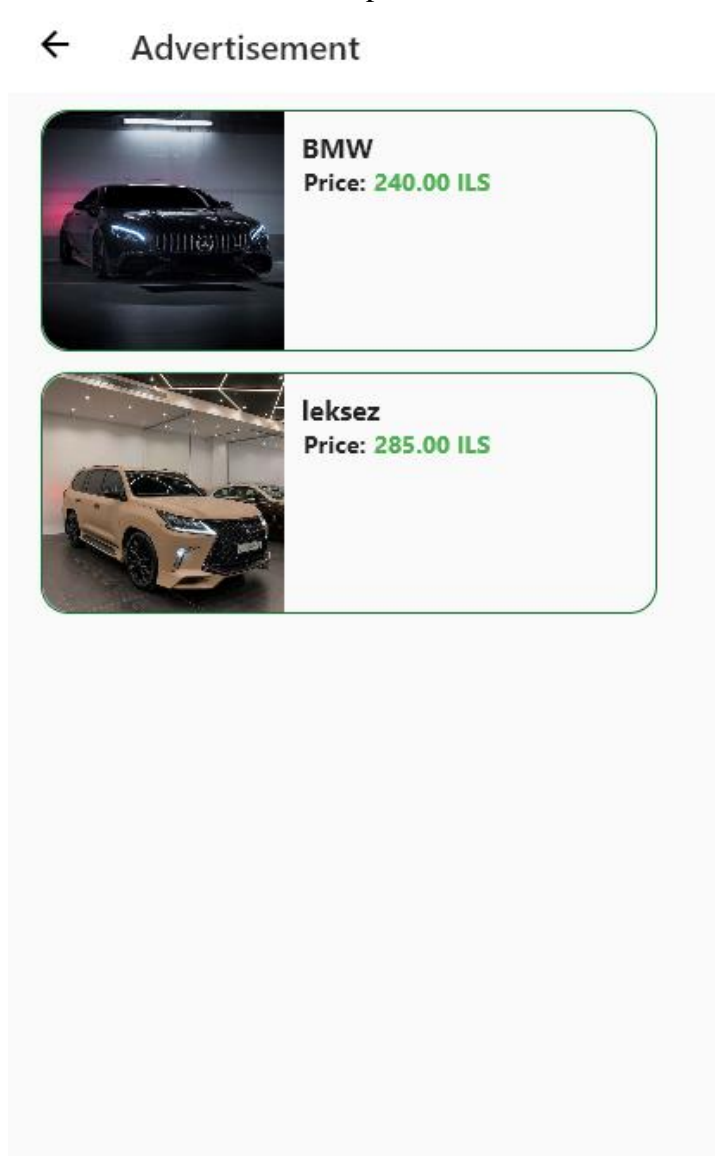


Figure 41. Advertisement page

- Notification System

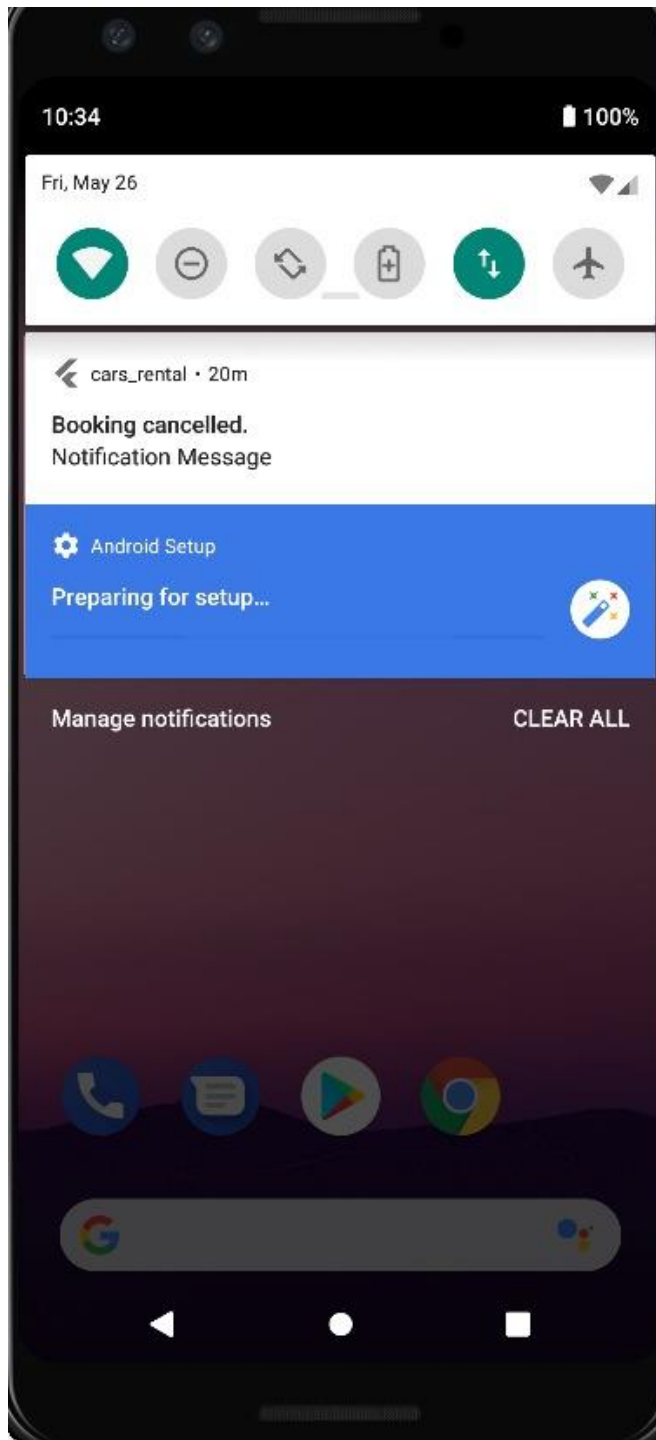
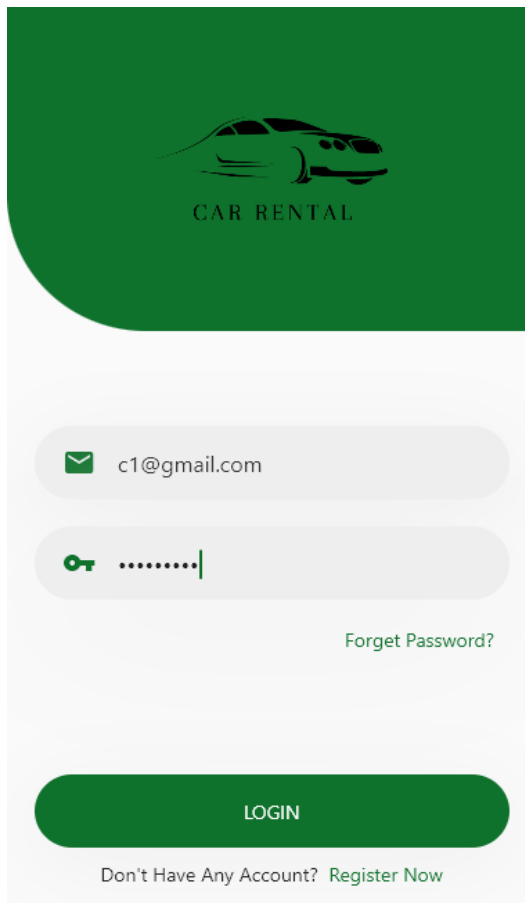


Figure 42.Msg Notification page

4.4.1.2 Company Side

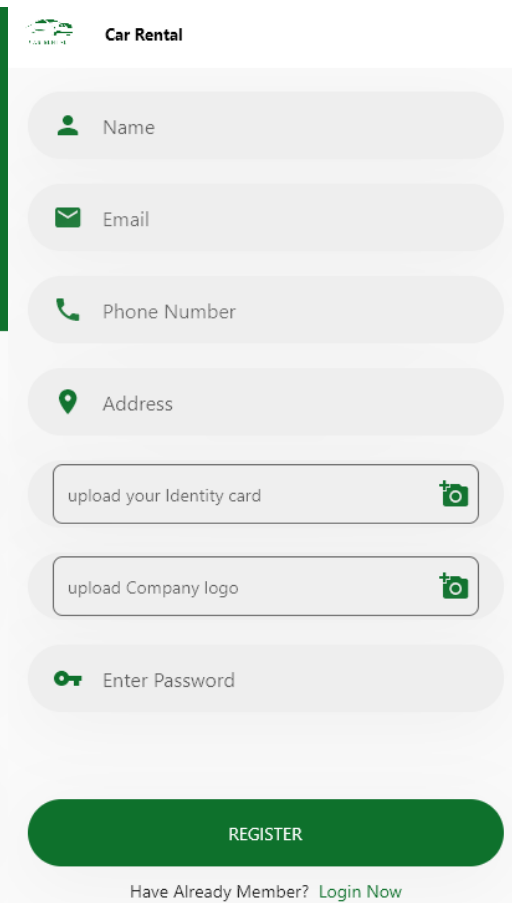
- Login page



The login page features a dark green header with a car silhouette and the text "CAR RENTAL". Below the header, there are two input fields: one for email (containing "c1@gmail.com") and one for password (containing "....."). A "Forget Password?" link is positioned below the password field. At the bottom, there is a large green "LOGIN" button and a link that says "Don't Have Any Account? Register Now".

Figure 43. Company sign in page

SignUp Page



The sign up page has a light gray header with a car silhouette and the text "Car Rental". It contains several input fields: "Name", "Email", "Phone Number", and "Address". There are also two upload fields: "upload your Identity card" and "upload Company logo", each with a camera icon. Below these is a field for "Enter Password". At the bottom, there is a large green "REGISTER" button and a link that says "Have Already Member? Login Now".

Figure 44. Company sign up page

The company enters its email and password to log in to the application successfully. During the signup process, the company provides its details and rental license information. When a new company registers, it is added to an ordered list on the admin side as "awaited." The admin then reviews the license to ensure its authenticity and approves it if everything is in order. Once approved, the company becomes available for users to book their services.

- Forget password process

The user or admin enters their email address, and an email is sent to them containing a verification code for VTP (Verification Through Email). The user then inputs the verification code, which allows them to proceed to the password reset page. On this page, they can set a new password for their account.

The image displays two sequential steps of an email verification process on a mobile application interface. Both screens feature a green header with a back arrow and the text "Email Verification".

Figure 45 (Left): The screen prompts the user to "Please enter your email address:". Below this, there is an input field labeled "Email" containing the text "noorshanteer871@gmail.com". A green button labeled "Send OTP" is positioned below the input field. An illustration of a person holding a large green envelope is shown in the background.

Figure 46 (Right): The screen prompts the user to "We sent you an email check it". Below this, there is an input field labeled "OTP" containing the text "633099". A green button labeled "Verify OTP" is positioned below the input field. An illustration of a person sitting at a desk with a laptop and a shield icon with a checkmark is shown in the background.

Figure 45.Email verification

Figure 46.OTP verification page for new password

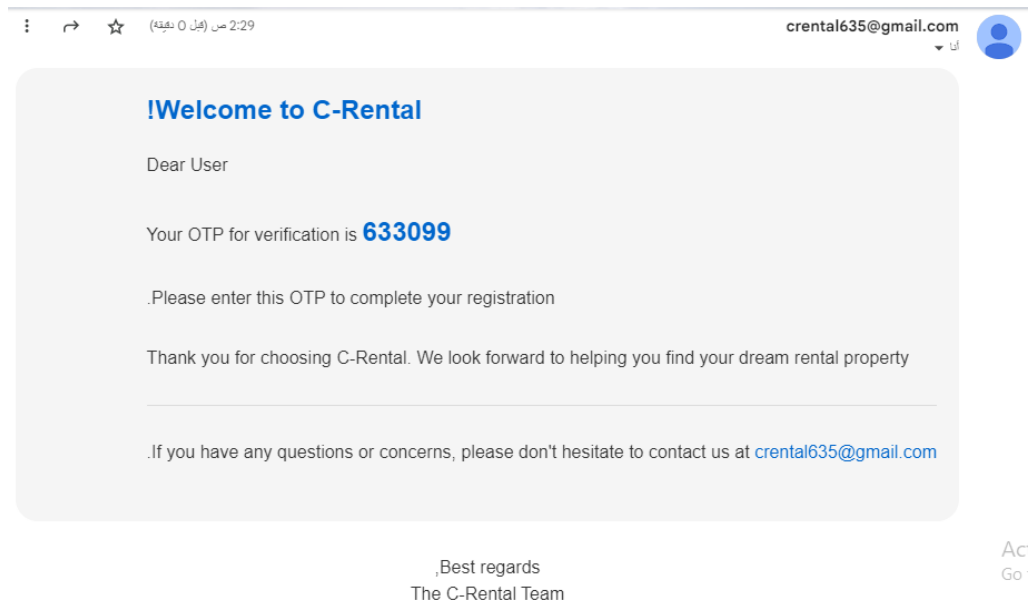


Figure 47.OTP verification page

Then user reset the password successfully

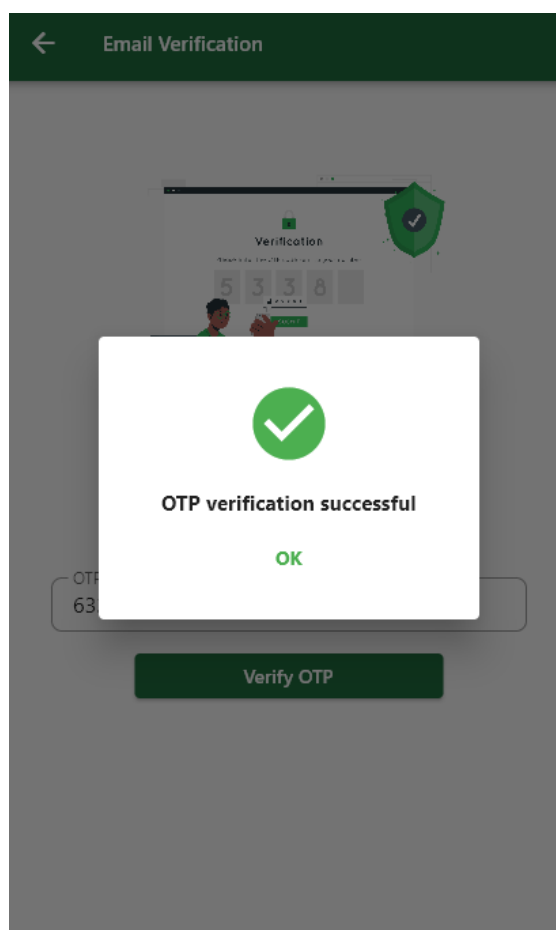


Figure 48.OTP verification successful

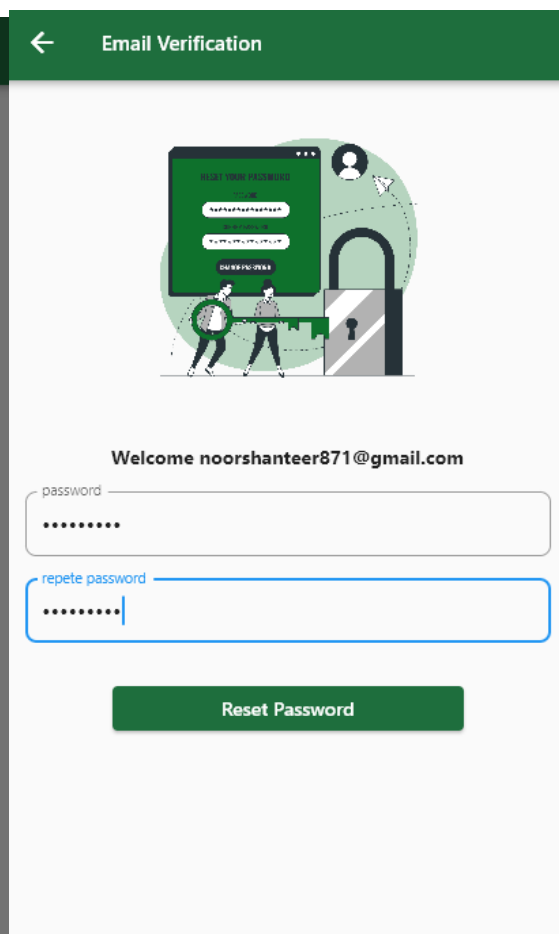


Figure 49.Create new password page

- Company HomePage

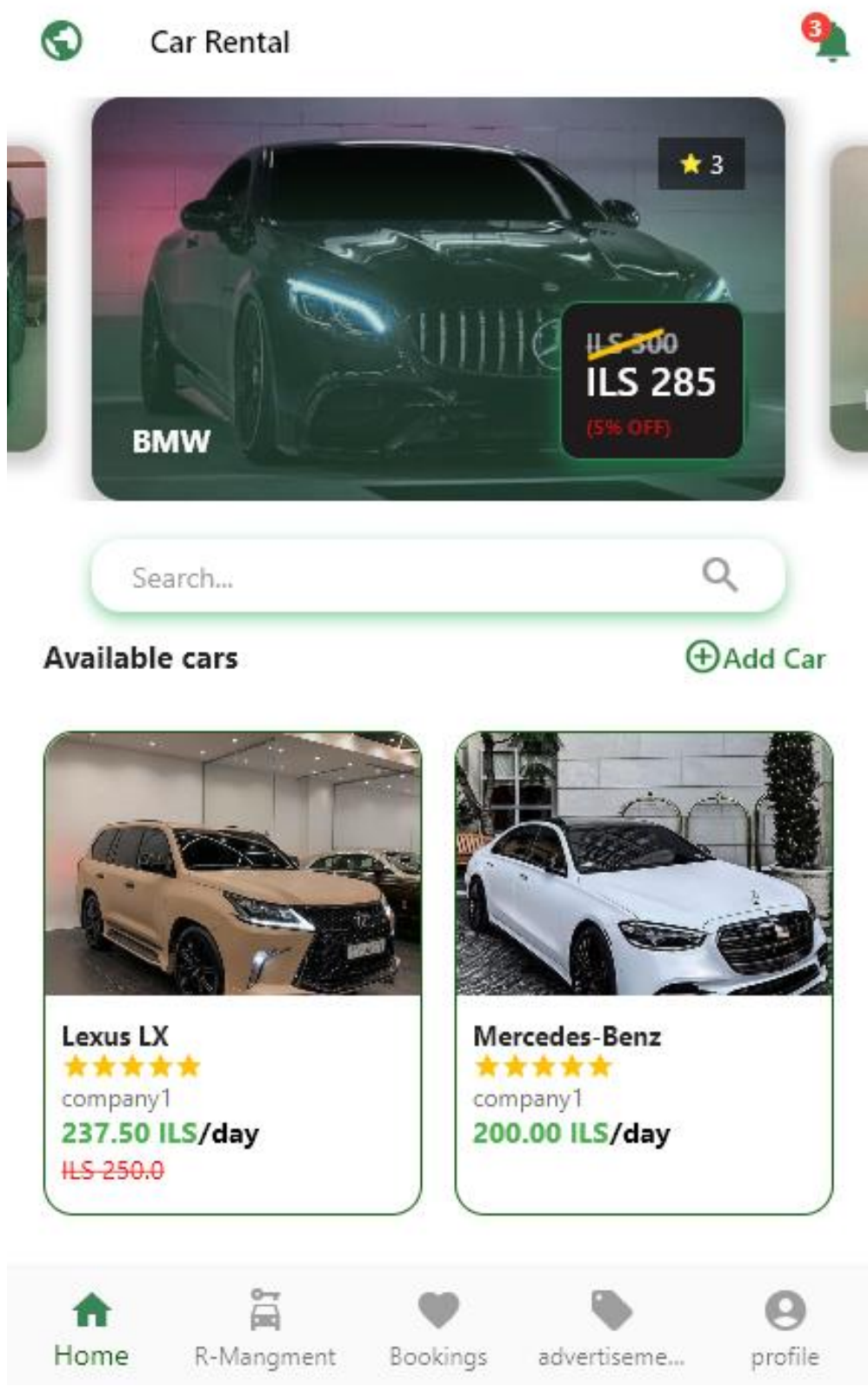


Figure 50.Company HomePage

- There are 4 states for the company
 - if the admin agrees on the company, then it will access normally to home page
 - if the company is still on the waiting list, then none of its cars will be accessible to users. and a “wait” word will appear on the home page

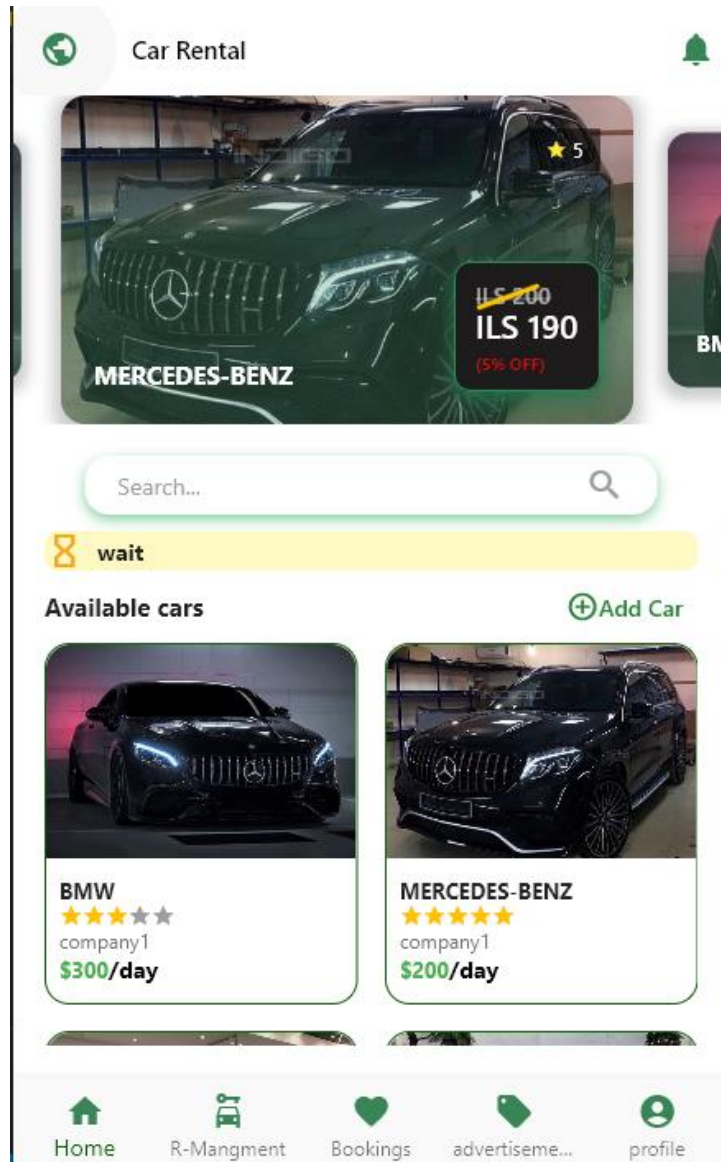


Figure 51. Company Home wait page

- if the company was blocked by the admin and the reason was wrong license , admin gave another chance to reupload its license

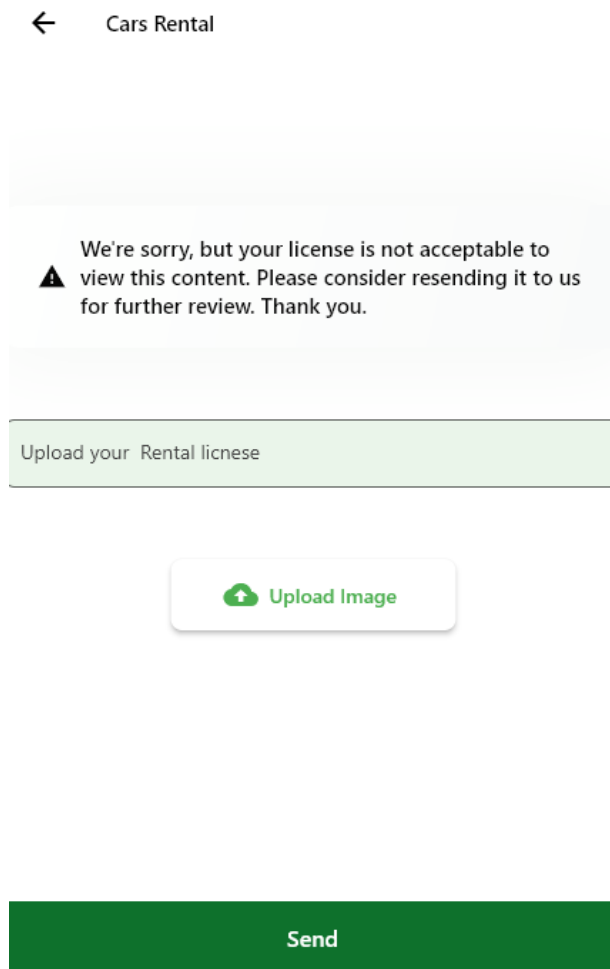


Figure 52.Reupload license

- but if admin was blocked by not respect the app policies it will prevented to use the app at all

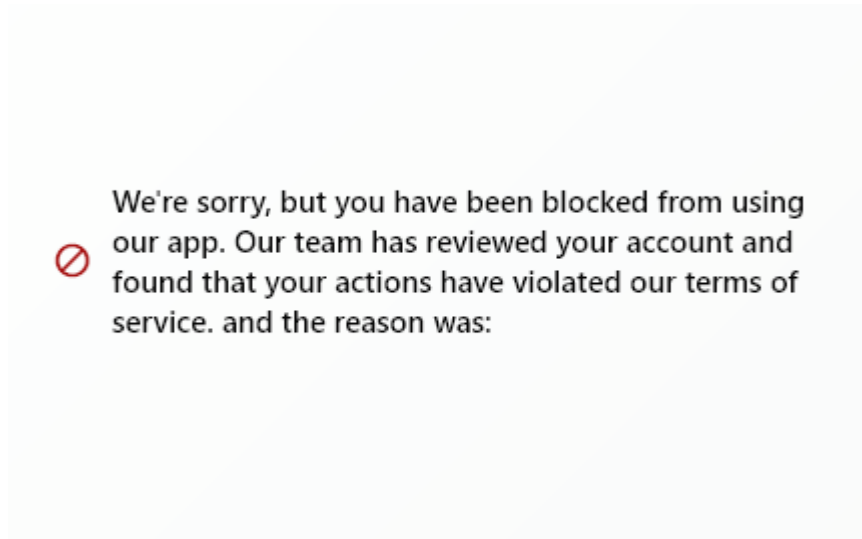


Figure 53.Company ban page

- Advertisement

On the Advertisement page, users can view the ads that have been added by companies. They have the capability to delete ads, and if the time for an ad has expired, it will be automatically removed.

On the "Add New Ad" page, users can see a list of all cars. Some cars will have a check icon, indicating that they already have an ad associated with them, while others will have an add icon, indicating that no ad has been added yet. However, it is still possible to add a new ad for a car, as long as its time does not overlap with existing ads for the same car.

By clicking on the calendar icon, the company can view all the ad days for a specific car. Additionally, we have implemented a system to handle scenarios where multiple ads exist for a car. In such cases, there may be multiple discounts offered, and our code is designed to determine the discount based on the duration of each ad.

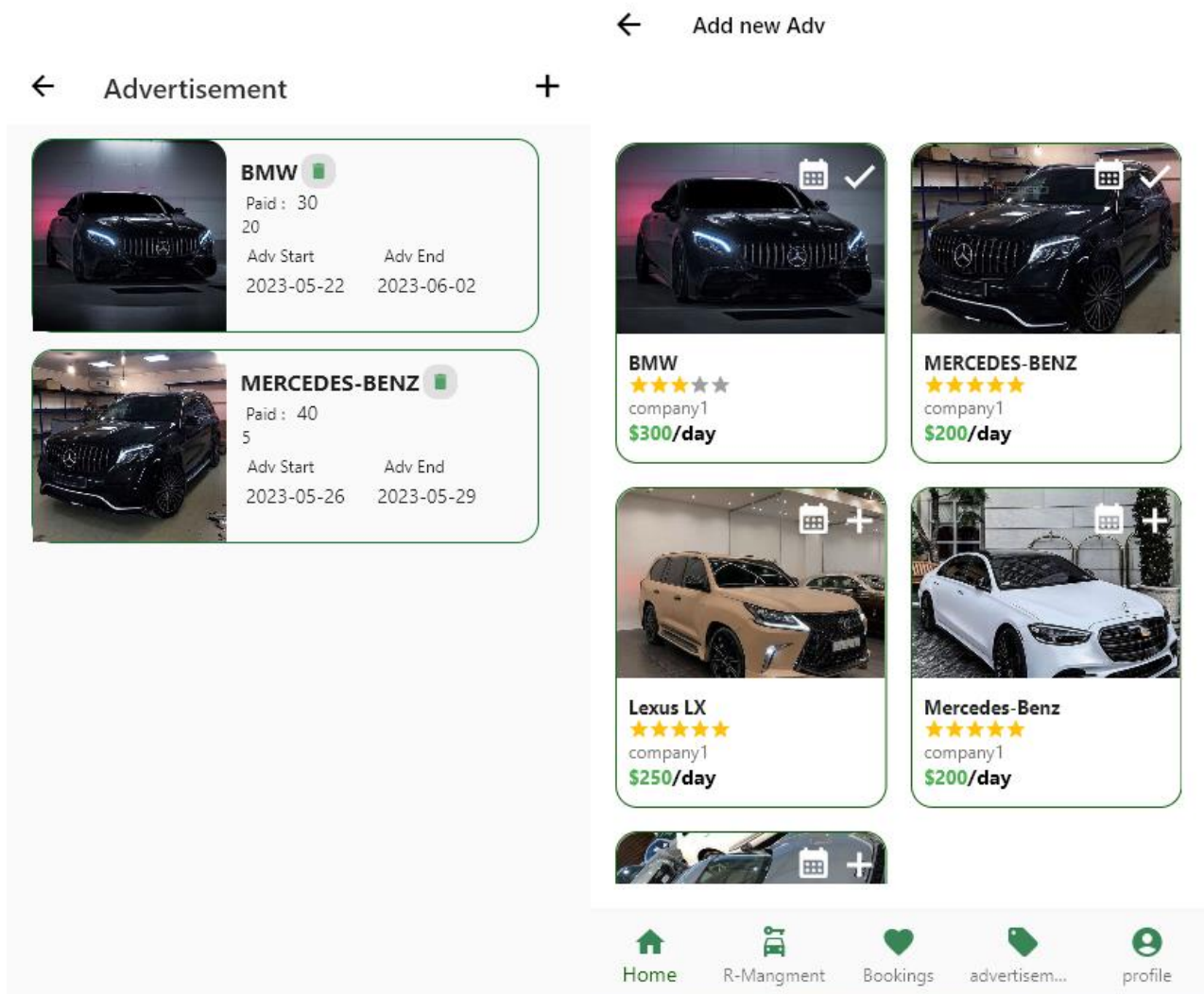


Figure 54. Add advertisement page

The calendar displays the advertisement days for a specific car

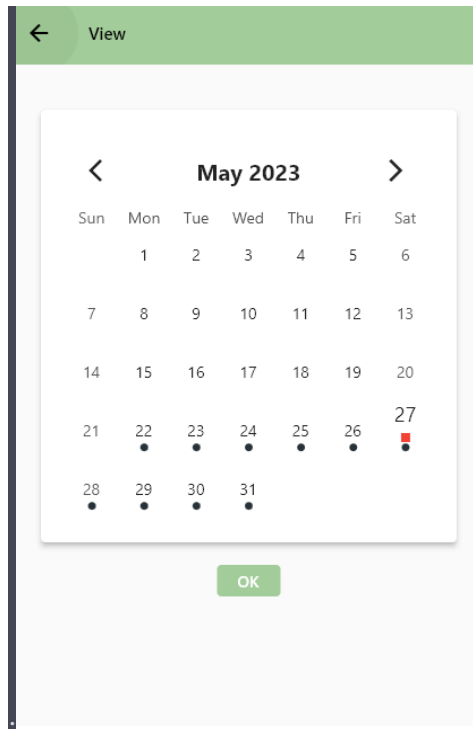


Figure 55. Calendar advertisement days page

- add new ad details

The company adds the details of the advertisement and proceeds to make the payment. The price for the advertisement is determined by the admin.

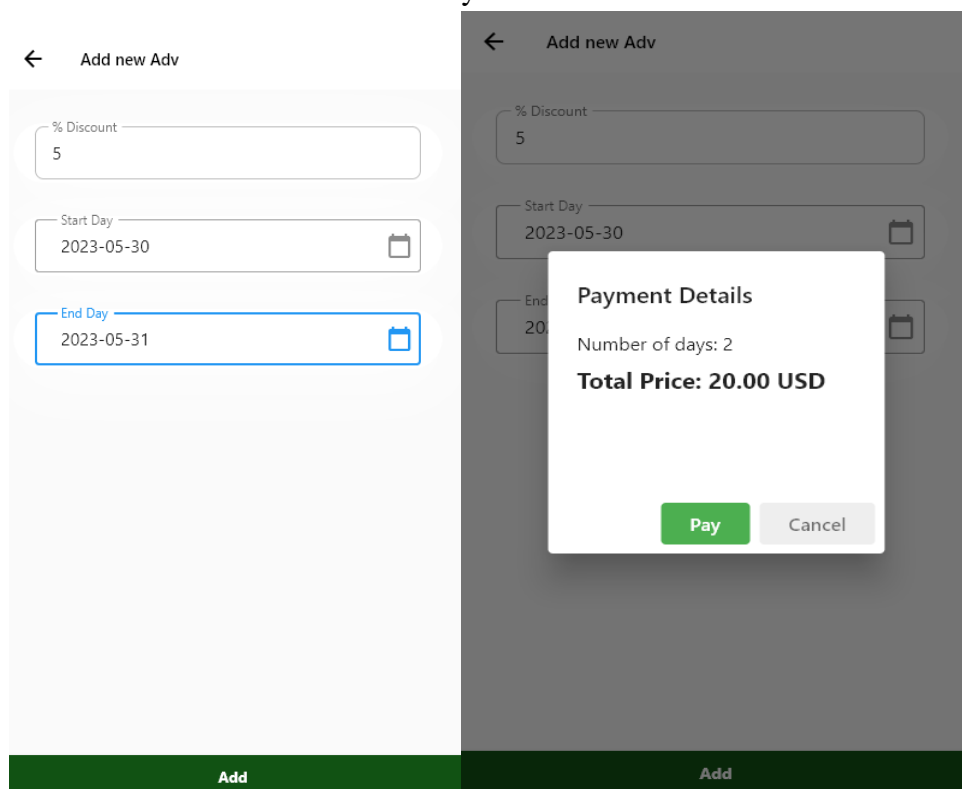


Figure 56. Add new ad details

- Search

The search page allows users to search based on seven categories such as seats, price, name, and more.

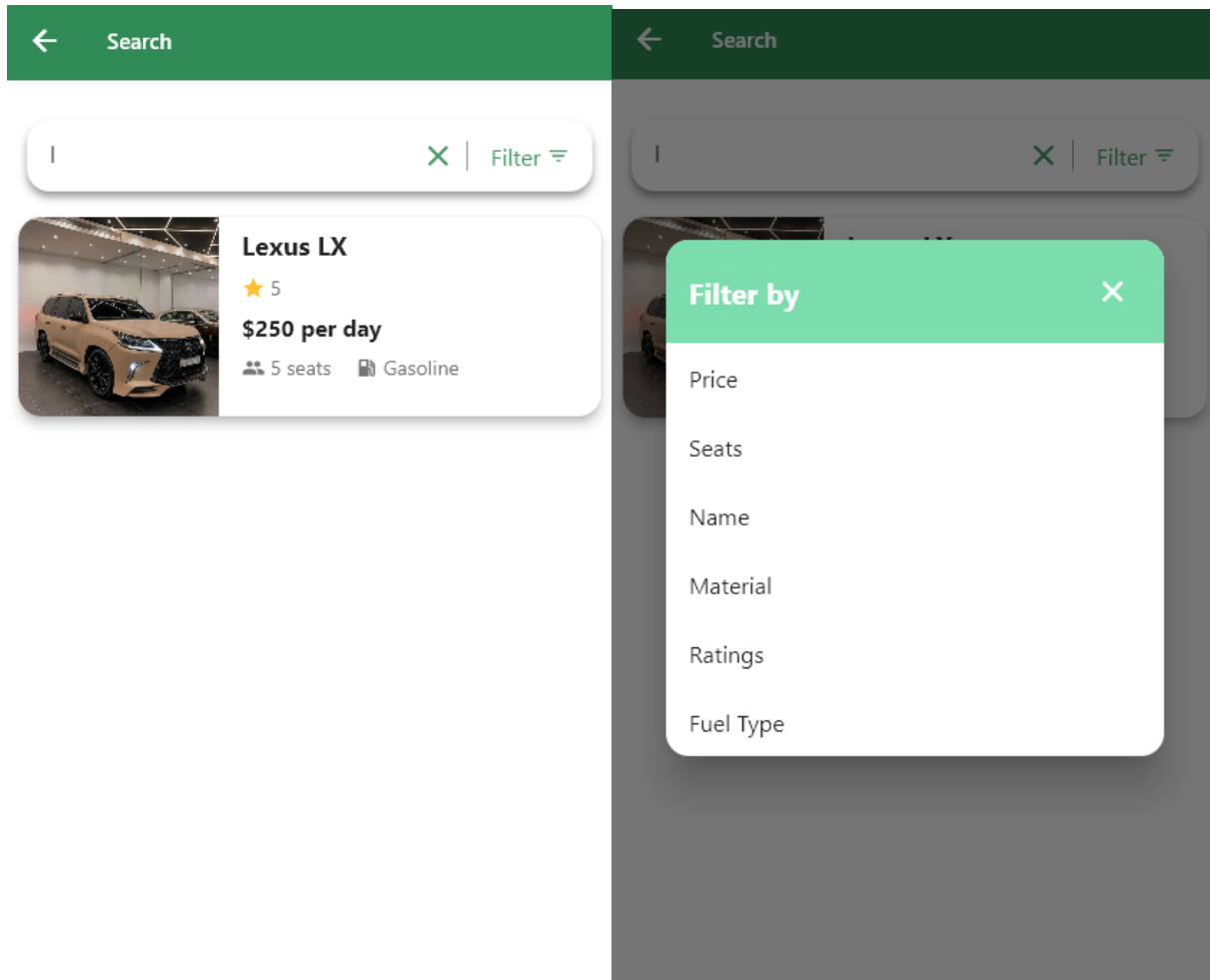


Figure 57. Search page

- Notifications Page
it informed the company of last actions it did or any information from the other sides

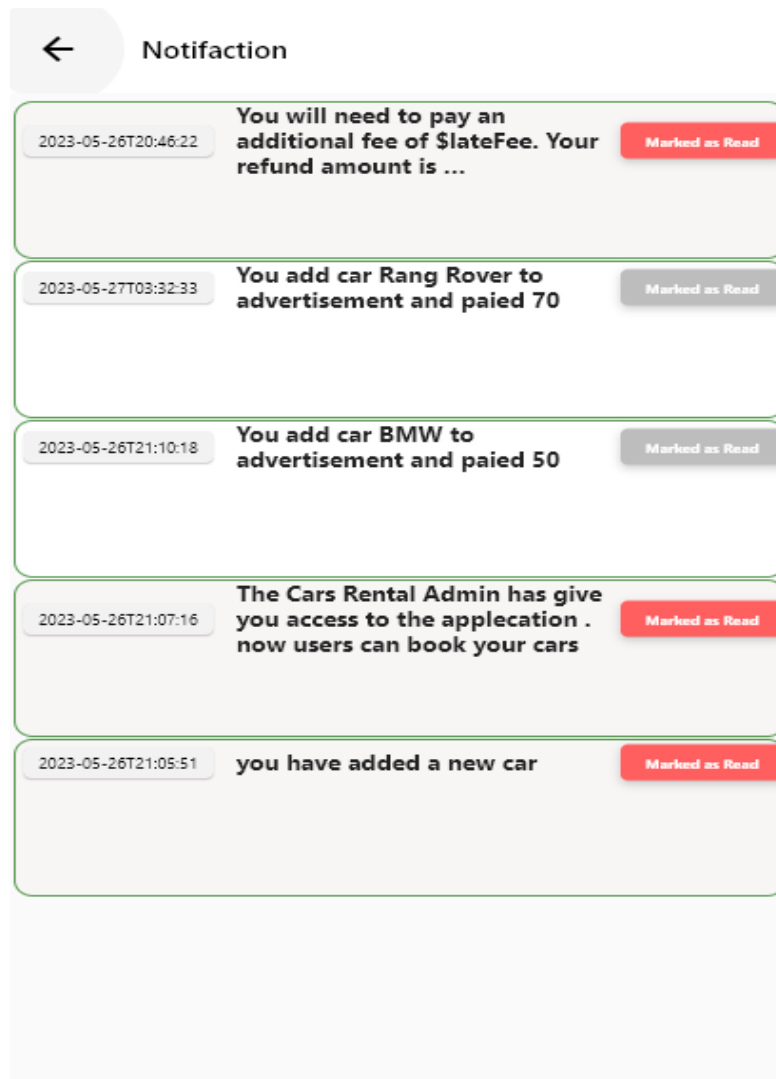


Figure 58. Notifications Page

- Profile

The company has the ability to edit its profile, enable the dark mode feature, and view the branches associated with the company. Additionally, the company can add new branches, as well as edit or delete existing branches as needed.

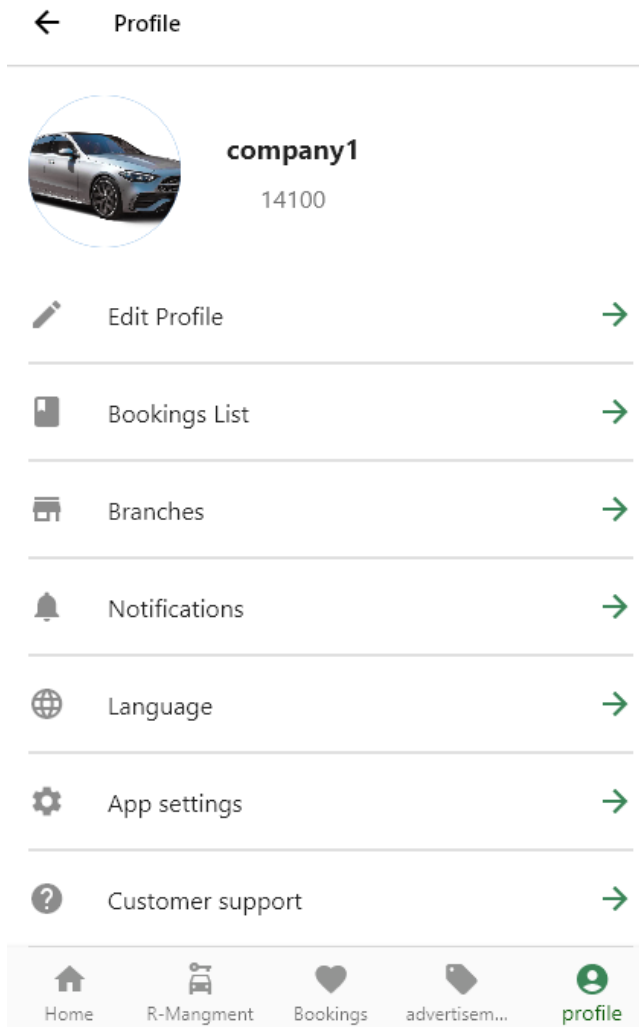


Figure 59. Company profile page

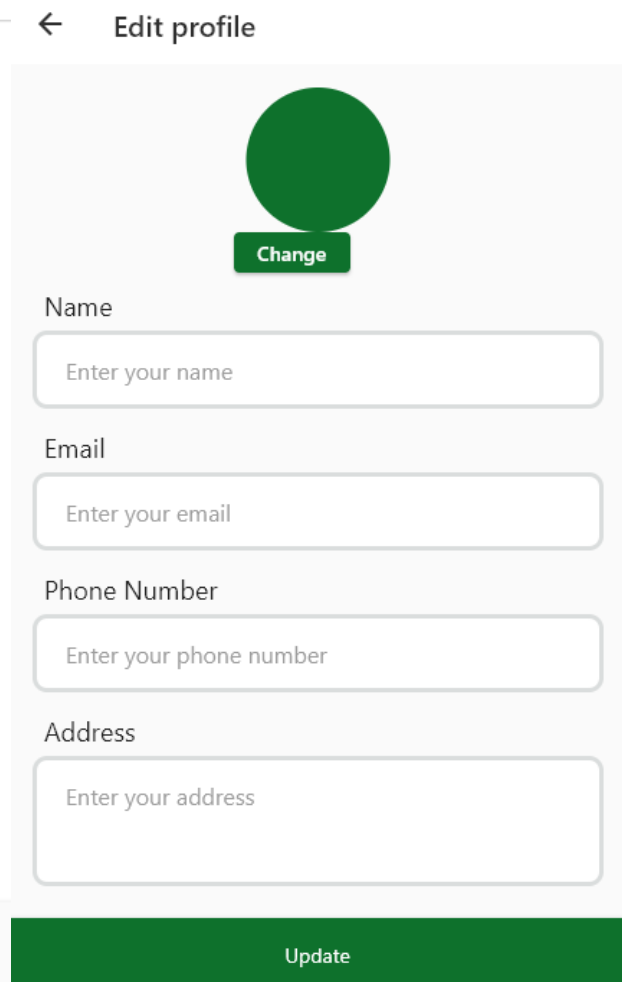


Figure 60. Company Profile Edit Page

- Branches

The company can access and view the branches associated with their account. They have the option to delete existing branches, edit their details, or add new branches as needed.

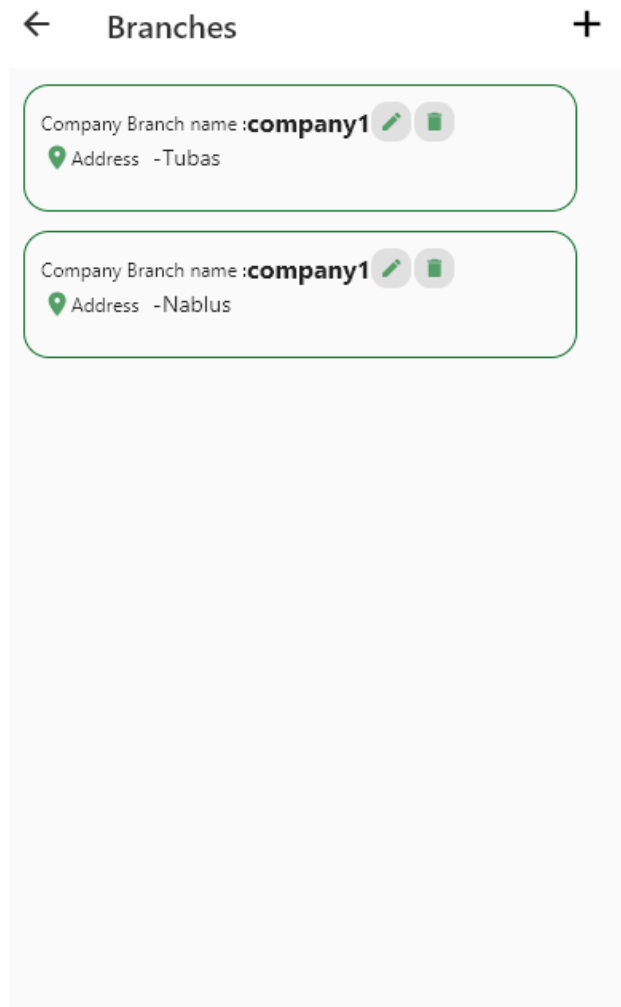


Figure 61.Company branch page

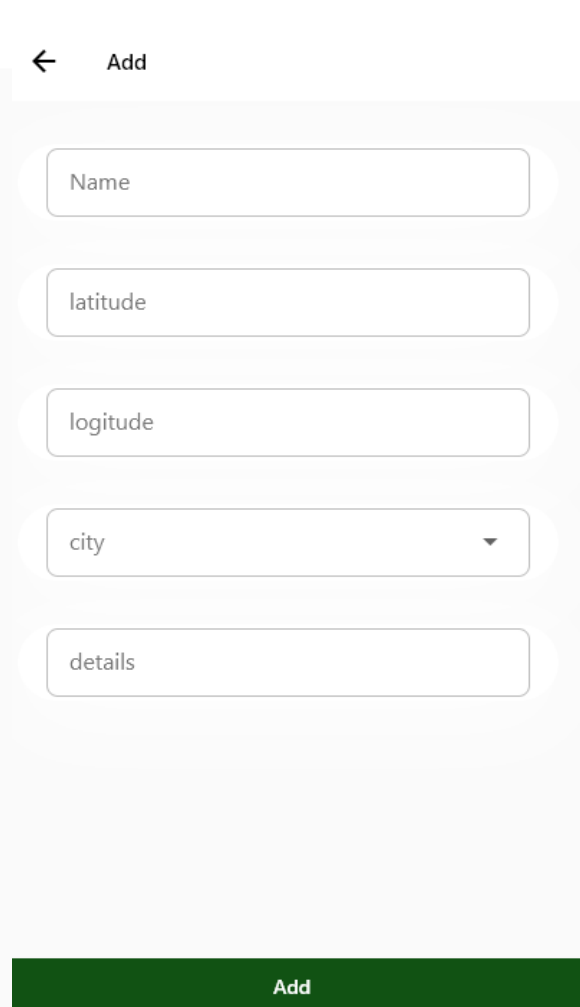


Figure 62.Add new branches page

- Car details Page

On the Car Details page, companies can view comprehensive information about a specific car. They have the ability to edit or delete the car's details, as well as add a repair day if needed. Additionally, there is a chart compare the selected car with other cars, allowing them to make informed decisions based on a comparison of features and specifications.

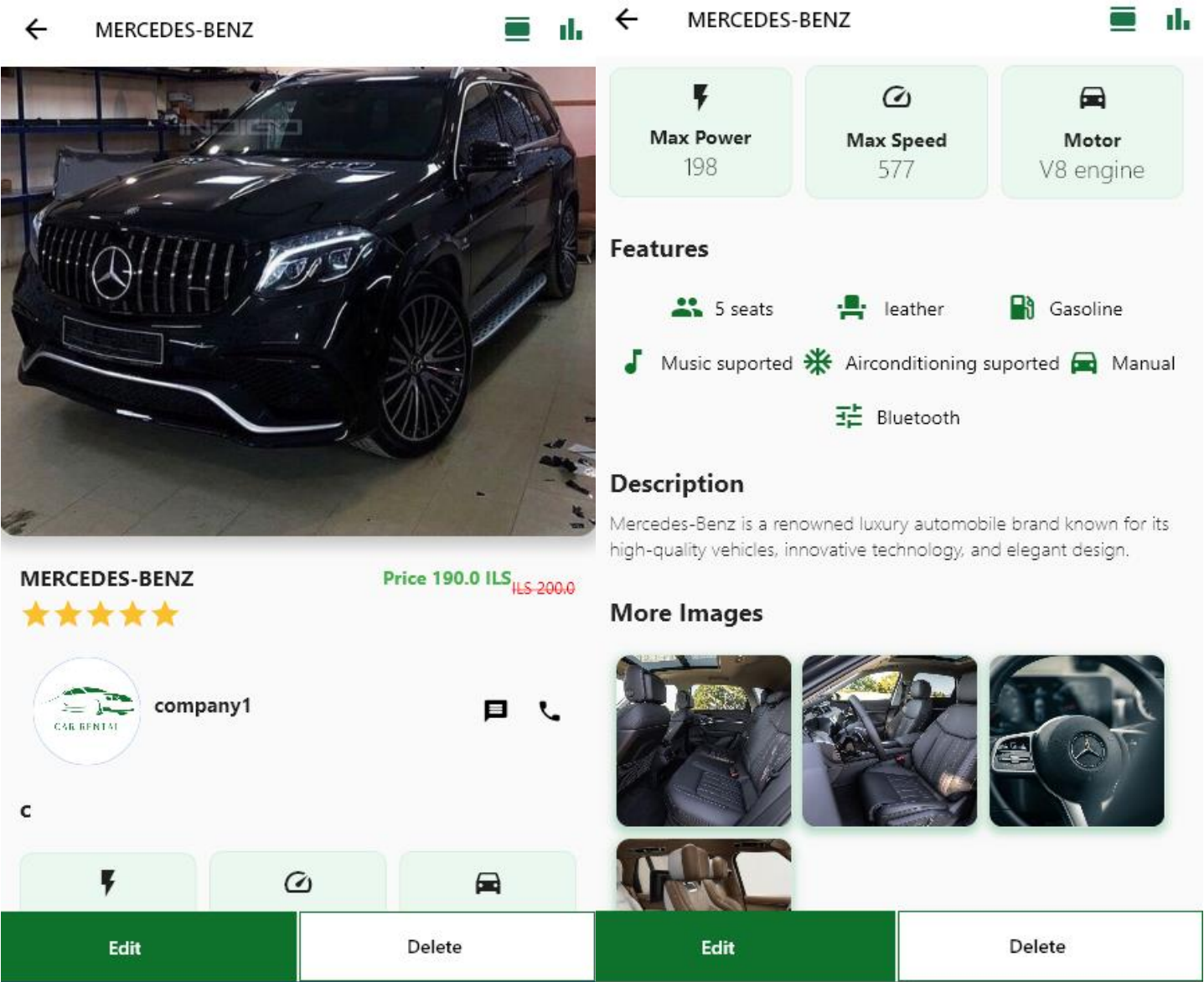


Figure 63. Company Car details page

- the chart

add repair day



Figure 64.chart page

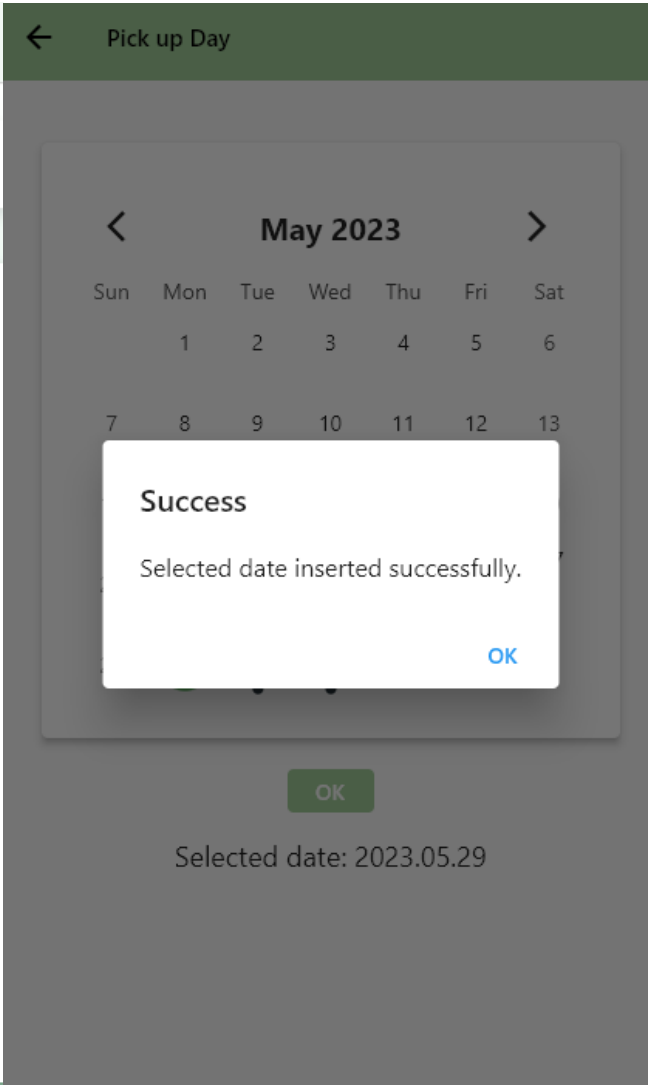
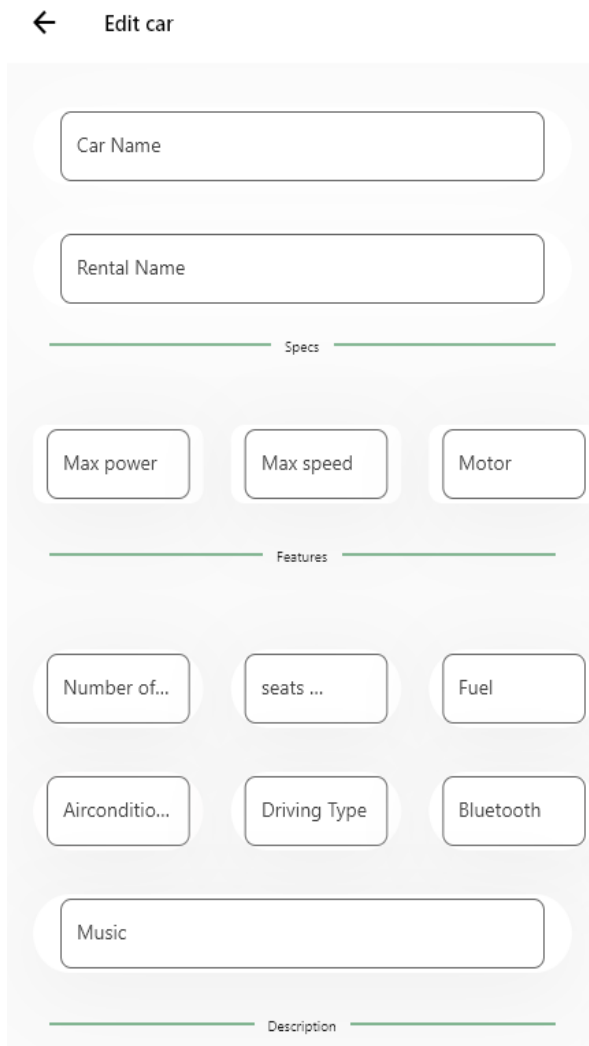


Figure 65.Add repair day

- add, edit and delete Pages

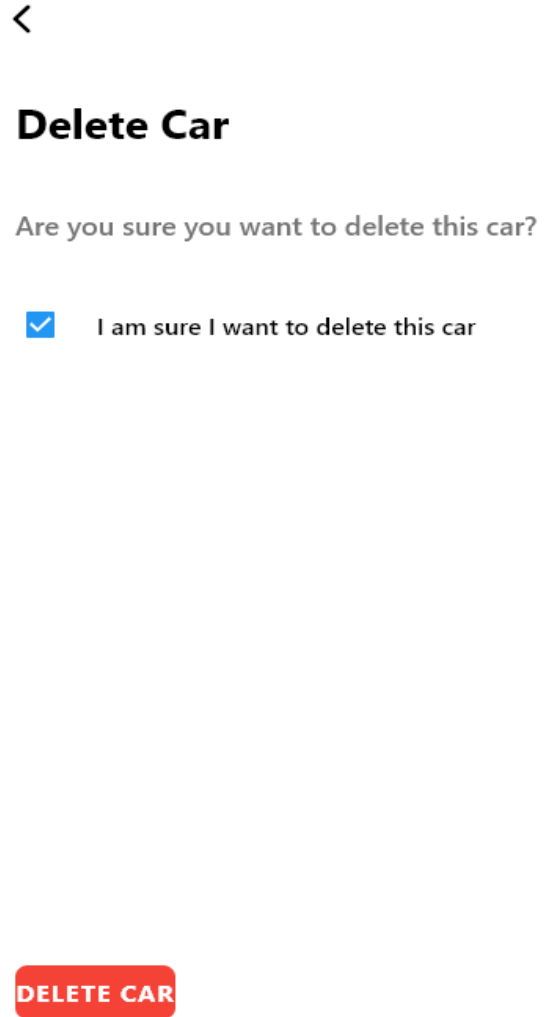
Both the add and edit have the same design. The company can utilize these features to add all the necessary details for a car, including the option to add a discount if desired.

However, when it comes to the delete page, the company can only delete a car if it is currently available and not booked by any user.



The 'Edit car' page features a back arrow and the title 'Edit car'. It contains several input fields: 'Car Name', 'Rental Name', and 'Music'. The 'Specs' section includes 'Max power', 'Max speed', and 'Motor'. The 'Features' section includes 'Number of...', 'seats ...', 'Fuel', 'Airconditio...', 'Driving Type', and 'Bluetooth'. The 'Description' section is at the bottom.

Figure 66.Edit car page



The 'Delete Car' page features a back arrow and the title 'Delete Car'. It asks 'Are you sure you want to delete this car?' with a checked checkbox and the text 'I am sure I want to delete this car'. A red 'DELETE CAR' button is at the bottom.

Figure 67.Delete car page

- Users Booking Page

this page view the bookings for all users with ability to cancel booking if it was not finished yet and determine how much money will back to user also company can see use information how booked this car

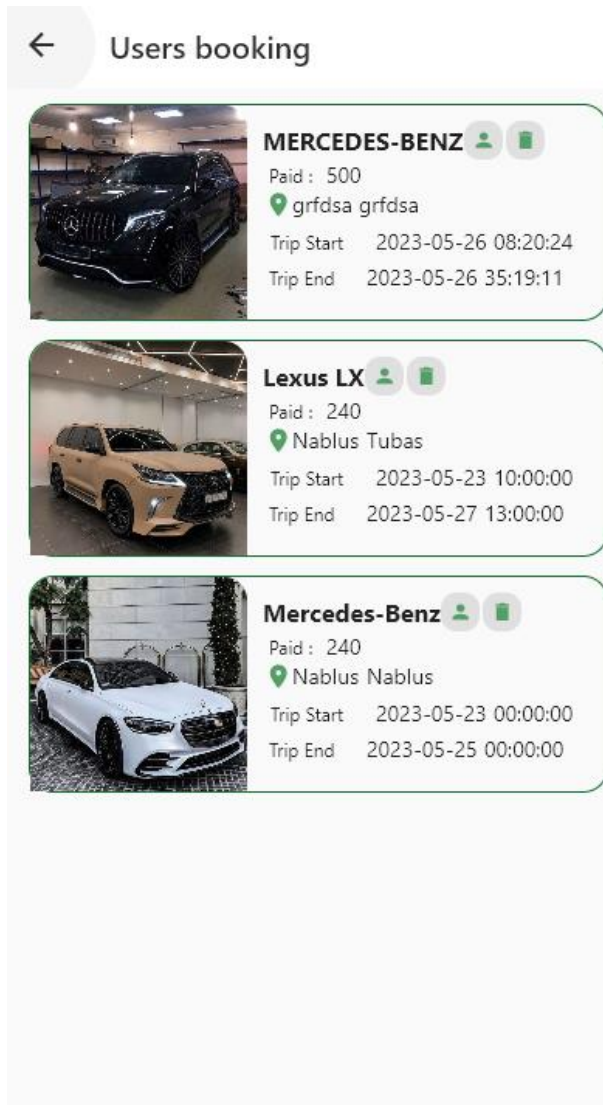


Figure 68.Users booking page

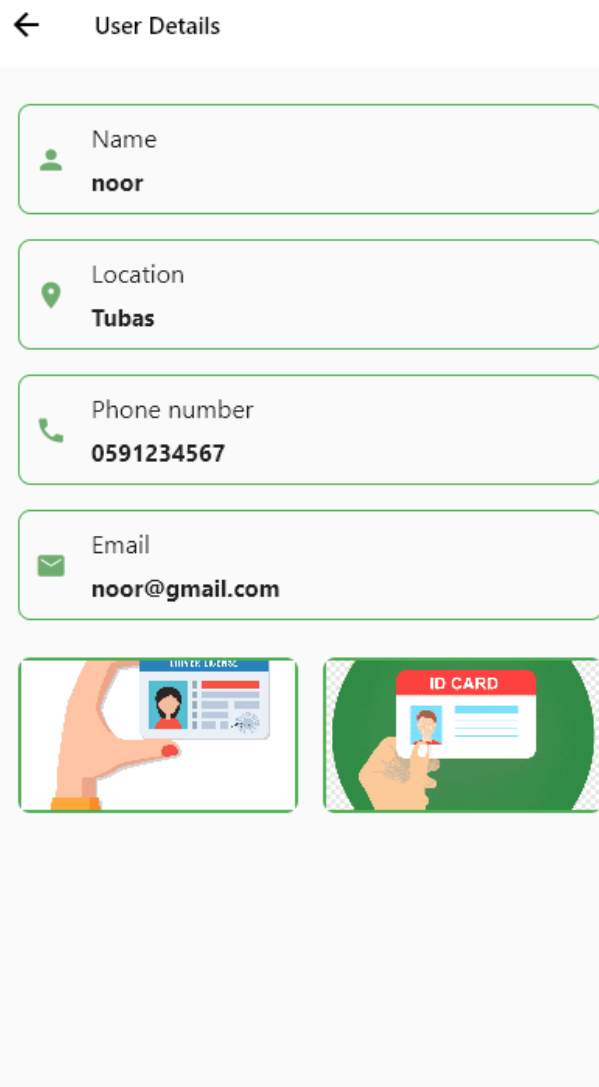


Figure 69.User details page

- Car Rental management

- sending cars

it views the cars that should be sent to the user today , by clicking on the send icon that means the user receives the car from the company and directly the car become not available .

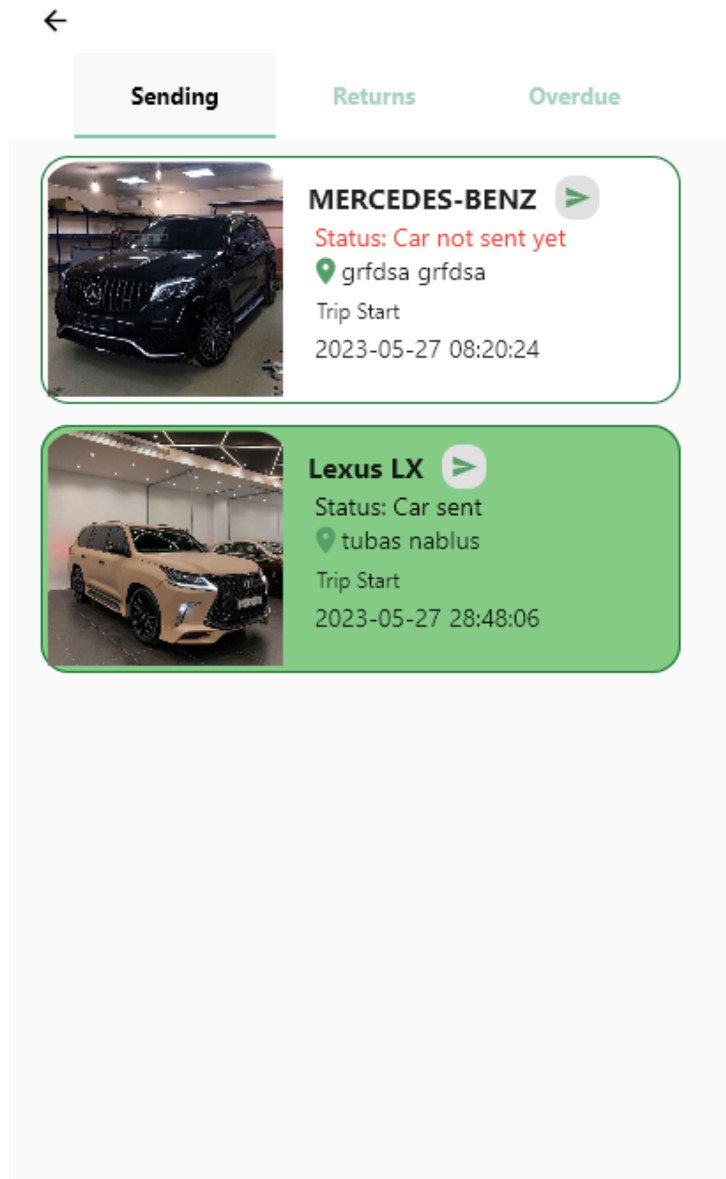


Figure 70.sending cars page

- Receiving car
it views the cars that should be return from user today , by click on the return icon that means the company receive the car from user and directly the car become available

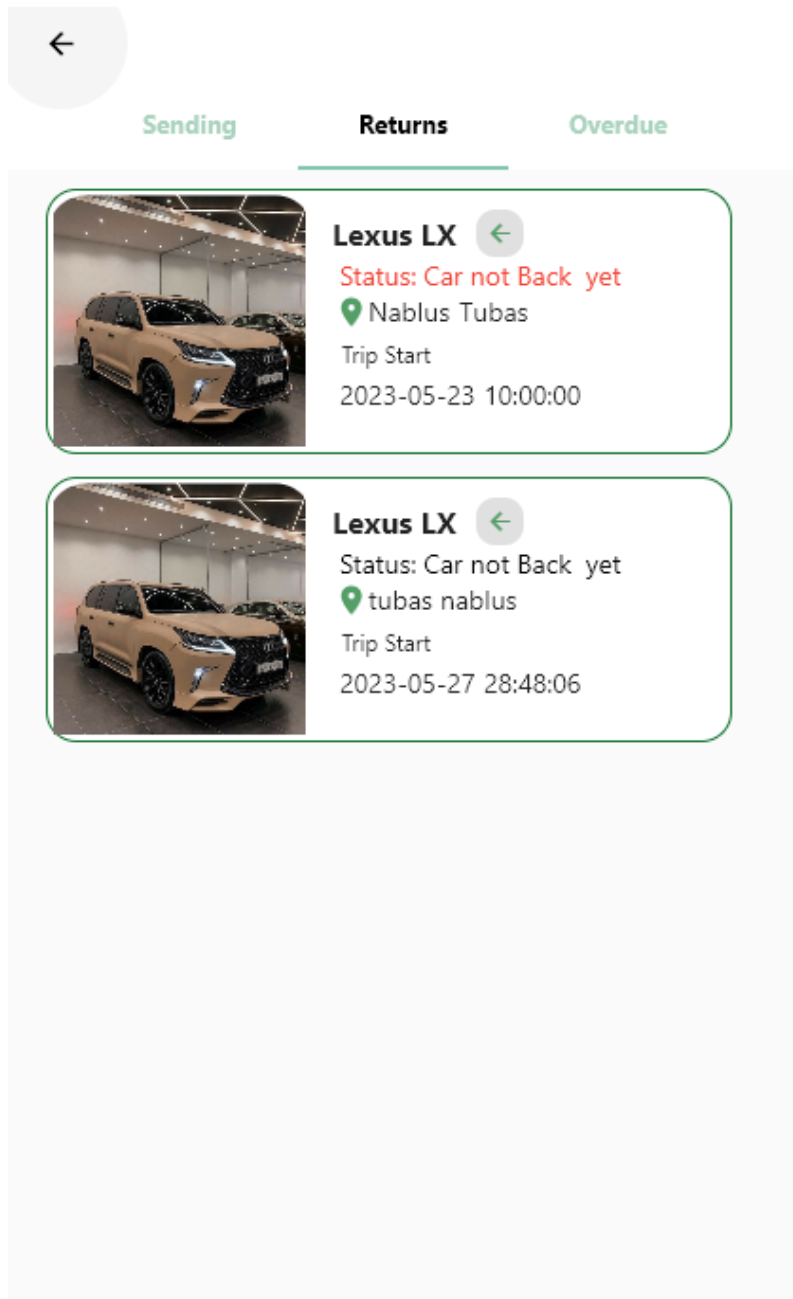


Figure 71.Receiving car page

- Late Returns

it views the cars that should be return from user but still not return yet , by click on the return icon that means the company receive the car from user and directly the car become available and the user have to bay one the lates days by sending a message inform user how much he have to pay

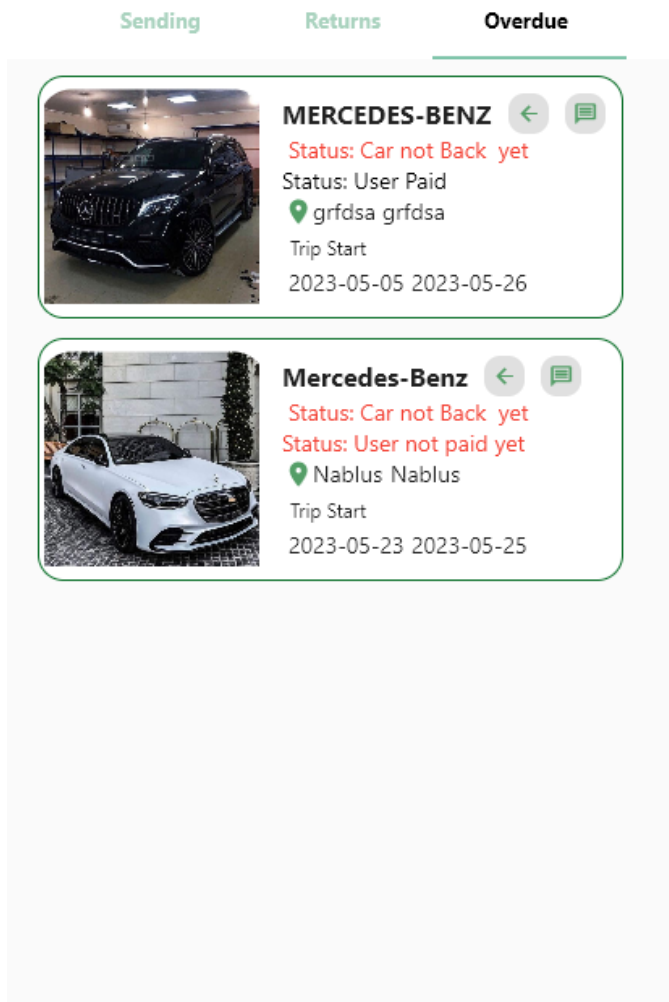


Figure 72.Late Returns page

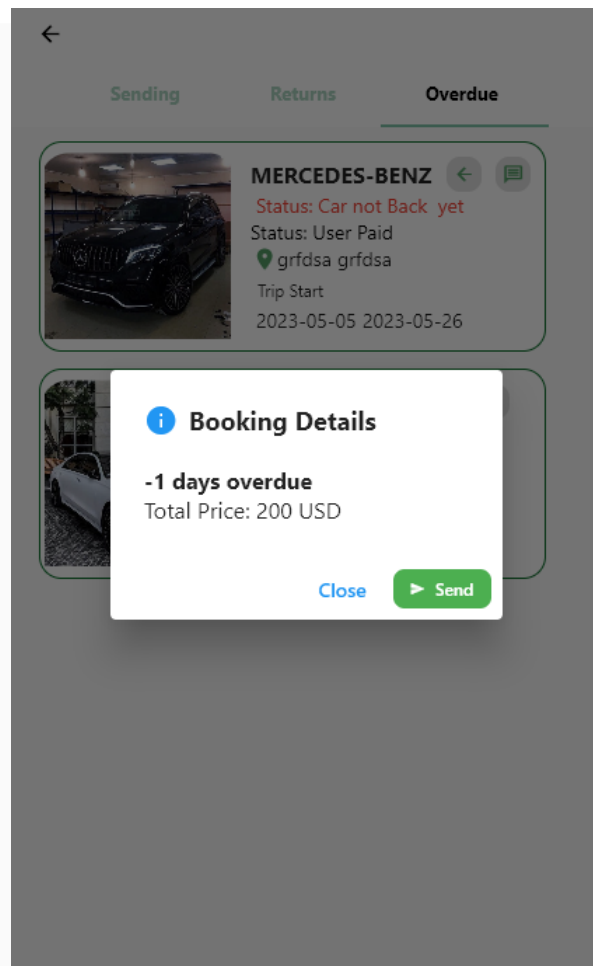
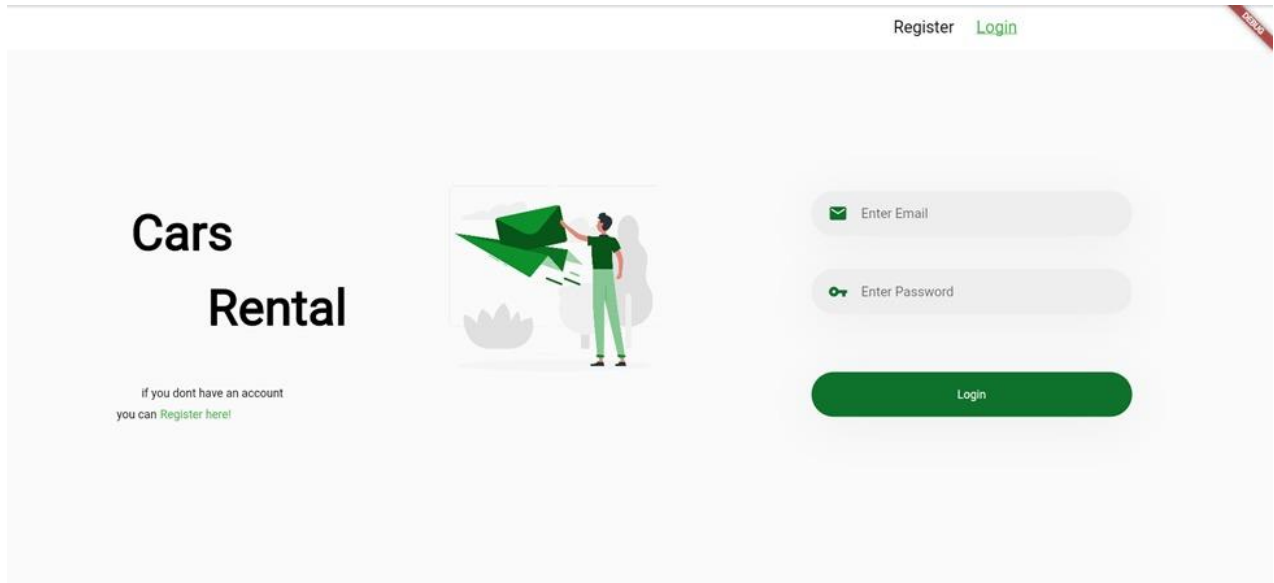


Figure 73.Inform msg page

4.4.1.3 Admin Side

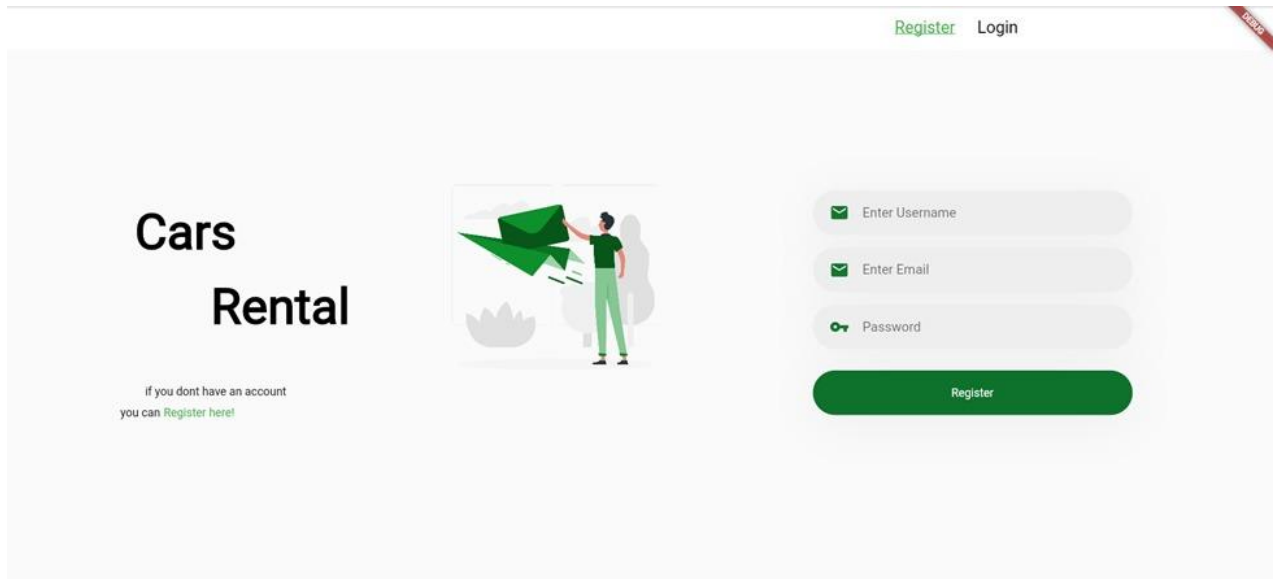
- login page



The image shows the admin login page for a 'Cars Rental' system. At the top right, there are links for 'Register' and 'Login'. The main heading 'Cars Rental' is on the left. Below it, a message says 'if you dont have an account you can Register here!'. In the center is an illustration of a person placing a green block into a structure. On the right, there are two input fields: 'Enter Email' and 'Enter Password', each with an icon (envelope and key respectively). Below these is a green 'Login' button. A red 'Admin' label is in the top right corner.

Figure 74.Admin login page

- sign up page

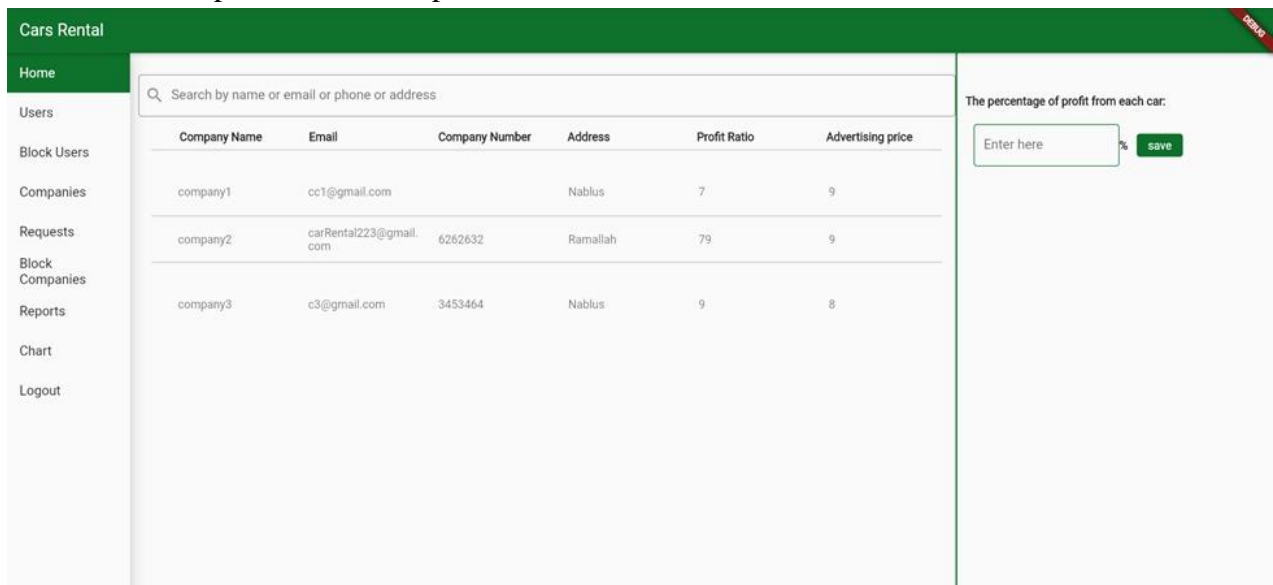


The image shows the admin sign up page for a 'Cars Rental' system. At the top right, there are links for 'Register' and 'Login'. The main heading 'Cars Rental' is on the left. Below it, a message says 'if you dont have an account you can Register here!'. In the center is an illustration of a person placing a green block into a structure. On the right, there are three input fields: 'Enter Username', 'Enter Email', and 'Password', each with an icon (envelope, envelope, and key respectively). Below these is a green 'Register' button. A red 'Admin' label is in the top right corner.

Figure 75.Admin sign up page

- Profit and advertisement price page

the admin determine the profits for each company separately or it can set all of the in one time , also it can set the ad price for the companies



Cars Rental

Home

Users

Block Users

Companies

Requests

Block Companies

Reports

Chart

Logout

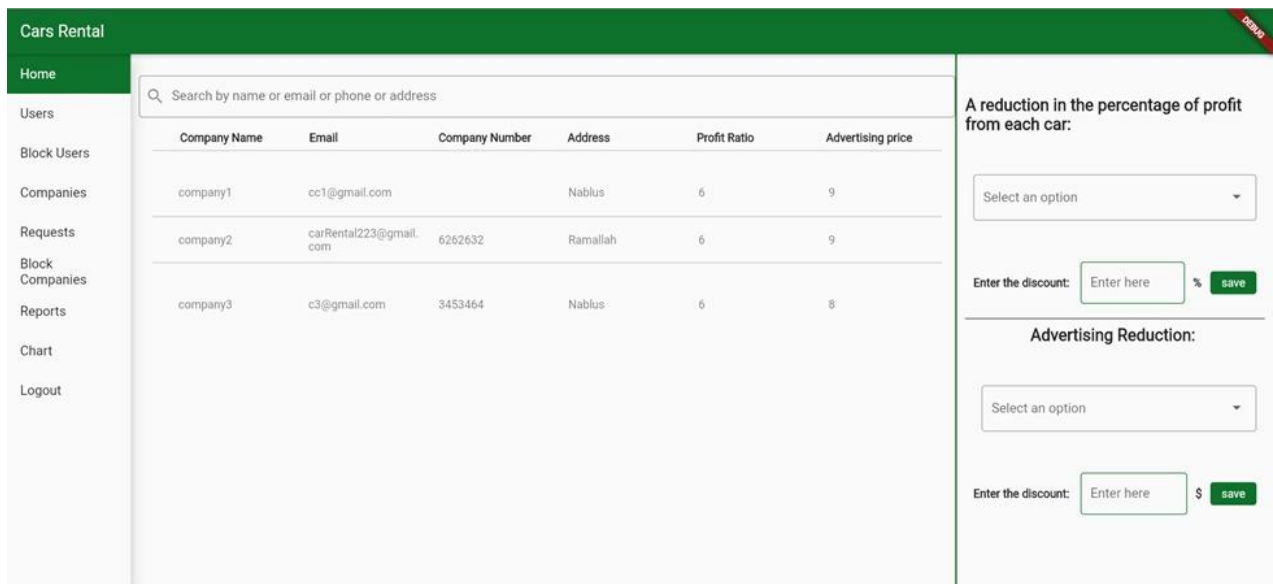
Search by name or email or phone or address

Company Name	Email	Company Number	Address	Profit Ratio	Advertising price
company1	cc1@gmail.com		Nablus	7	9
company2	carRental223@gmail.com	6262632	Ramallah	79	9
company3	c3@gmail.com	3453464	Nablus	9	8

The percentage of profit from each car:

Enter here %

Figure 76.Profit price page



Cars Rental

Home

Users

Block Users

Companies

Requests

Block Companies

Reports

Chart

Logout

Search by name or email or phone or address

Company Name	Email	Company Number	Address	Profit Ratio	Advertising price
company1	cc1@gmail.com		Nablus	6	9
company2	carRental223@gmail.com	6262632	Ramallah	6	9
company3	c3@gmail.com	3453464	Nablus	6	8

A reduction in the percentage of profit from each car:

Select an option

Enter the discount: Enter here %

Advertising Reduction:

Select an option

Enter the discount: Enter here \$

Figure 77.Reduction page

- Display users
the admin views all users who access their app and see their details , also he can block them to use the app . or remove them from the block list

Cars Rental				
Home	Search by name or email or phone or address			
Users				
Block Users				
Companies				
Requests				
Block Companies				
Reports				
Chart				
Logout				
	Username	Email	Phone	Address
	amany	amoon4@gmail.com	1234567898	doma
	mmmm	mm@g.c	1234567898	
	noor	noor@gmail.com	765767564	
	qqq	qq@g.c	1234567896	
	amany	amanydawa5@gmail.com	0598084078	doma
	fvd	dsc@ejne.dcmk		fvev

Figure 78.User display page

- User block list page


Cars Rental					
Home	Search by name or email or phone or address or reason				
Users					
Block Users					
Companies					
Requests					
Block Companies					
Reports					
Chart					
Logout					
	Username	Phone	Address	Email	Reason to Block
	 amany	1234567898	doma	amoon4@gmail.com	You have been banned because you did not return the car. Return it to unblock it

Figure 79.User block list page

- Display Companies

the admin can view the companies that uses the app , with the ability to block a company and write the reason of block to company , or remove the block from blocked company page







Cars Rental					
Home	Username	Phone	Address	Email	License
Users	 company1		Nablus	company234@gmail.com	
Block Users	 company2	6262632	Ramallah	carRental223@gmail.com	
Companies	 company3	3453464	Nablus	company6653@gmail.com	
Requests					
Block Companies					
Reports					
Chart					
Logout					

Figure 80.Companies display page

- blocked companies page



Cars Rental						
Home	Username	Phone	Address	Email	License	Reason to Block
Users	 company2	6262632	Ramallah	carRental223@gmail.com		The license is wrong
Block Users						
Companies						
Requests						
Block Companies						
Reports						
Chart						
Logout						

Figure 81.Blocked companies page

- companies cars
the admin can view all the company cars with its details



Figure 82.view companies cars page

- Request page
the companies that signup new will added in this page in order the admin can see the rental license and agree on company to access the users

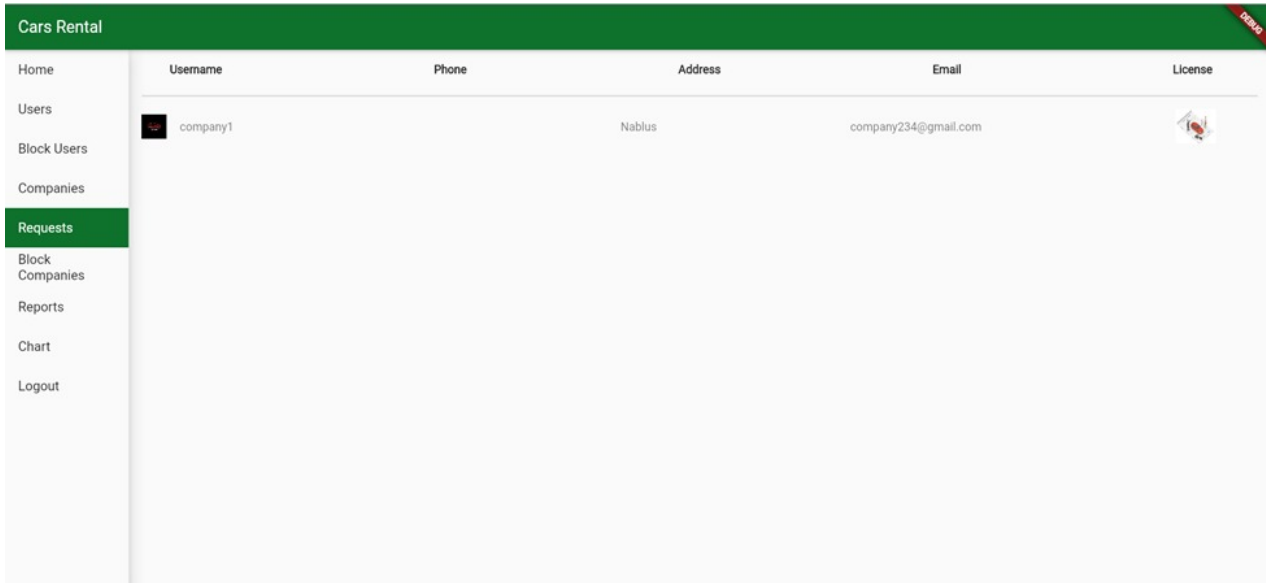


Figure 83.Request page

- Messages page
display the messages that come from all sides

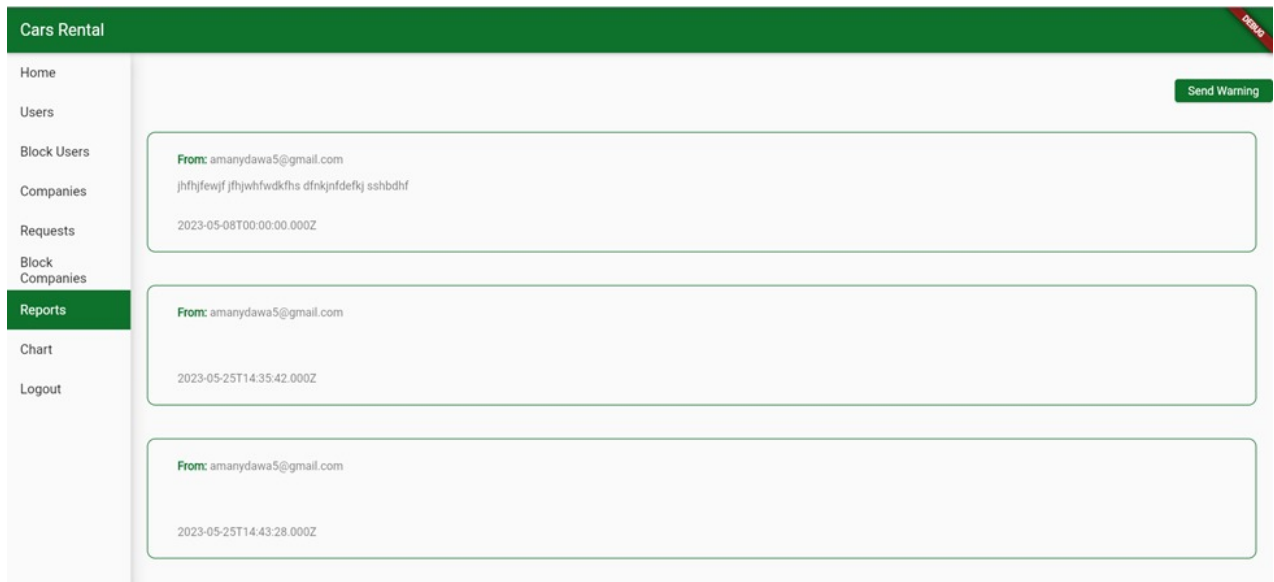


Figure 84.Messages page

- send messages to any of the sides

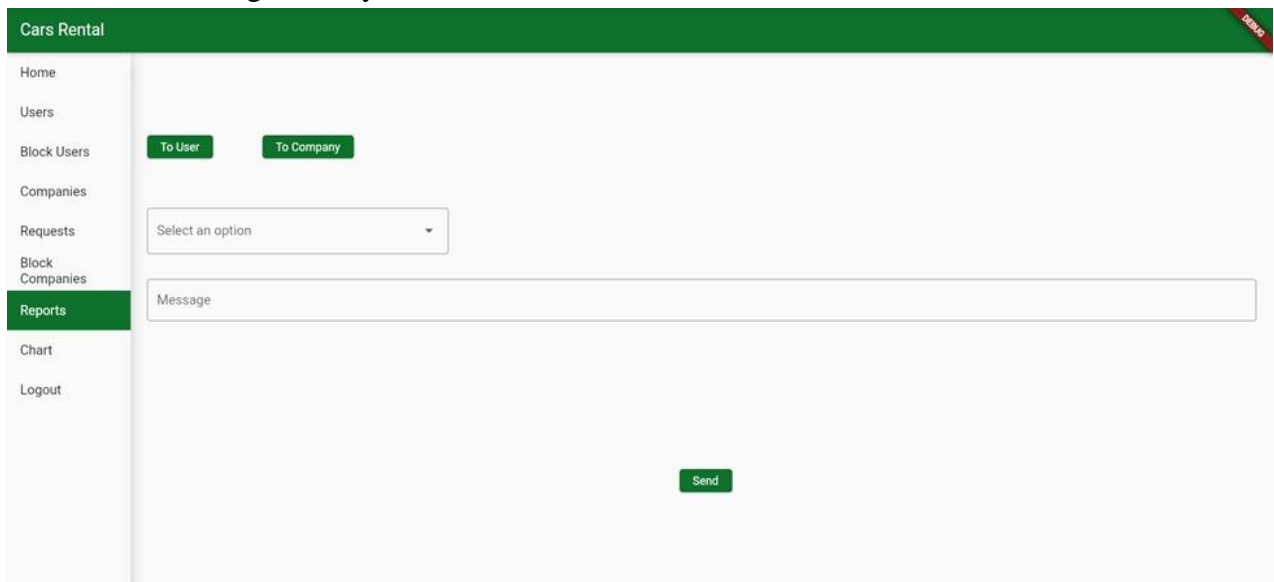


Figure 85.Send messages page

- Users ratings for the app

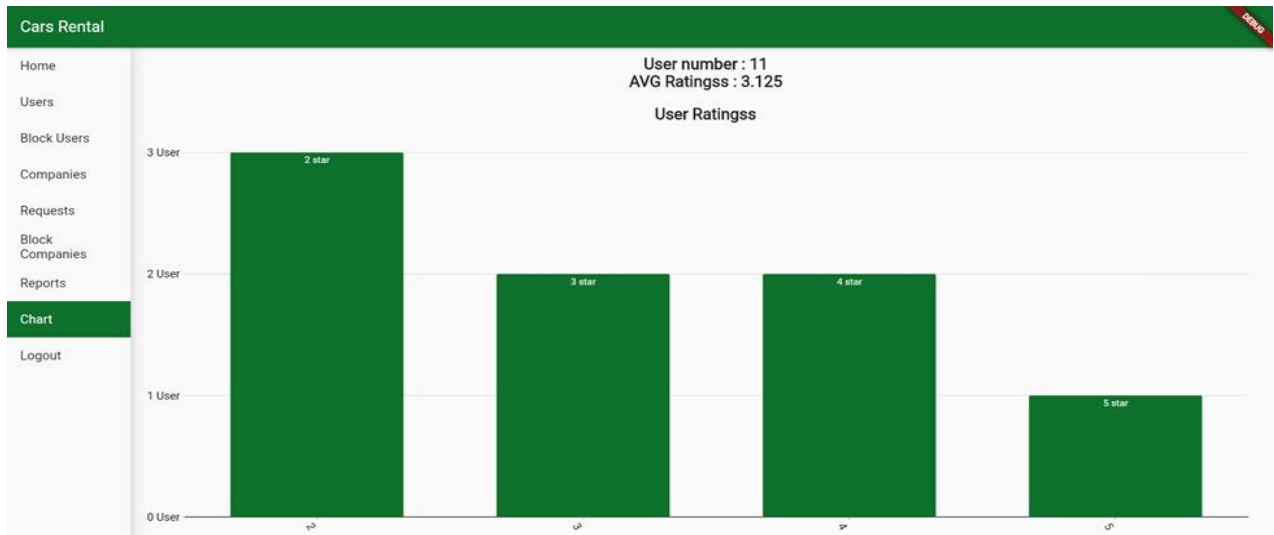


Figure 86. Chart to Users ratings page

- Most cars rental

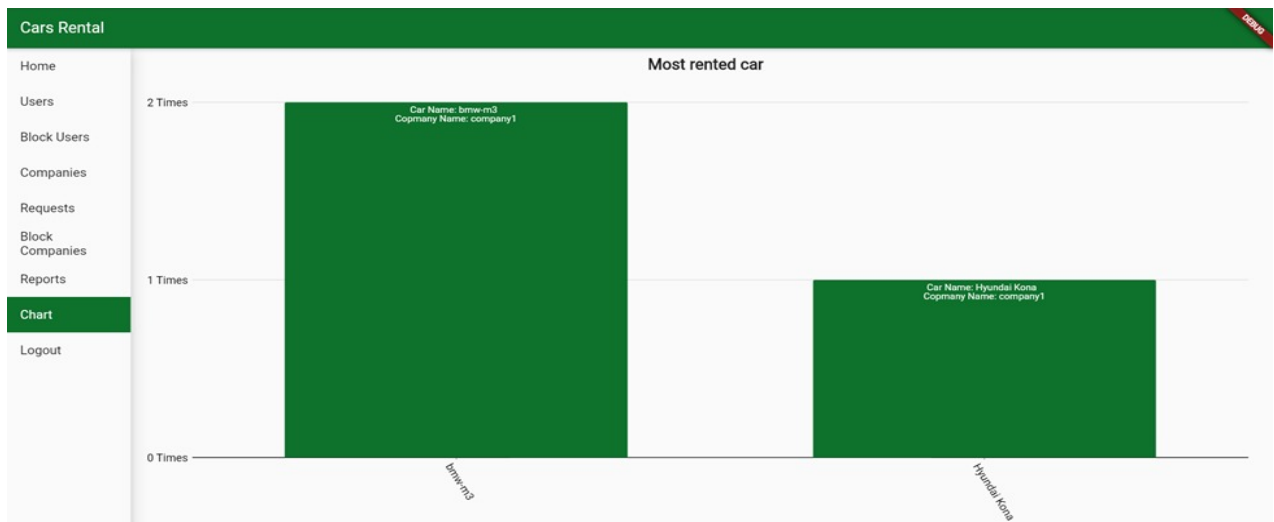


Figure 87. Most cars rental

- The company that most rental from it

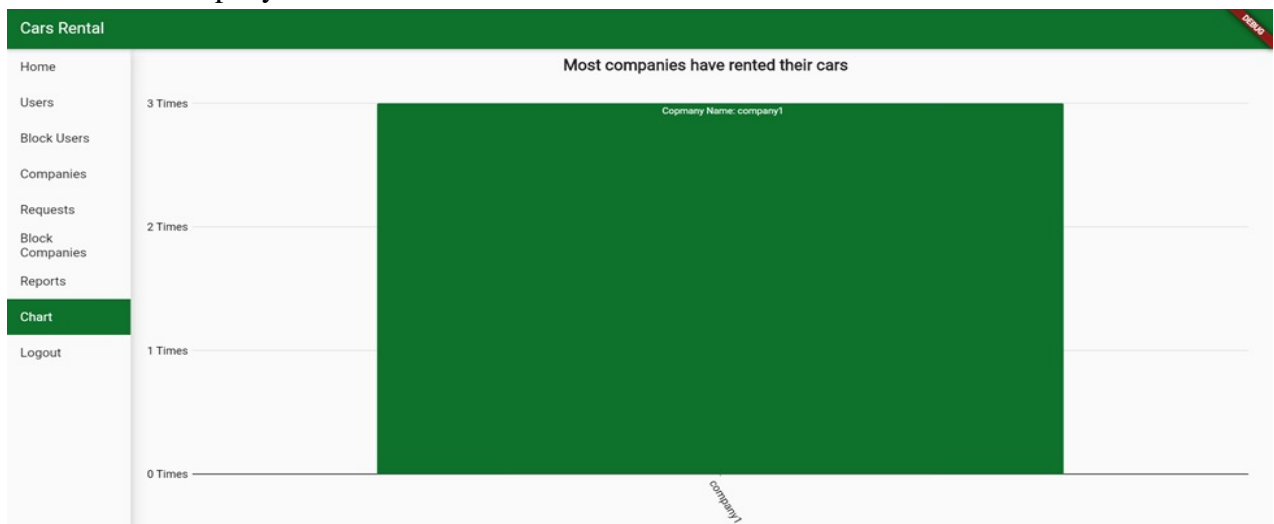


Figure 88. Most companies chart page

Chapter 5: Conclusion & Recommendations

5.1 CONCLUSION:

In conclusion, our app has a lot of features that benefit all sides. Users benefit from a user-friendly interface that allows for easy navigation and efficient search capabilities based on various categories. They can view detailed car listings, compare prices and discounts, and even create a personalized favorites list. The integration of a booking calendar and the ability to cancel bookings ensures flexibility and control, and a map makes it easy for them to choose the closest company.

Companies can effectively manage their car inventory, add, edit, and delete cars, schedule repairs, and monitor user bookings. The inclusion of a map feature not only helps users locate branches but also enables companies to showcase their available cars at each location. This improves accessibility and customer satisfaction.

Administrators have comprehensive control over user and company management, with the ability to block or approve registrations, monitor bookings, and assess profitability. The inclusion of a chat system facilitates seamless communication between all parties involved, ensuring a smooth rental experience. Moreover, our app emphasizes security by implementing VTP verification for password reset and requesting users to upload identity cards and driving licenses. This guarantees authenticity and safety throughout the rental process.

Additional features such as an attractive advertisement section, dark mode, payment integration via PayPal, a rating system, and comprehensive reports add value and enhance user engagement.

In summary, our app provides a comprehensive, secure, and user-friendly solution for all car rental needs. It streamlines the booking process, empowers companies with efficient management tools, and ensures administrators have full control. With a focus on convenience, security, and user satisfaction, our app aims to transform the car rental experience into a seamless and enjoyable journey for all stakeholders involved.

5.2 RECOMMENDATION:

To further improve the application, we can consider the following recommendations :

- Make the application support multiple languages, in order to make it around the world.
- Integrate Additional Payment Options: Apart from PayPal, consider integrating other popular payment options such as credit/debit cards, mobile wallets, or local payment gateways. Offering diverse payment methods can improve convenience and cater to a wider range of users.
- AI Verification System: Implement an AI-driven verification system to automatically validate user identities and licenses.

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