



**An-Najah National University**

Faculty of Engineering & Information Technology

Computer Engineering Department

Software Graduation Project

# CarDeal



**Najwa Hinnno & Mira Shahed**

Supervisor: **Dr. Mohanad Al-Jabi**

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## **Abstract**

In today's world, many people face difficulties in managing and tracking their driver's licenses, renewing insurance, paying traffic fines, and organizing other important vehicle-related appointments. Although these tasks are essential, many struggle with knowing the renewal dates, keeping up with updates, and ensuring that all procedures are completed on time. Based on these challenges, we decided to create this project, which aims to simplify and facilitate the management of driving licenses and insurance related to vehicles through one comprehensive and secure platform.

This project revolves around providing an easy-to-use interface that targets vehicle owners by enabling them to track their license status, renew insurance, pay fines, and receive notifications about important vehicle-related appointments. It also provides insurance companies with an interface to display insurance information and track renewals. As for government agencies, it offers them an interface to display license information and track vehicle renewals, as well as the police.

The application has several features, including license and insurance management, receiving renewal notifications, creating a digital license with a QR code, a points system that encourages safe driving through rewards and lower insurance premiums, an emergency button that sends notifications to contacts with the user's geographical location, the use of artificial intelligence to analyze data and provide proactive recommendations based on live data, a stolen number verification feature (OSR), image analysis to identify accidents and potential risks, and document storage. The app provides multiple digital payment options to settle fees and also allows direct interaction with government agencies for complaints or inquiries.

It allows users easy access to all their vehicle-related data anytime, anywhere, reducing human errors and providing a seamless and secure experience using encryption technologies. The app also helps improve the efficiency of government agencies, speeds up procedures, and reduces costs. It simplifies the lives of citizens in the face of complex procedures. By providing a single platform that consolidates all information, the app will improve the user experience through real-time notifications to ensure that no important appointment or update is missed.

Although there are some global applications, such as "Moovit," which provide similar services in other fields, there is no similar application in our region (West Bank) that combines integrated services related to licenses, insurance, and fines in one platform. What sets our project apart is the comprehensive integration that combines all the services the user needs to manage their vehicle.

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# Chapter 1

## Introduction

In today's rapidly evolving digital era, technology plays a crucial role in simplifying complex tasks and enhancing daily experiences. Our project focuses on revolutionizing vehicle management by providing a comprehensive and user-friendly platform that integrates all essential services related to private vehicle ownership. While owning a vehicle is a necessity for many, managing aspects such as license renewals, insurance updates, paying traffic fines, and tracking important deadlines often becomes a burdensome and error-prone process.

To address these challenges, we have developed an integrated vehicle management system called **CarDeal**, designed to serve three primary user groups: vehicle owners, insurance companies, and government authorities. This system is more than just an application it is a transformative solution that aims to streamline, digitize, and enhance the vehicle management experience through smart features, real-time notifications, and secure access to all related services from one centralized platform.

### 1.1 Motivation

The primary motivation behind our project stems from the increasing challenges that vehicle owners face in managing their essential documents and vehicle-related responsibilities. Tasks such as renewing a driver's license, updating insurance, paying traffic fines, and remembering important deadlines often become overwhelming and error-prone due to the absence of a centralized and accessible system.

With the lack of an integrated solution in our region, **CarDeal** was envisioned to bridge this gap by offering a smart, unified platform that simplifies these processes for users. Our motivation is to empower vehicle owners with better control over their responsibilities, provide insurance companies with streamlined communication tools, and assist government authorities in improving efficiency and transparency. Ultimately, CarDeal aims to enhance road safety, reduce administrative burdens, and contribute to building a more connected and digitally enabled society.

## 1.2 Aims and Objectives

The primary objective of our project is to design and develop an intelligent, secure, and user-centric vehicle management platform named CarDeal, which serves three core user groups: vehicle owners, insurance companies, and government authorities.

For vehicle owners, the mobile application offers a streamlined interface to manage licenses, renew insurance, pay traffic fines, receive real-time notifications for due dates, store official documents digitally, and access a smart dashboard that summarizes their vehicle's status. Features such as a digital driving license with QR code, emergency alert with live location, and driving behavior tracking for reward-based incentives further enhance the user experience.

Insurance companies benefit from a dedicated interface to manage client policies, send renewal reminders, and process claims or requests efficiently.

Government authorities (such as traffic departments and law enforcement) are provided with a centralized system to update license data, verify information, monitor compliance, and interact directly with users through the platform. Additionally, the system includes an OCR (Optical Character Recognition) feature, allowing police to scan and extract information from physical documents, license plates, and digital IDs instantly enabling faster identity verification and streamlined field operations.

This system is designed to reduce manual effort, minimize human error, and promote safety and responsibility. Ultimately, CarDeal contributes to a smarter and more organized transportation ecosystem by fostering digital transformation and enhancing citizen authority collaboration.

## Chapter 2

# Constraints and Earlier work

## 2.1 Constraints

During the development of the **CarDeal** vehicle management system, we faced several notable challenges. One of the main constraints was the need to learn and apply various technologies that were unfamiliar to us at the beginning, including **Flutter**, , and integration with cloud services for real-time notifications and data storage.

A significant technical hurdle was the integration of **QR code generation**, **OCR technology**, and **Google Maps API**, which required paid services and API authentication through a billing account posing an obstacle in terms of accessibility and cost.

Another challenge was running and testing multiple modules simultaneously, including the **user mobile app**, **insurance company portal**, and **government web dashboard**, which placed a heavy load on our personal devices and sometimes led to performance issues during development and testing.

Additionally, balancing academic responsibilities with the demands of such a technically diverse and feature-rich project placed pressure on our time management. Frequent context-switching between university tasks and project development required strong coordination and effective scheduling.

To address these challenges, we sought help from experienced developers, used online resources, and allocated extra hours for focused work. Through continuous learning and perseverance, we were able to move forward and maintain steady project progress.

## 2.2 Earlier Work

At the beginning of the **CarDeal** project, we carried out detailed research on existing solutions related to vehicle management systems and their core functionalities. Our goal was to understand what features are typically offered, how users interact with such systems, and what limitations exist particularly in our region. We found that while some systems offer partial services, there is a noticeable absence of a comprehensive, centralized platform that brings together all vehicle-related services in one place—such as license renewal, insurance management, fine payments, emergency support, and digital document access. This insight led us to design **CarDeal** as a unique solution tailored specifically to the needs of users in our community. Rather than simply replicating standard features, we focused on developing advanced tools like real-time notifications, QR-based digital licenses, OCR support for authorities, and behavior-based rewards ensuring that the system meets both practical needs and enhances user experience.

By identifying what was lacking in existing offerings, we were able to build a platform that fills those gaps and offers added value through localization, accessibility, and innovation.

## Chapter 3

# Literature Review

Our innovative **CarDeal** vehicle management system is designed to address the ongoing challenges faced by vehicle owners, insurance providers, and government entities in managing transportation-related processes. This project represents a pioneering step in our region, introducing a comprehensive digital platform that brings together multiple essential services under one unified system.

Research and regional observations highlight the increasing complexity of vehicle ownership, which often involves fragmented systems for license renewals, insurance updates, fine payments, and document tracking. Traditional approaches rely heavily on manual processes, in-person visits, and paper documentation—leading to delays, missed deadlines, and human errors.

For individual users, the absence of real-time reminders or centralized access to their vehicle data contributes to stress and disorganization. From the perspective of institutions such as insurance companies and traffic authorities, the lack of integration and automation hinders operational efficiency and delays service delivery.

Recent trends in smart mobility and digital transformation underscore the urgent need for intelligent systems that streamline interactions between citizens and regulatory bodies. **CarDeal** stands out by incorporating features such as digital licensing with QR codes, OCR tools for quick verification, behavior-based reward systems, emergency alerts with live location, and secure data storage with encryption.

This literature review supports the growing necessity for an all-in-one solution like **CarDeal**—a system that not only digitizes vehicle-related procedures but also enhances safety, user satisfaction, and institutional effectiveness. By modernizing outdated vehicle management practices, CarDeal aims to redefine how transportation responsibilities are handled in a more connected, organized, and sustainable manner.

## Chapter 4

# Methodology

### 4.1 Non-Functional Requirements

#### **Security:**

The **CarDeal** platform is built on a robust security framework to ensure the protection of sensitive user data such as personal information, driving license details, insurance records, and payment transactions. The system uses secure login mechanisms, including strong password policies, encrypted data transmission (HTTPS), and multi-factor authentication. Account recovery is facilitated through verification codes sent via email or SMS, ensuring safe and verified password resets.

#### **EaseofUse:**

CarDeal is designed with user convenience in mind. The user interface features clearly labeled icons, logical page layouts, and intuitive navigation, enabling users to access various services—such as viewing license status, uploading documents, or paying fines—with minimal effort. Clear feedback and prompts guide users through each process.

#### **Usability:**

The application is meant to be highly self-explanatory and beginner-friendly. Whether the user is a vehicle owner, an insurance agent, or a government officer, the interface is tailored to suit their specific needs without requiring technical expertise. This design significantly reduces the learning curve and enhances accessibility for users of all backgrounds.

### 4.2 Design

Initial planning for the design phase began in the early stages of CarDeal development, with a strong focus on building a user-friendly and function-oriented graphical interface. The UI/UX design was developed through detailed analysis and benchmarking of similar systems, while being specifically tailored to meet the needs of the platform's diverse user groups, including vehicle owners, insurance company agents, and government officials.

The design aims to provide a seamless and intuitive experience that ensures quick access to essential services such as: License renewal, Insurance tracking, Fine payments, Emergency alerts. Each interface was customized based on the target user's role and usage behavior, which sets CarDeal apart from traditional solutions. The system is developed with three main components: A mobile application for users, A dedicated web portal for insurance and licensing companies, A police mobile application for field use. The design of the system serves vehicle owners and government entities by integrating: License renewal processes, Insurance management, Fine payments, Accident reporting, Digital document verification.

#### **4.2.1 Registration and Log In**

Our system consists of three interconnected platforms: the user application, the police application, and the administrator control panel. Each features a secure, role-specific registration and login system. In the user application, the registration process involves entering unique personal information such as full name, ID number, email address, and phone number. This information is verified to prevent duplication. Password security standards are also enforced, including length, complexity, and password confirmation. Users can log in using their email address and password. If they forget their password, they can retrieve it via a verification code sent to their registered email or phone. Information such as driver's license number, vehicle plate number, and insurance policy are required, and these are verified against official databases to ensure authenticity. After approval, the user gains access to special features such as tracking license and vehicle status.

#### **4.2.2 User Profile Management**

The system allows users to view and update their personal profiles with ease. This includes editing personal information such as full name, phone number, email address, and physical address. Users can also securely change their password through a verification process to ensure account protection. This feature is designed to provide a personalized and secure experience, enabling users to have full control over their personal data. All updates are handled with strong encryption and authentication mechanisms to maintain data privacy and integrity.

#### **4.2.3 Wallet and Payment**

The wallet feature allows users to manage their credit cards and payment options, enhancing the ticket purchasing process's convenience and security.

#### **4.2.4 Notifications and Alerts**

Our platform integrates a robust notification and alert system to ensure all users stay informed and engaged. System-wide notifications are used to inform users of important public updates from government agencies, insurance companies, or the platform itself. These notifications may include reminders for upcoming license or insurance renewals, changes to traffic laws, new app features, or specific violations. These notifications appear immediately and help users take proactive action and comply with relevant procedures. In addition, the system provides personalized alerts tailored to each user based on their profile and activity. For example, users receive alerts when their licenses are about to expire, when a traffic violation is issued, or when a new insurance policy is available. They may also receive warnings about violations, penalty points, or important updates related to their documents. These alerts help users respond quickly to important actions and avoid delays, penalties, or service interruptions. By providing global and user-specific notifications, the system ensures a seamless and informed experience that supports timely decision-making and enhances the reliability and efficiency of vehicle-related services.

#### **4.2.5 Annual reports**

The CarDeal platform includes a comprehensive reporting and statistics module designed primarily for administrative and government use. This feature allows stakeholders to monitor system-wide performance and user engagement over specified periods, particularly on a yearly basis. Key metrics included in the annual reports: Total number of license renewals processed through the platform. Number of insurance policies issued, renewed, or expired. Count and categories of fines paid by users. This feature plays a crucial role in ensuring transparency, operational oversight, and policy development based on real-world data collected through the CarDeal platform.

#### **4.2.6 ChatBot**

CarDeal integrates an intelligent chatbot system to provide instant support and assistance to users across all platforms. The chatbot is designed to handle a wide range of user inquiries efficiently, 24/7, reducing the need for direct human intervention while ensuring a responsive user experience. Key capabilities include: Answering frequently asked questions (FAQs) regarding license renewal, insurance, fines, and app usage. Guiding users through different features of the platform, such as how to renew a license or pay a fine. Providing real-time updates and information, including checking the status of submitted requests or documents. This feature enhances the usability of the CarDeal app, reduces support wait times, and offers a smarter, more user-centric way to interact with the system.

#### **4.2.7 Renew Personal License**

Allows users to submit renewal requests for their driver's license directly through the app, upload required documents, and receive approval notifications once processed.

#### **4.2.8 Digital license using QR Code**

The app provides users with the ability to view their personal license digitally within the app. Immediate viewing of the digital license via the app without the need to carry a paper license.

#### **4.2.9 Renew Vehicle License**

Allows the user to submit a vehicle license renewal request digitally, schedule a technical inspection, and upload the necessary documents.

#### **4.2.10 Insurance Management**

This feature allows users to manage all aspects of their vehicle insurance directly through the CarDeal app. It includes: Viewing active insurance policies along with coverage details and validity dates. Renewing insurance easily by submitting renewal requests and uploading required documents. Comparing insurance offers from multiple registered insurance companies to choose the most suitable plan. Receiving expiration alerts and reminders to avoid driving without valid insurance.

#### **4.2.11 Track and Pay Violations**

View violation details and pay them electronically using secure payment options. Receive alerts.

#### **4.2.12 Accident Management**

Filing a new accident report with date, location, description, and photo attachments. Viewing detailed information about each recorded accident. Tracking the total number of accidents associated with the user's profile or vehicle. Receiving updates on the status of submitted accident reports.

#### **4.2.13 Point system**

The CarDeal system includes this feature, which aims to encourage safe and responsible driving behavior. Users are awarded points based on their traffic record, such as not committing any violations, renewing their licenses and insurance on time, or correctly reporting accidents.

#### **4.2.14** Police Optical Character Recognition (OCR) Tool

The police application provides a registration portal that requires information such as full name, ID number, email address, and phone number, which are verified against official databases to ensure authenticity. It operates on an OCR system.

#### **4.2.15** Issuing violations by the police

The system allows police officers to easily view and update their profiles. This includes modifying personal information, such as their full name, phone number, email address, and physical address. They can also securely change their passwords through a verification process to ensure account security. This feature is designed to provide a personalized and secure experience, giving users complete control over their personal data. All updates are managed using strong encryption and authentication mechanisms to maintain data privacy and integrity.

#### **4.2.16** Report a stolen vehicle

This feature allows users and police officers to report stolen vehicles by submitting key details such as plate number, location, and time of the incident. The report is forwarded to the police system, where the vehicle is flagged as stolen to support faster detection and recovery.

#### **4.2.17** Admin Dashboard

The administrator's control panel is designed for system management and requires special credentials and a two-factor authentication system to enhance security. Through it, the administrator can manage users and drivers, verify documents, track complaints, and monitor system logs, with permissions restricted according to permitted tasks. This unified system contributes to providing a secure and seamless experience for all users while ensuring data privacy and preventing unauthorized access, enhancing system efficiency and reliability.

#### **4.2.18** Insurance Companies Portal

View and renew insurance policies for users. Manage and review new insurance applications. Track the status of insurance policies (active, expired, pending approval). Attach or modify the terms and conditions of each policy. Approve or reject applications directly with user notification. View and verify attached documents. Send alerts to users about the insurance status. Export data in various formats.

## **4.2.19** Licensing Department Portal

Access license data, process renewal applications, and approve or reject them electronically. Access personal and vehicle license data. Receive and process license renewal applications electronically. Directly approve or reject applications with notification to the user. View and verify documents attached by the user. Manage technical inspection appointments and review inspection results. Send alerts to users about the status of licenses or applications.

## **4.2.20** Police Dashboard

The police interface includes: access to vehicle and driver data using the license plate or ID number; verification of licenses and insurance through the system or OCR tools; review and manage reports of stolen vehicles or accidents; and electronically issue violations and track their enforcement status.

# **4.1 Implementation**

## **4.1.1 Key Library**

Server-side:

MySQL: We chose MySQL for our database needs due to its user-friendly interface and widespread popularity in software development. It is known for its ease of use, making it an ideal choice for this project.

PHP: It serves as a middleware for server-side operations, facilitating seamless communication and data exchange between the MySQL database and the application.

Client-side:

Flutter: This UI toolkit from Google is used to build natively compiled applications for mobile, web, and desktop from a single database. Flutter was chosen for its ability to deliver high-quality, natively compiled applications across multiple platforms, enhancing the efficiency and effectiveness of the development process. Dart is the primary language used in Flutter development, providing a reactive framework that simplifies the creation of visually appealing and functionally rich applications.

JavaScript: JavaScript accounts for 10.9% of the database and is primarily used in conjunction with PHP to manage server-side operations and build dynamic user interfaces.

## 4.2 Tools

Android Studio: the official IDE for Android app development, is built on IntelliJ IDEA. It streamlines Android app creation with features like an intuitive code editor, a flexible layout editor for designing user interfaces, and integrated Android SDKs for accessing the latest Android features. The IDE also includes a powerful emulator for testing apps across various Android devices and configurations, alongside robust build tools for compiling, debugging, and packaging applications. Its tailored environment for Android development makes it an indispensable tool for crafting high-quality Android apps.

Visual Studio Code (VS Code): is a lightweight yet powerful source code editor from Microsoft, compatible with Windows, macOS, and Linux. Known for its fast performance, it supports a wide range of programming languages including JavaScript, TypeScript, and offers extensive extensibility through a vast ecosystem of extensions. VS Code features integrated Git control for efficient versioning, advanced debugging tools, and extensive customization options to tailor the editor to specific development needs. Its flexibility and comprehensive functionality make it a favored choice for a variety of software development tasks.

XAMPP: is a free and open-source cross-platform web server solution stack package developed by Apache Friends. It simplifies the installation and deployment of a local web server environment, which is essential for testing and developing web applications. XAMPP includes the Apache HTTP Server, MariaDB database, and interpreters for scripts written in PHP and Perl. Its ease of setup and use makes it a popular choice for developers who need a reliable and straightforward local testing environment. XAMPP's portability and compatibility with multiple operating systems further add to its utility in diverse development scenarios.

# Chapter 5

## **Results and Analysis**

The project presents an integrated vehicle management platform consisting of a mobile app for vehicle owners, a dedicated app for police officers, and a centralized administrative dashboard. It aims to streamline processes such as license renewal, insurance tracking, fine payments, and emergency reporting. By offering real-time access to digital documents, notifications, and verification tools, the system enhances efficiency, security, and transparency in transportation services.

This unified solution not only simplifies interactions between citizens and public institutions but also supports the digitization of government procedures. Moreover, it encourages responsible driving habits through a built-in point system, while promoting innovation and growth in the mobility tech sector.

# Chapter 5

## 5.1 User App

### 5.1.1 Start Page

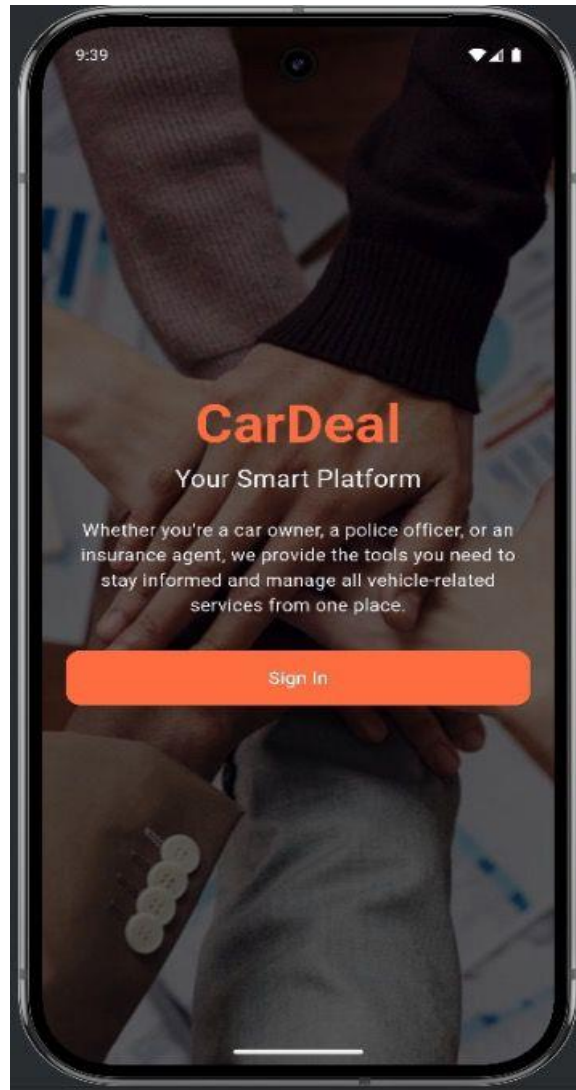


Figure 5.1 Welcome Page

This is the CarDeal app's homepage, the first screen the user sees when they open the app.

Description: "Your Smart Platform" Explains that the app is an integrated smart platform designed to serve users.

# Chapter 5

## 5.1.2 Sign up page:

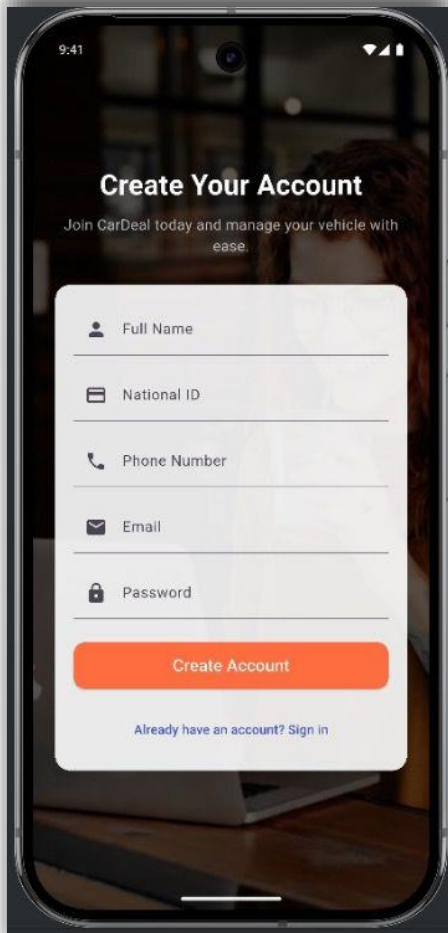


Figure 5.2 Sign Up Page

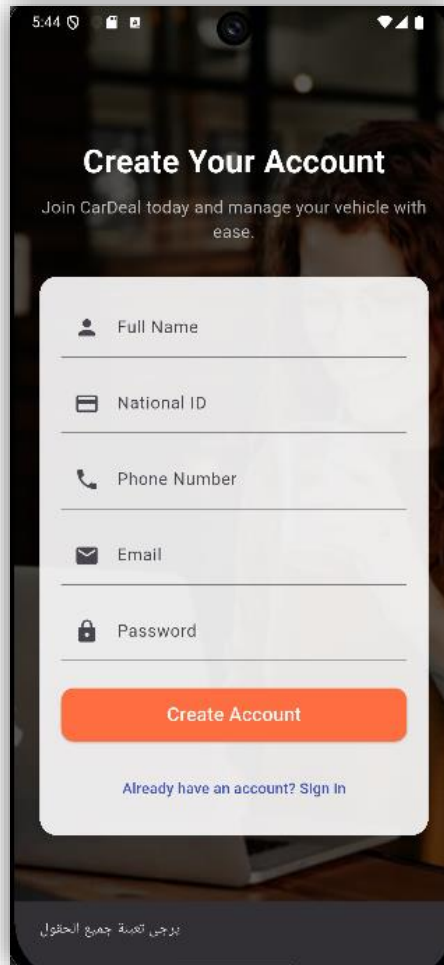


Figure 5.3 Registration Empty Fields Message Page

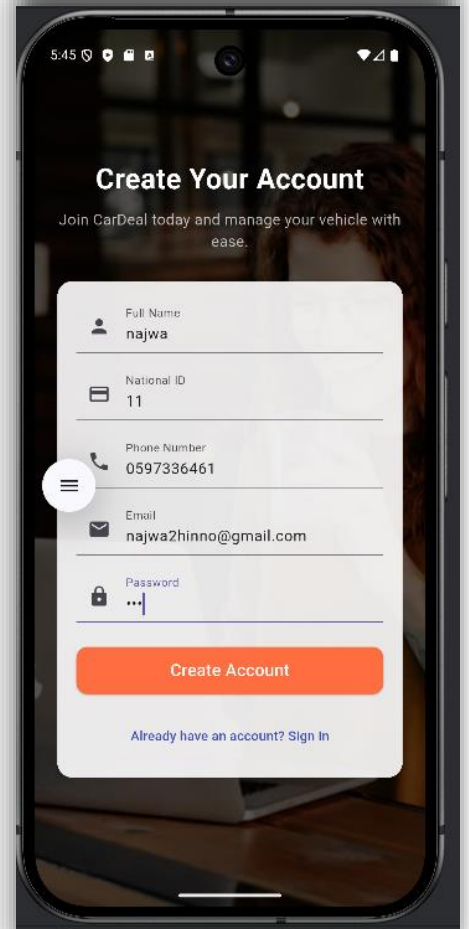


Figure 5.4 Registration success

The Sign Up page allows new users to create an account by entering their full name, national ID, phone number, email, and password. All fields are mandatory, with validation to ensure correct formatting and prevent duplicates. If any field is left empty, a warning appears. Upon successful entry, the account is created, and the user proceeds to the next step.

# Chapter 5

## 5.1.3 login page

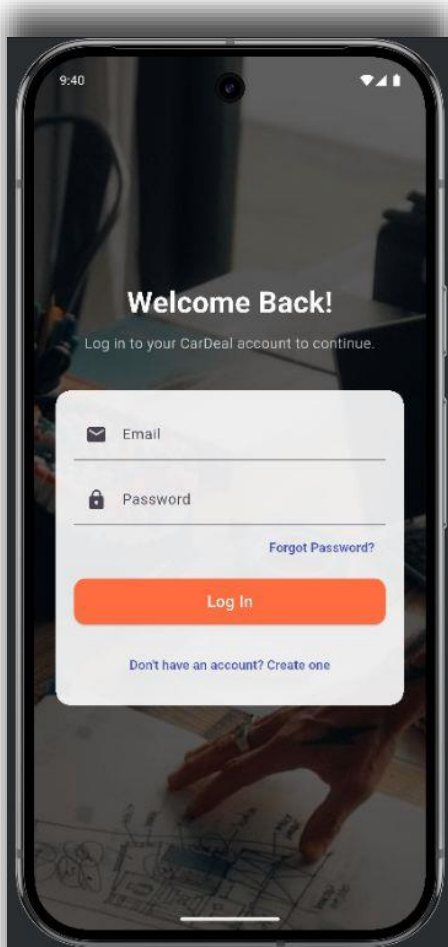


Figure 5.5 Login Page

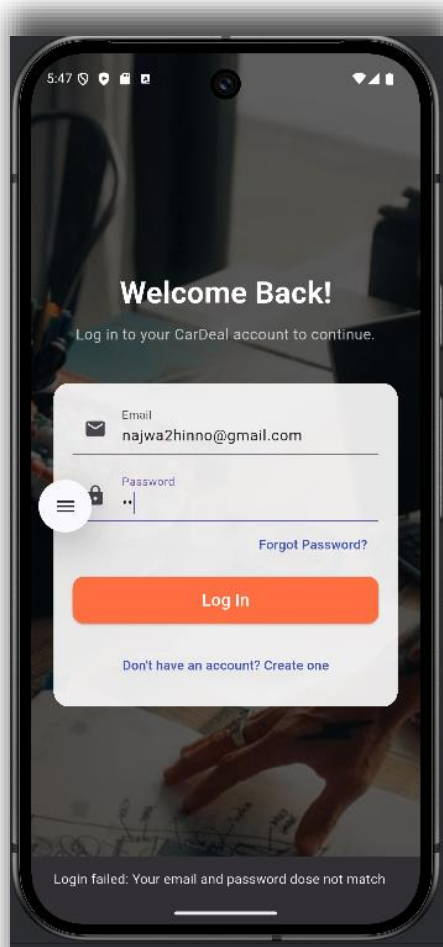


Figure 5.6 Wrong Password Page

On the login page, returning users can enter their unique email and password to access the app. The system ensures email format validity and password strength for secure sign-ins.

# Chapter 5

## 5.1.4 forget password page

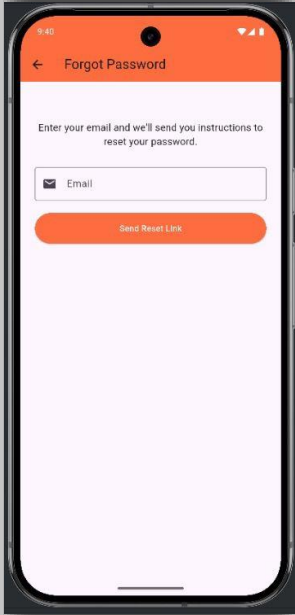


Figure 5.7 Enter Email to Reset Password Page

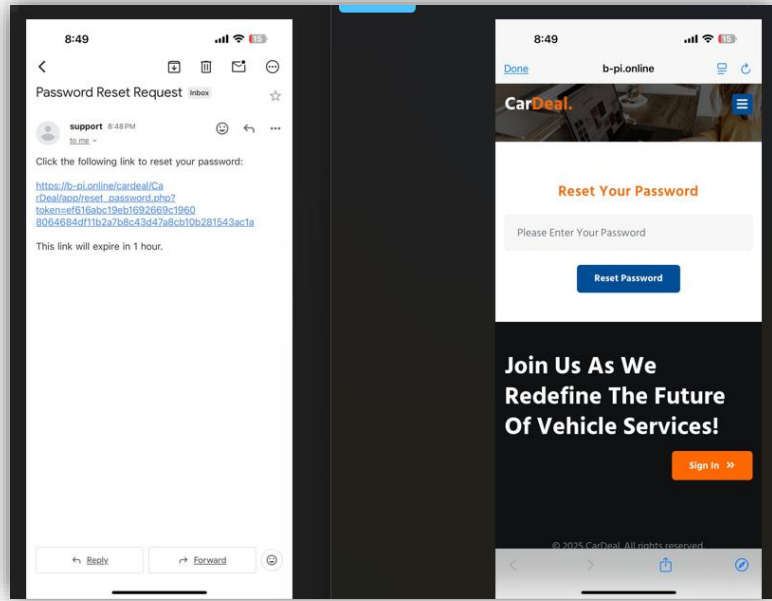


Figure 5.8 Enter Verification Code Page



Figure 5.9 Enter New Password Page

If a user forgets their password, our app provides a secure password reset process. From the login page, the user can tap on the "Forgot password?" link, which leads to a password reset page. Here, they are prompted to enter their registered email address to receive a reset code. Once the reset code is sent to their email, they can enter this code into the app to verify their identity. After verification, they are directed to a new page where they can set a new password, ensuring they regain access to their account with strong authentication measures in place.

## Chapter 5

### 5.1.5 home page

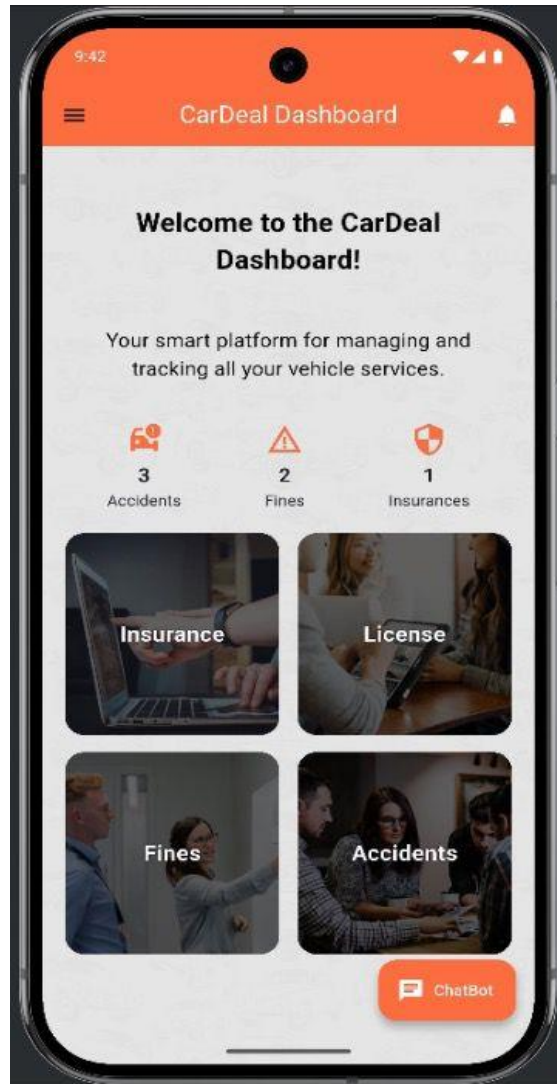


Figure 5.10 Home Page

Once logged in, users are directed to the Home Page, which opens with a welcoming "Welcome to the CarDeal Dashboard" message. This page serves as the central hub for all CarDeal services, allowing users to access their profile, view digital licenses, manage insurance and fines, report incidents, and receive real-time notifications — all through a clear and user-friendly interface.

# Chapter 5

## 5.1.6 Profile Page & Edit Profile Pages

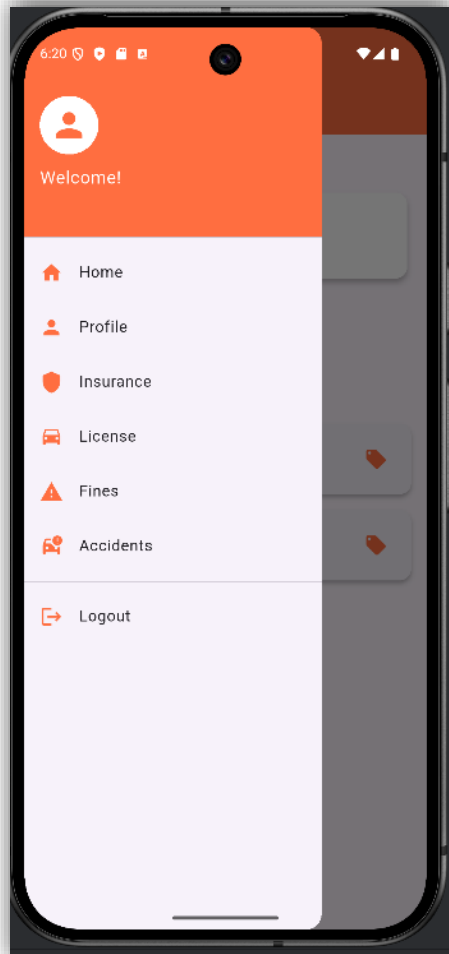


Figure 5.11 Profile Page

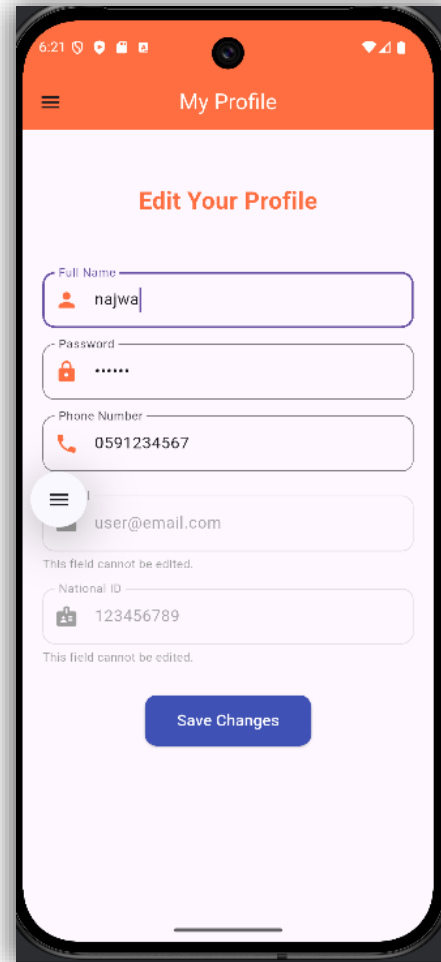


Figure 5.12 Edit Profile Page

The user profile section of the app is a personal space for users to view and manage their account information. Here, they can see their name, email, and a profile picture, providing a personalized touch to the user experience. For updates or changes, users can navigate to the "Edit Profile" page where they can modify details such as their username, email, password. This ensures that users keep their information current and secure. The process is straightforward: make the desired changes and tap "Save Changes" to update the profile instantly

# Chapter 5

## 5.1.7 Notification Page

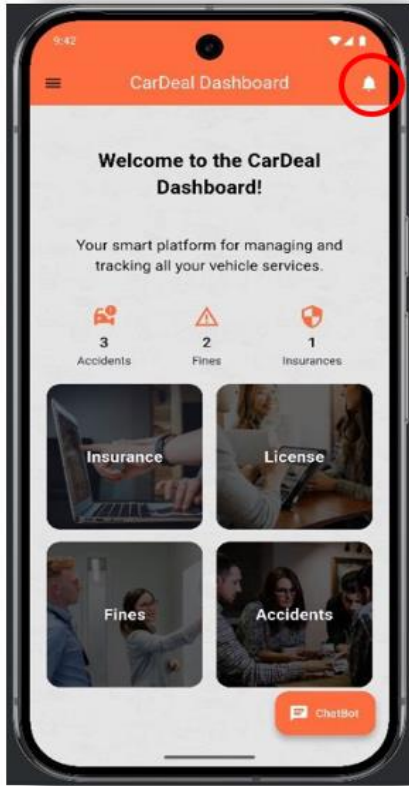


Figure 5.13 Notification in home Page

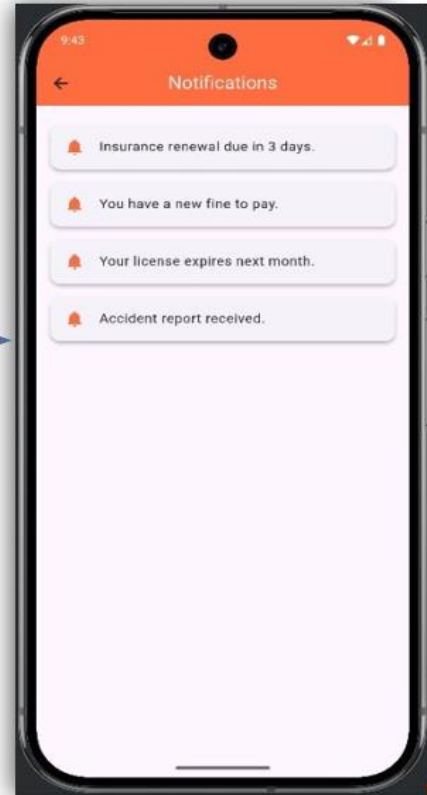


Figure 5.14 Notification page

The app's notifications page features alerts from newest to oldest, ensuring users can easily keep track of important information.

## 5.1.8 Annual reports

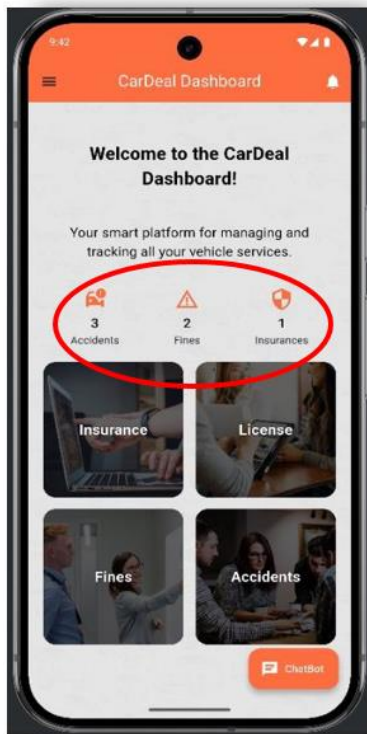


Figure 5.15 Annual in Home Page

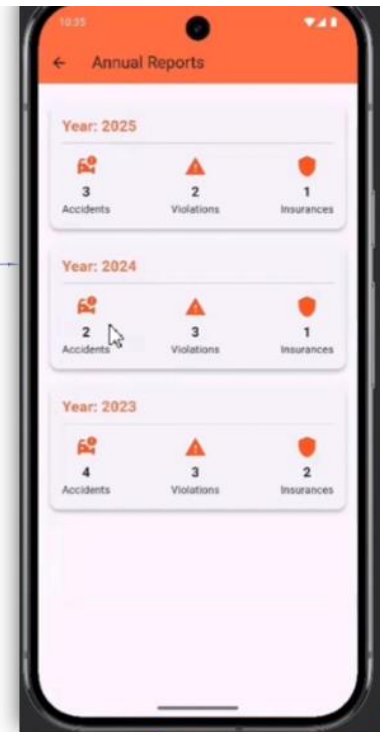


Figure 5.16 Annual page

The reports page features a view of all accidents, violations, and even insurance claims over the years, ensuring users can easily track important information.

## 5.1.9 CHATBOT

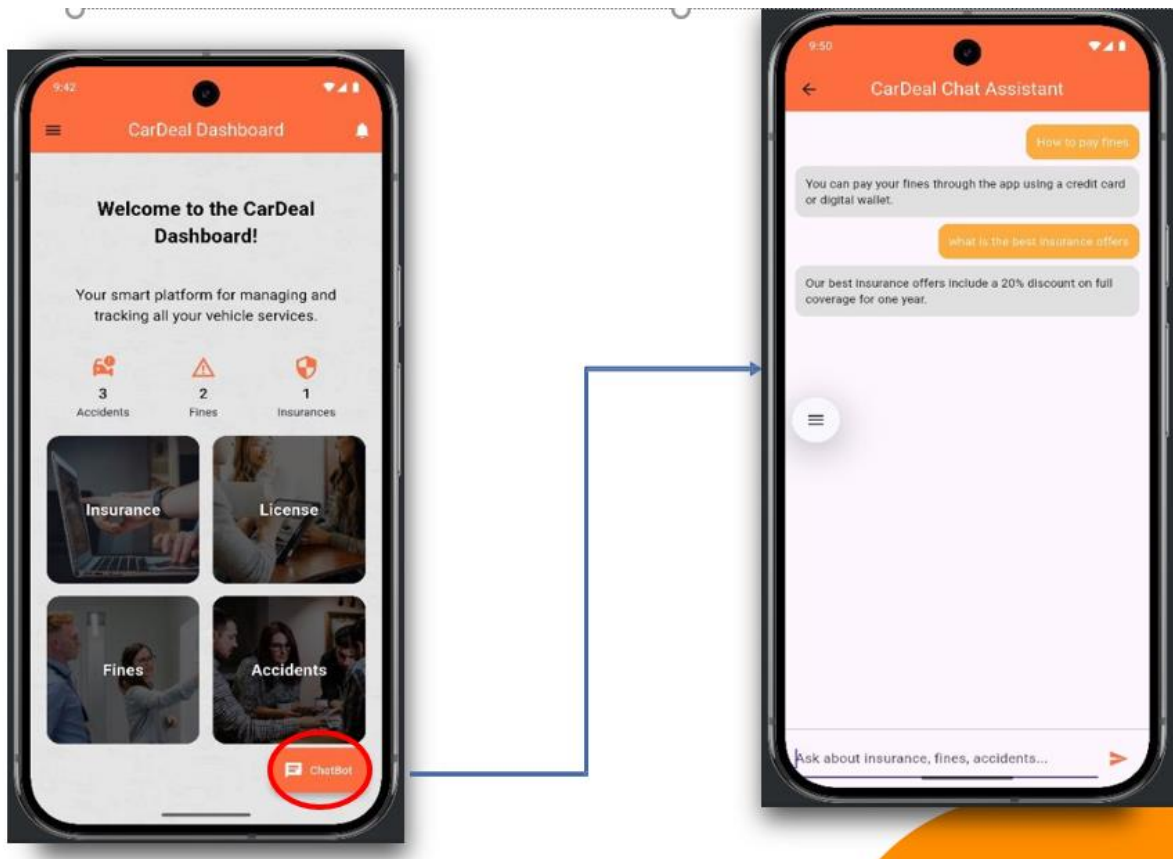


Figure 5.17 ChatBot in Home Page

Figure 5.18 ChatBot Page

The chatbot interface allows for instant interaction with users, allowing them to quickly respond to their inquiries about licensing, insurance, violations, and other services, enhancing the user experience and saving time and effort.

## 5.1.10 INSURANCE

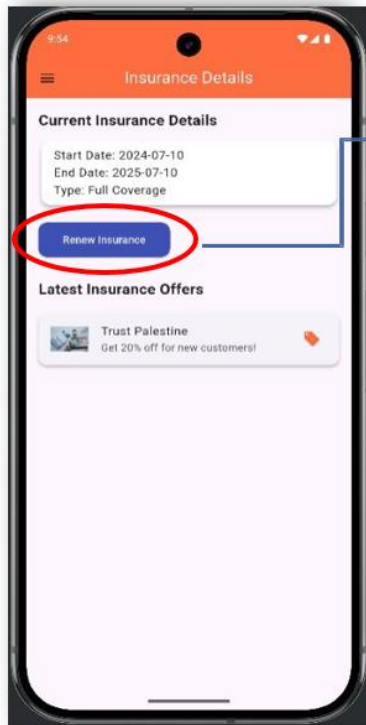


Figure 5.19 Insurance Details

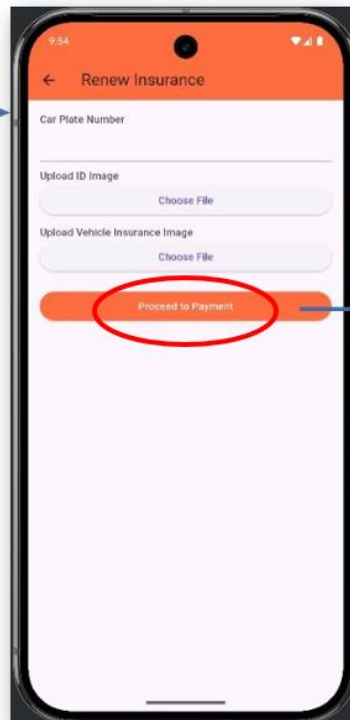


Figure 5.20 Renew Insurance

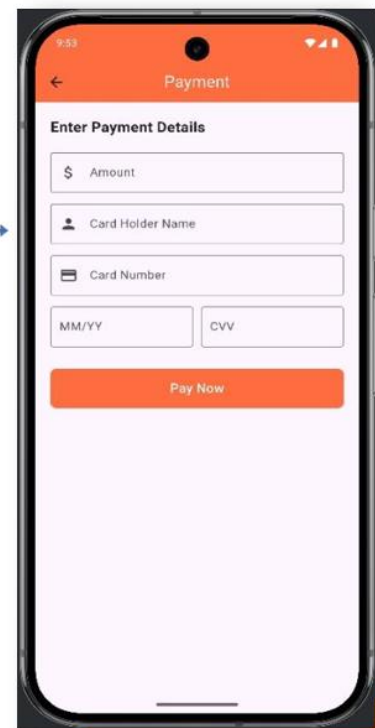


Figure 5.21 Payment to insurance

The insurance interface allows users to view their insurance policies, check expiration dates, compare offers, renew policies directly through the app, and even pay through the app, ensuring easy and secure vehicle insurance management.

## 5.1.11 LICENSES-CAR

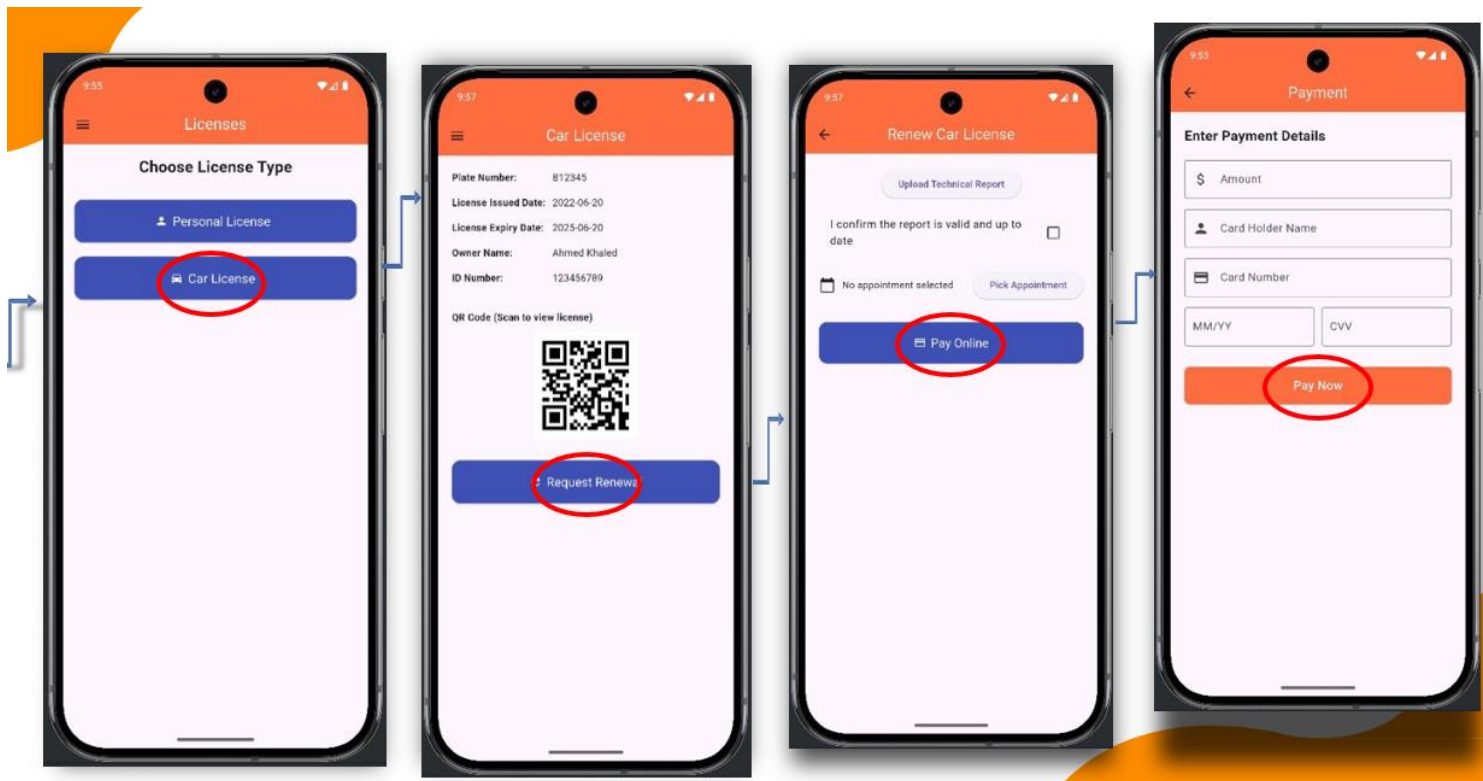


Figure 5.22 Choose to Licenses

Figure 5.23 Car Licenses Details

Figure 5.24 Renew car license

Figure 5.25 Payment to licenses

The vehicle licensing interface enables the user to view the current license data, know the expiration date, book an appointment for a technical inspection, and submit an electronic renewal application easily and securely. There is also a QR code.

## 5.1.12 LICENSES-PERSONAL

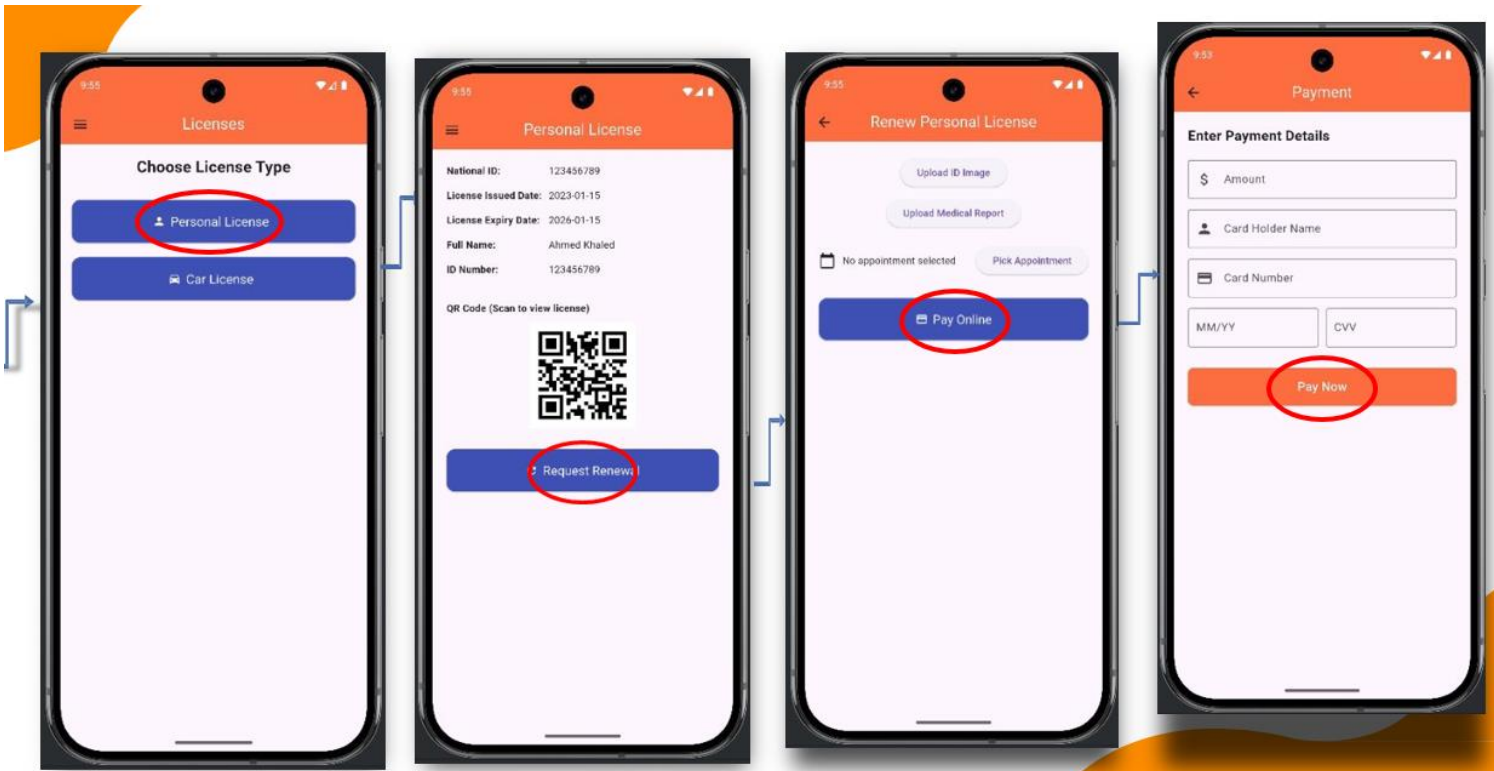


Figure 5.26 Choose to Licenses

Figure 5.27 Personal Licenses

Figure 5.28 Renew per. Licenses

Figure 5.29 Payment to Licenses

The personal license interface displays the user's driving license information, including the issue and expiration dates, with the ability to display a digital copy containing a QR code for easier verification. Payment is also possible through the app.

## 5.1.13 FINES

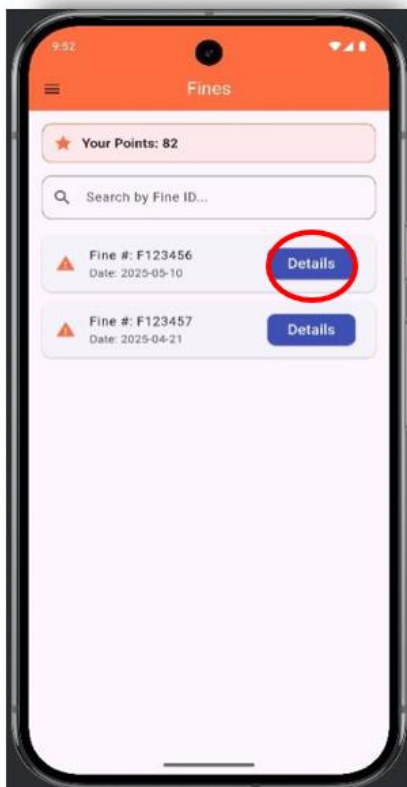


Figure 5.30 Fines page

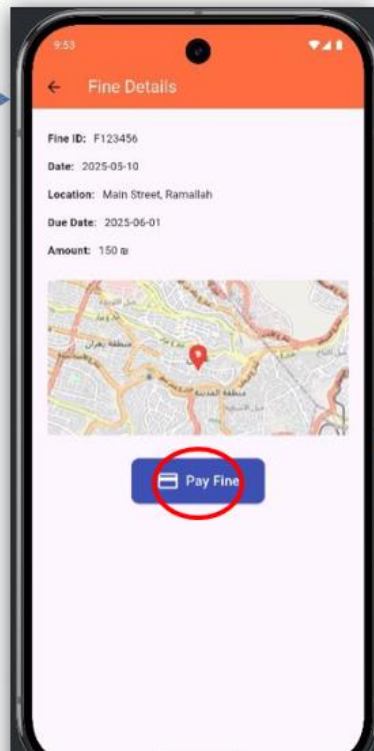


Figure 5.31 Fine Details

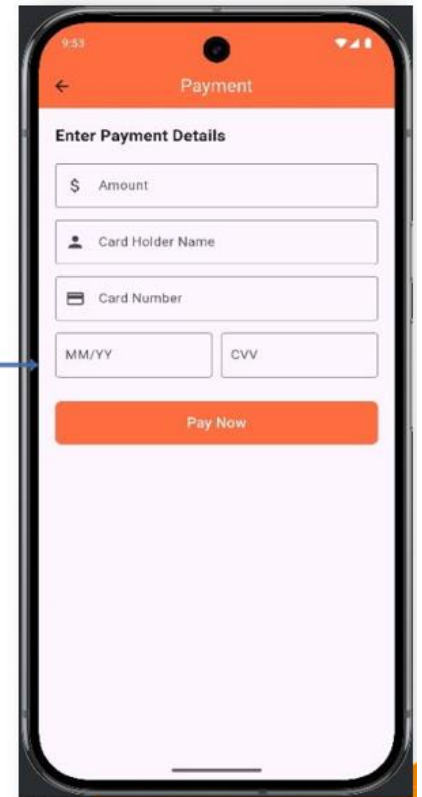


Figure 5.32 Payment Fines

The Violations interface allows users to view all recorded violations, view details of each violation, such as the date and amount, and pay the violations electronically, easily and securely, through the app.

## 5.1.14 ACCIDENTS



Figure 5.33 Accidents page

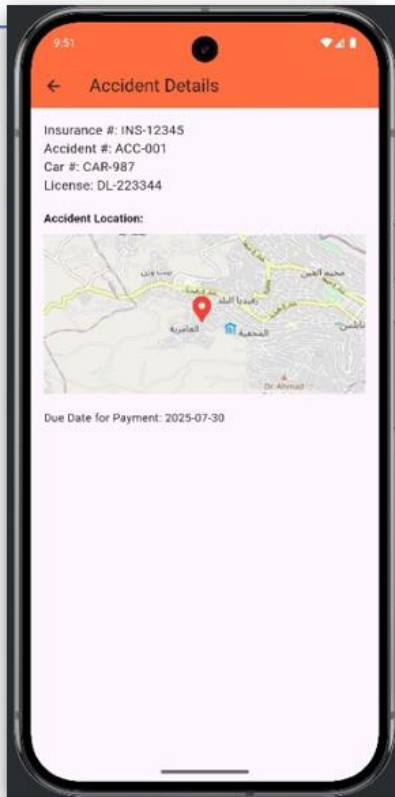


Figure 5.34 Accident Details

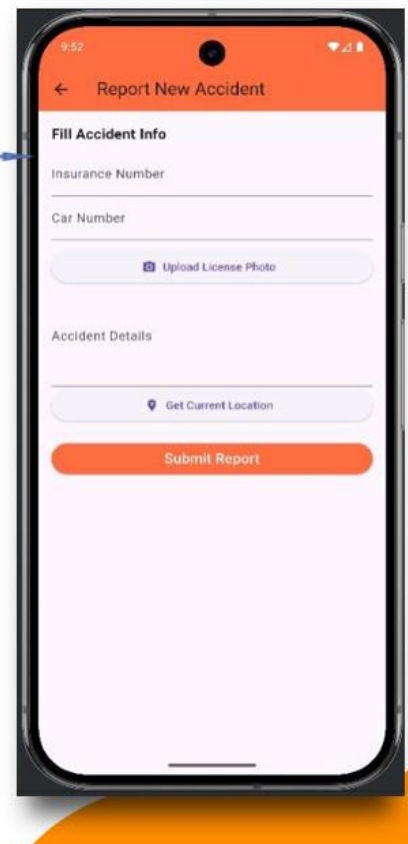


Figure 5.35 Report New Accident

The incident interface allows users to report accidents they have been involved in, attach photos and specify the location, and view details of previous accidents and their number for easy tracking.

## 5.2 POLICEMOBILE APP

### 5.2.1 Start Page



Figure 5.36 police home page

## 5.2.2 Profile Page & Edit Profile & Check Vehicle

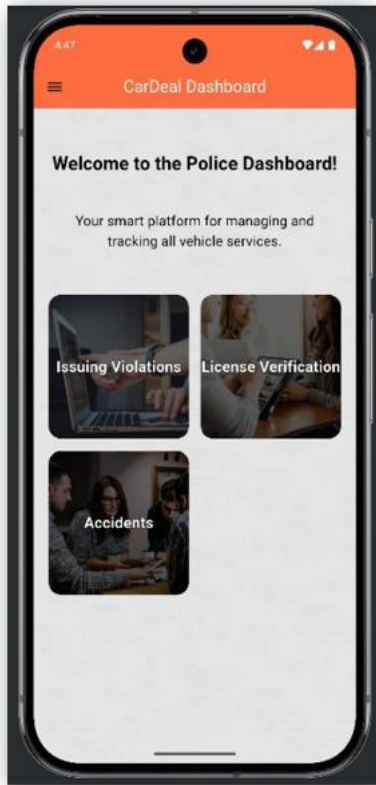


Figure 5.37 police Dashboard

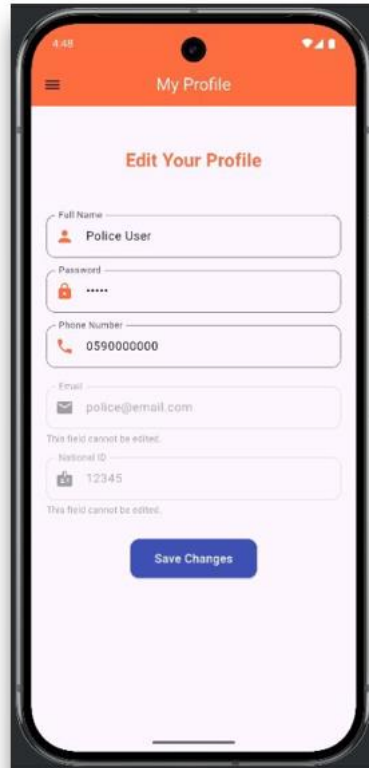


Figure 5.38 Profile and Edit

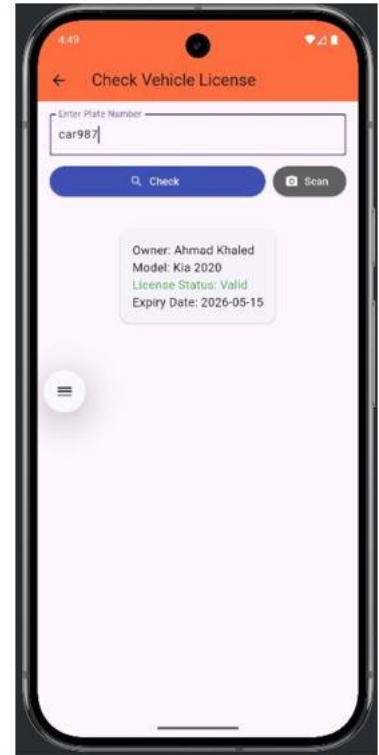


Figure 5.39 Check Vehicle License

## 5.2.3 ISSUE A FINE

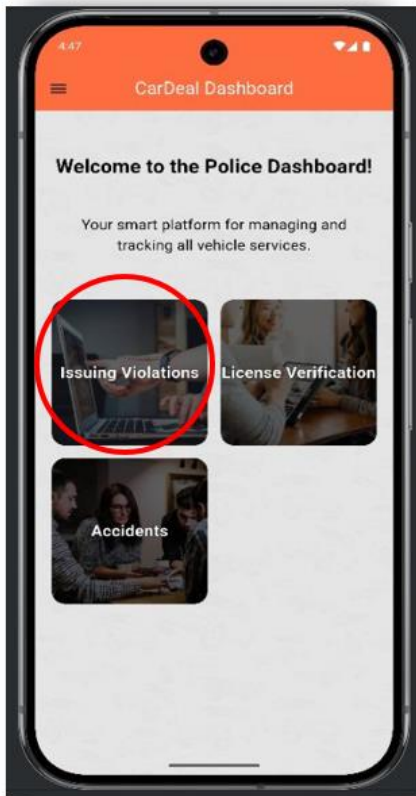


Figure 5.40 Issuing Violation in police home page



Figure 5.41 Issue a Fine

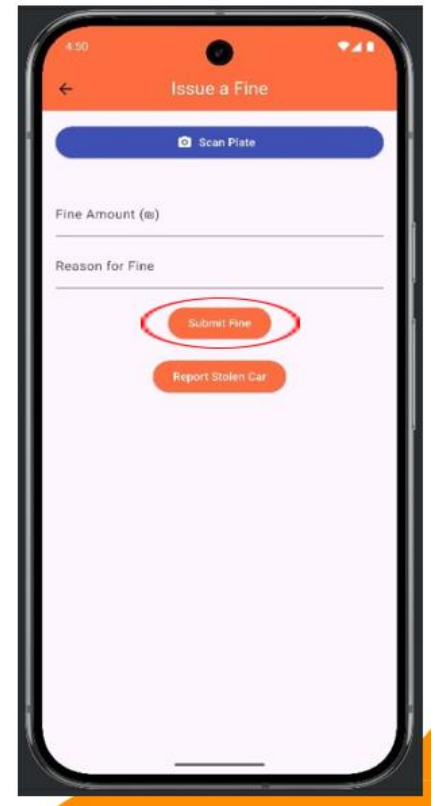


Figure 5.42 Issue a fine in scan

## 5.2.4 REPORT STOLEN CAR

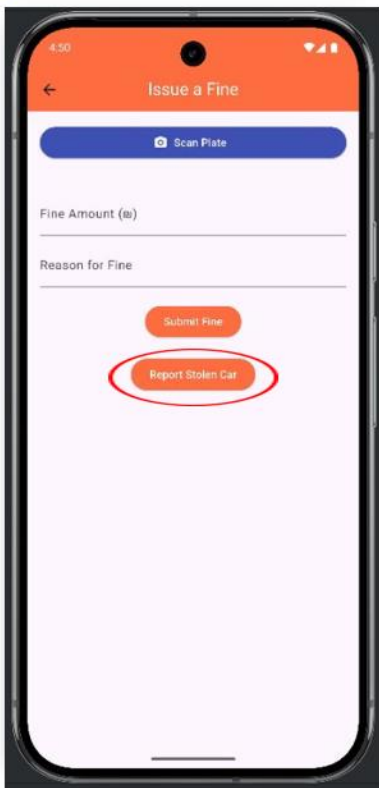


Figure 5.43 Report Car



Figure 5.44 scan plate

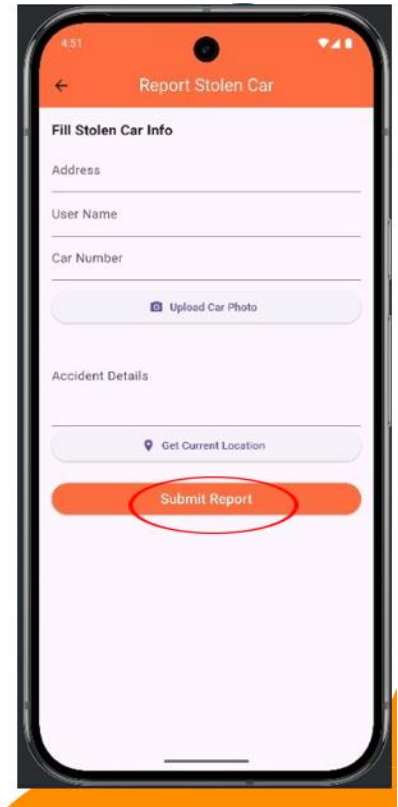


Figure 5.45 Report Stolen Car

## 5.3 WEBSITE

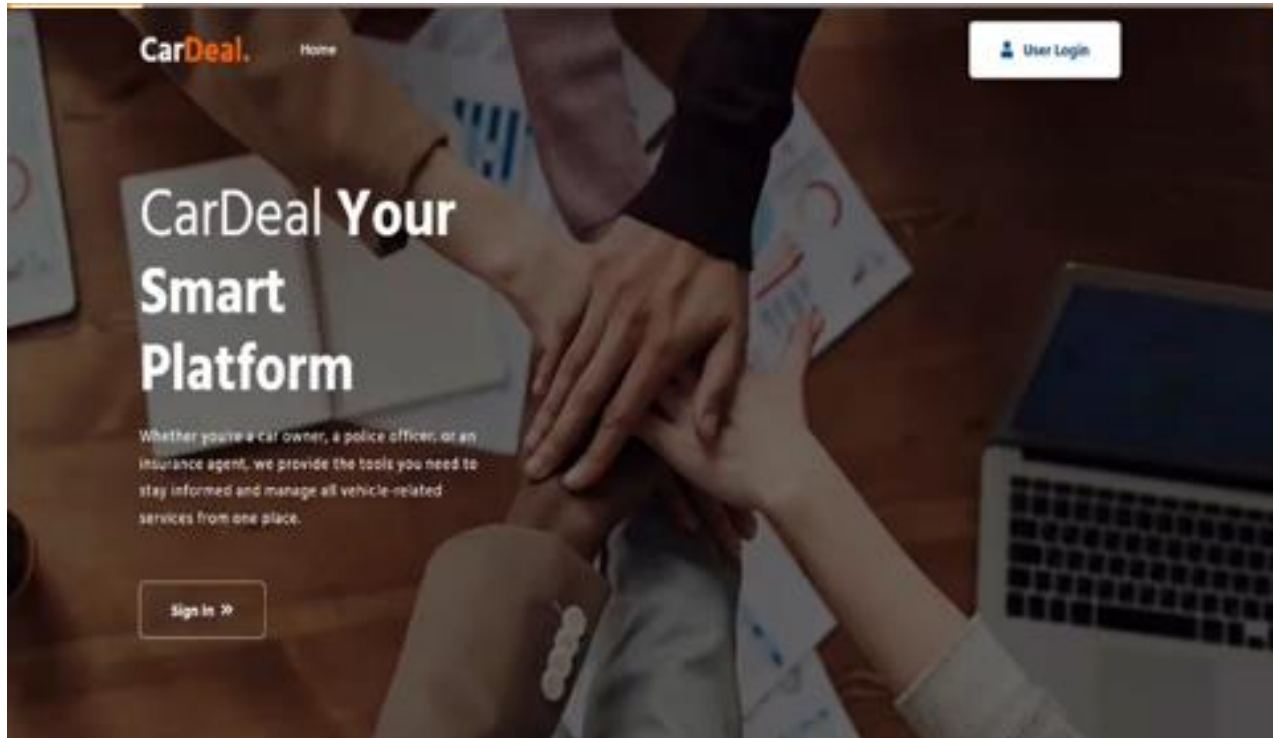


Figure 5.46 Welcome website

### 5.3.1 Admin sing up

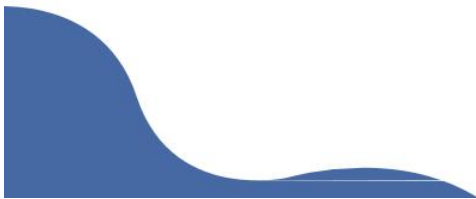


Figure 5.47 Sing up admin

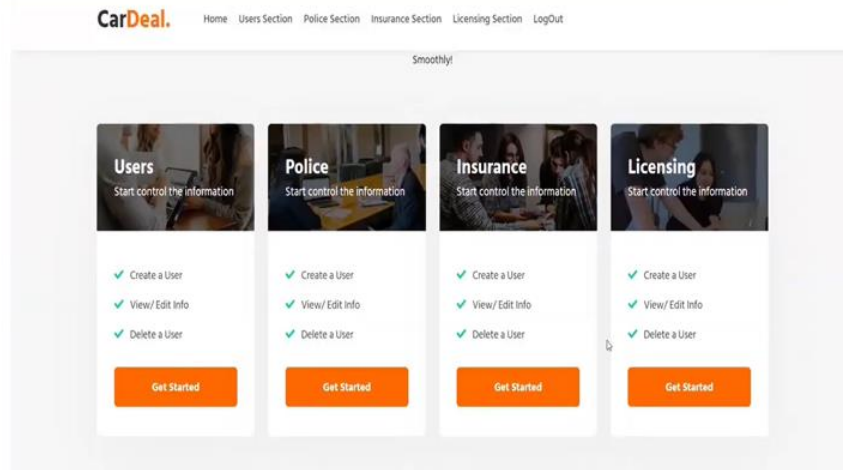


Figure 5.48 Home page Admin

## 5.3.2 Admin powers

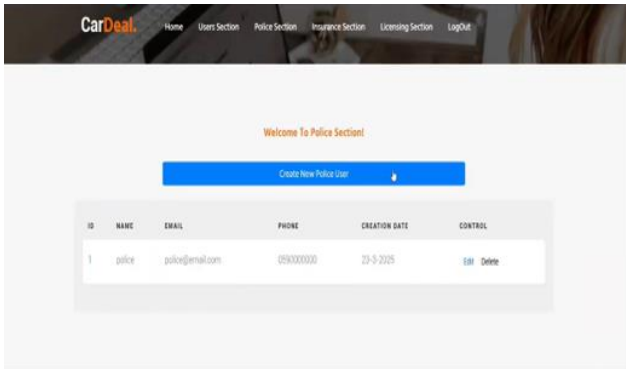


Figure 5.49 Police Officers' Vision

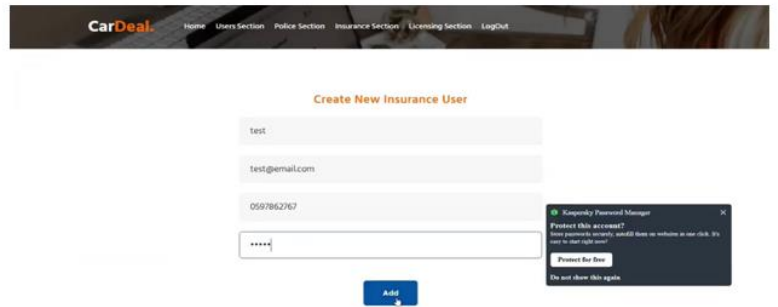


Figure 5.50 Create new insurance

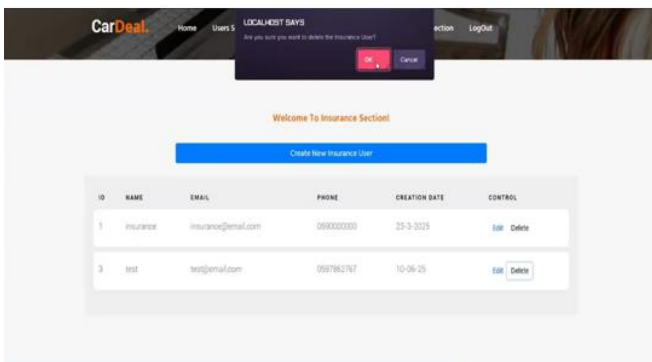


Figure 5.51 Delete employees

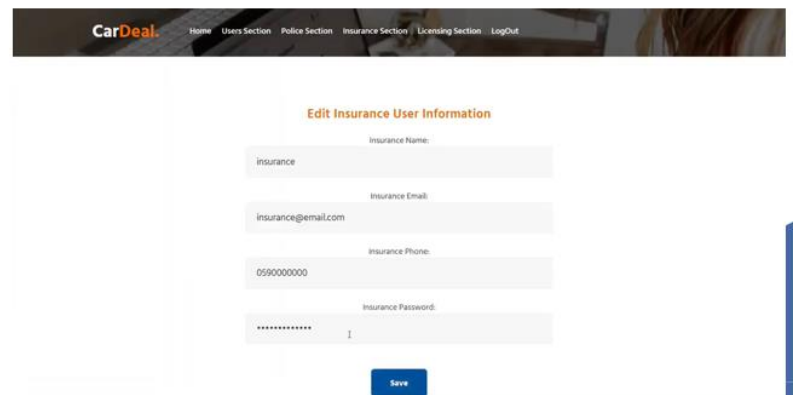


Figure 5.52 Edit information

### 5.3.2 Insurances section

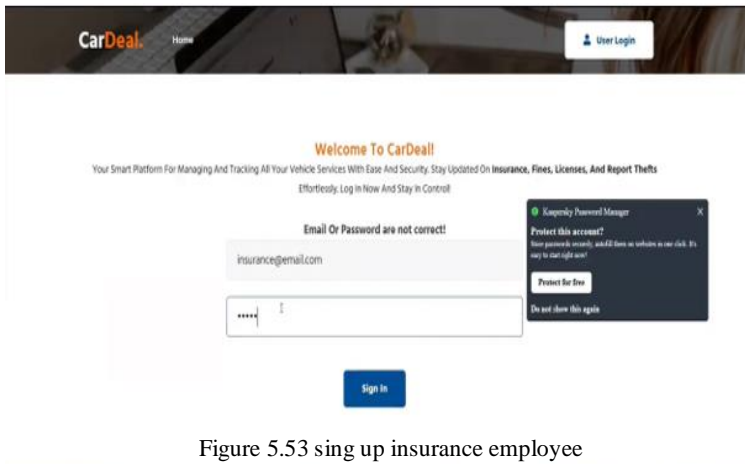


Figure 5.53 sing up insurance employee

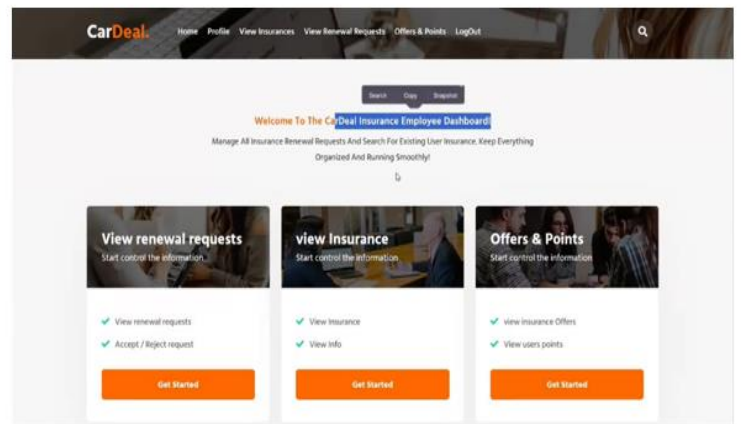


Figure 5.54 Insurance page

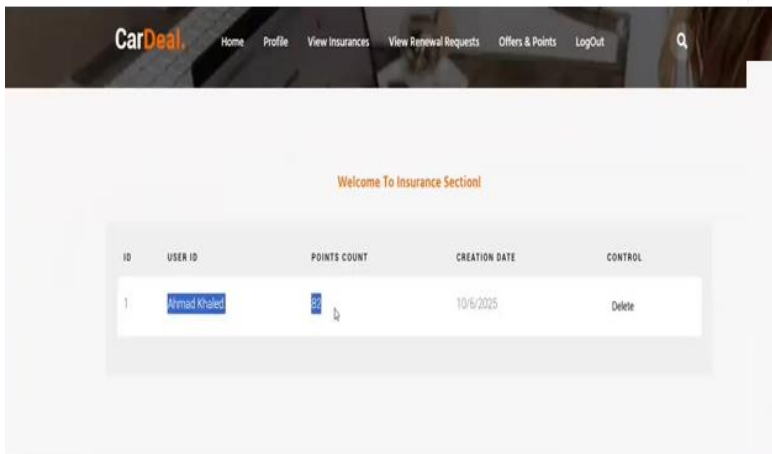


Figure 5.55 View users who insured their

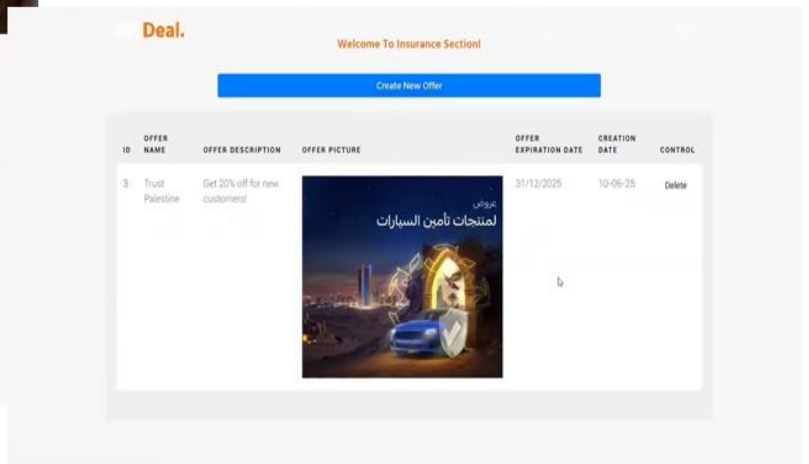


Figure 5.56 view offer

**CarDeal.** Home Profile View Insurances View Renewal Requests Offers & Points LogOut

**Create New Offer**

Please Enter Offer Name

Please Enter Offer Description

Please Enter Offer Expiry date

Please Enter Offer Picture

Choose File No file chosen

**Add**

Figure 5.57 create offer

**CarDeal.** Home Profile View Insurances View Renewal Requests Offers & Points LogOut

Welcome To Renewal Requests Section!

Create New Renewal Requests

ID	USER	INSURANCE TYPE	ISSUE DATE	EXPIRATION DATE	PIC	SUBMIT DATE	STATUS	CONTROL
5	Ahmad Khalid	Full Cover	10/7/2025	10/7/2026		10-06-25	Pending	View All info

Figure 5.58 renewal Request

**Deal.**

Renewal Requests ID: 5

ID	USER	INSURANCE TYPE	CAR ID	ISSUE DATE	EXPIRATION DATE	REPORT	PIC	SUBMIT DATE	STATUS	CONTROL
5	Ahmad Khalid	Full Cover	SX0253	10/7/2025	10/7/2026			10-06-25	Pending	Accept Reject

Figure 5.59 Renewal Request

**CarDeal.** Home Profile View Insurances View Renewal Requests Offers & Points LogOut

Renewal Requests ID: 10

ID	USER	INSURANCE TYPE	CAR ID	ISSUE DATE	EXPIRATION DATE	REPORT	PIC	SUBMIT DATE	STATUS	CONTROL
10	Ahmad Khalid	Full Cover	SX0253	10/7/2025	10/7/2026				Pending	Pending

Figure 5.60 view and pending

## 5.2.3 Licenses section

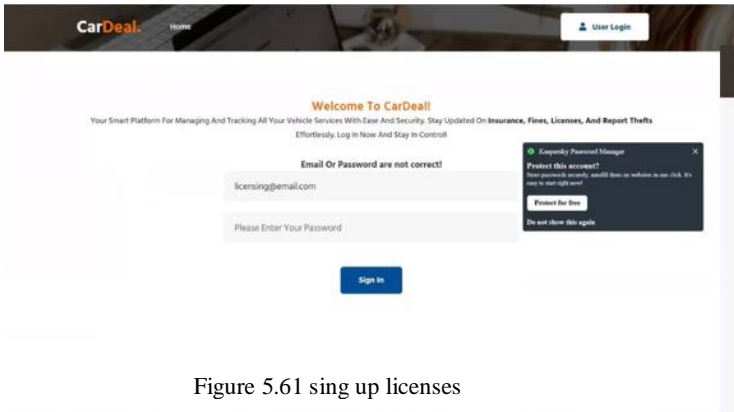


Figure 5.61 sing up licenses

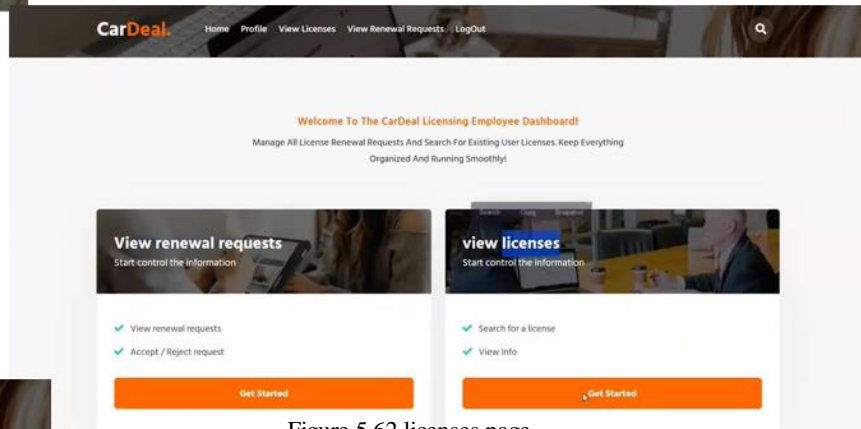


Figure 5.62 licenses page

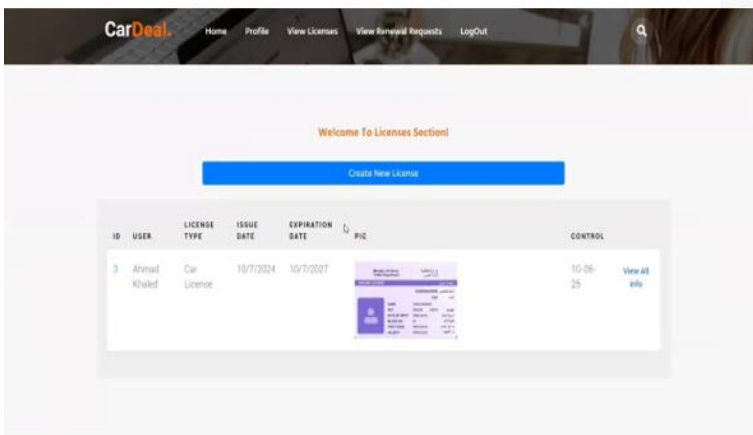


Figure 5.63 view user licenses



Figure 5.64 create new licenses

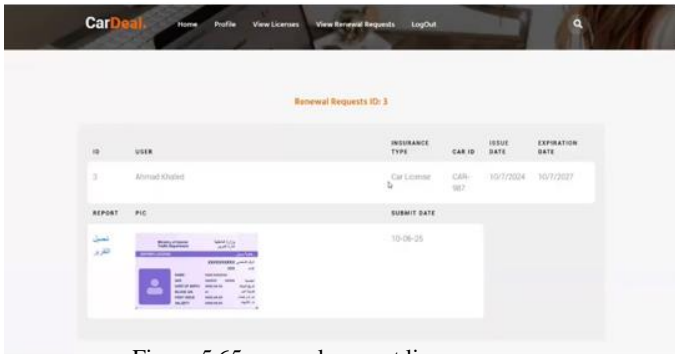


Figure 5.65 renewal request licenses

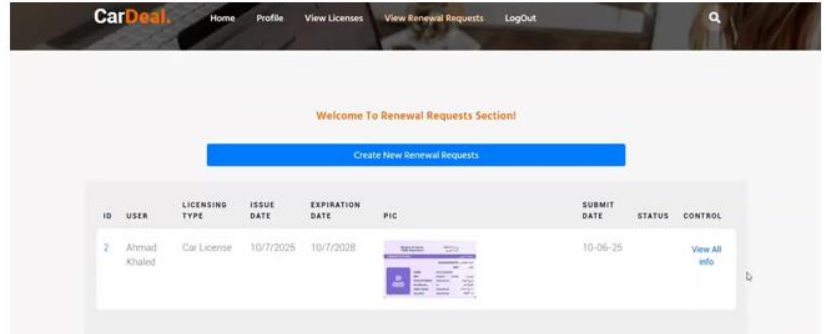


Figure 5.66 view and create licenses

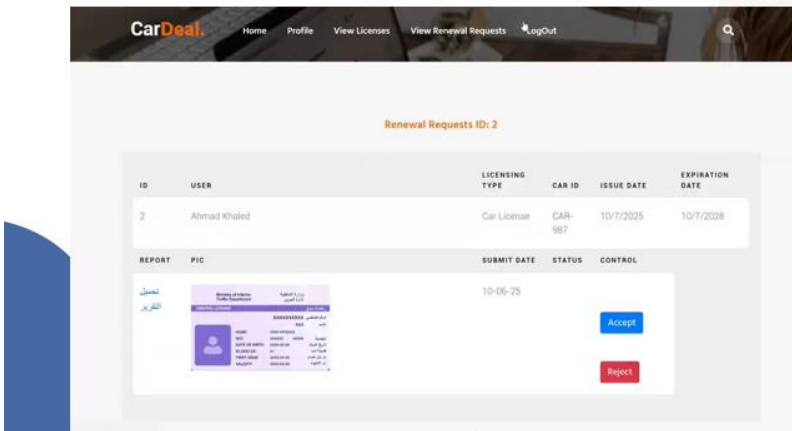


Figure 5.67 accept or reject licenses

### 5.3.4 Police section

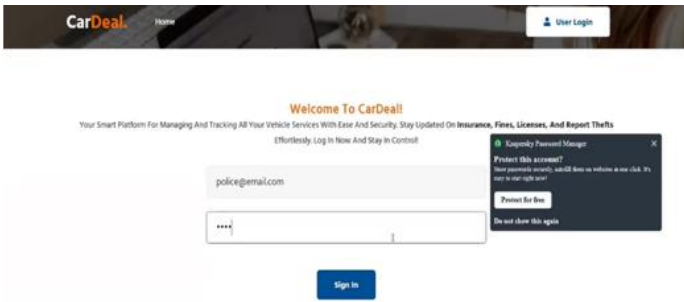


Figure 5.68 sing up police

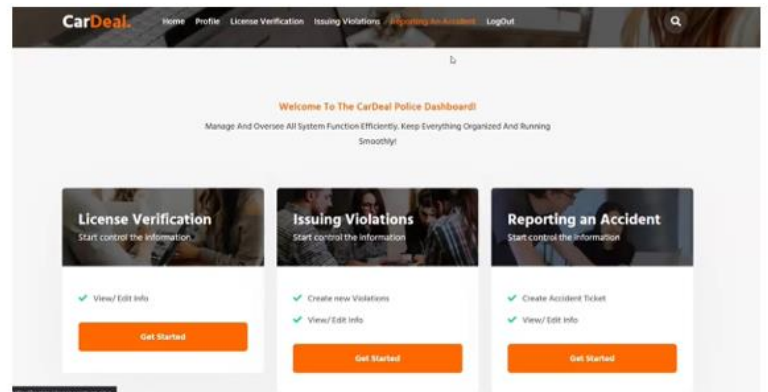


Figure 5.69 police page

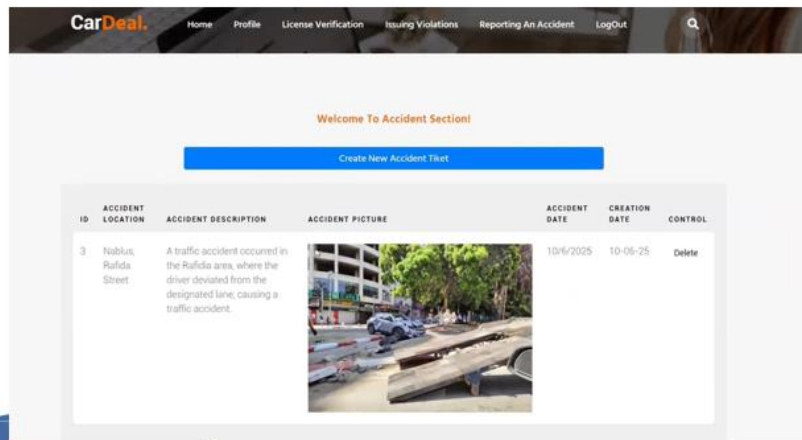
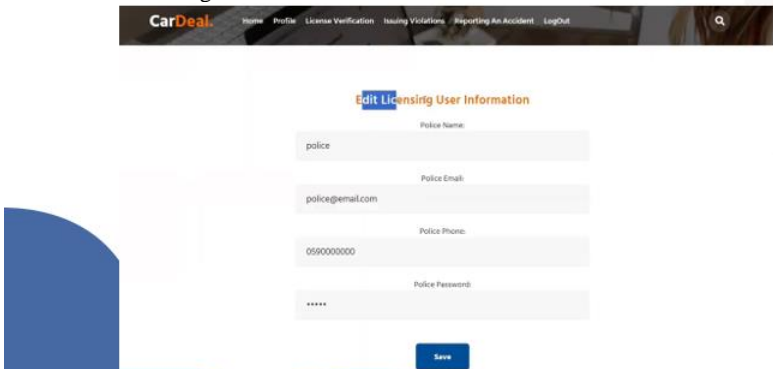
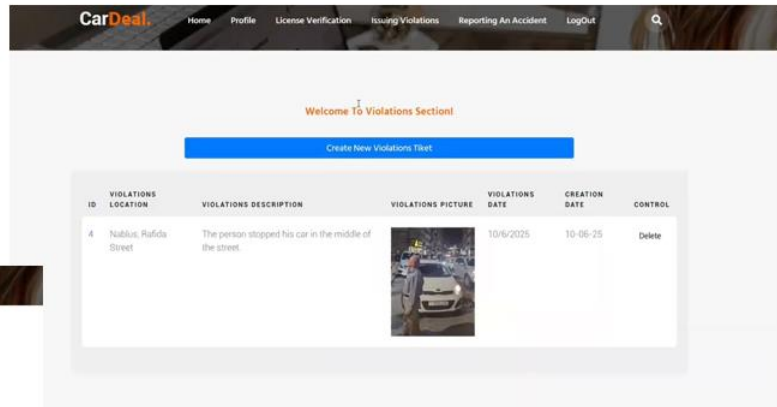
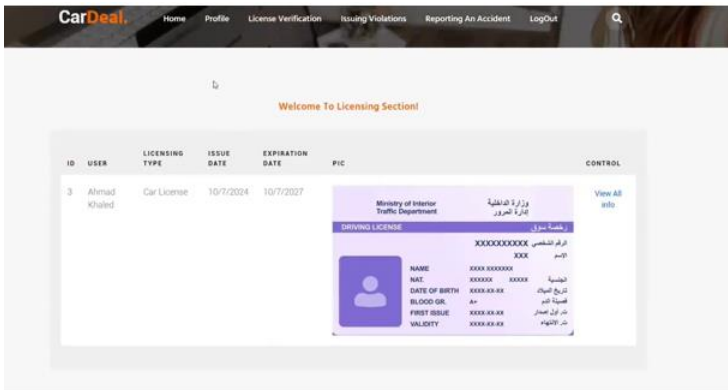


Figure 5.70 view and create and delete accident



# Chapter 6

## Results and Discussion

In today's digital age, smartphones have become essential tools for managing various aspects of daily life, from communication and entertainment to health, education, and financial services. Despite the vast number of available applications, our research revealed a clear gap in the market: the absence of a specialized, integrated vehicle management application that caters to the specific needs of vehicle owners, insurance providers, and government agencies particularly in our region.

To address this need, we developed **CarDeal**, a comprehensive platform designed to simplify and centralize tasks such as license renewals, insurance tracking, fine payments, document storage, and emergency reporting. Throughout the development process, we have achieved significant milestones, including secure registration and login, role-based access, real-time notifications, digital licenses with QR codes, and OCR tools for field verification.

Our solution is more than a digital utility; it represents a shift toward smart transportation management. As we continue to improve the platform, we plan to introduce advanced features such as AI-based behavior analysis, dynamic insurance pricing, and automated reminders for upcoming deadlines all tailored to user feedback and evolving market demands.

The project's impact extends beyond solving individual pain points. It contributes to building a digitally connected, more efficient transportation ecosystem, empowering users with control and transparency while supporting public institutions with automation and data-driven decision-making. Through this initiative, **CarDeal** helps pave the way toward safer, smarter, and more responsive mobility infrastructure in our region.

# Chapter 7

## Conclusion

The rapid rise in smartphone usage and the widespread adoption of mobile applications have significantly transformed the way individuals handle their daily responsibilities. While mobile apps now cover a wide range of sectors—including finance, health, education, and productivity there remains a clear gap in applications dedicated to vehicle management and transportation services, particularly in our region.

This realization inspired the creation of **CarDeal**, a comprehensive solution designed to fill this gap and modernize how individuals and institutions manage transportation-related tasks. CarDeal offers a centralized platform that simplifies essential services such as license renewal, insurance tracking, fine payments, emergency alerts, and document management, while also enhancing communication between citizens, insurance providers, and governmental authorities.

What makes CarDeal unique is its focus on serving multiple user groups through tailored features: vehicle owners benefit from a seamless digital experience with secure access to all their vehicle-related data; insurance companies enjoy better client tracking and policy management; and government authorities gain tools for efficient verification, compliance monitoring, and field operations through advanced features like OCR and QR-based digital licenses.

The overarching aim of CarDeal is to improve the overall transportation experience, reduce administrative burdens, increase operational efficiency, and promote digital transformation in the public and private sectors alike. Through this project, we aspire to contribute to safer, smarter, and more connected mobility infrastructure that enhances quality of life and supports future innovation.

# Chapter 8

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[2]

Palestinian Traffic Authority. (2024). *"Digital Transformation in Vehicle Licensing: Case Study of the West Bank"*. International Journal of Transportation Research, 15(2), 89-104.

[3]

Brown, L., & Green, T. (2022). *"AI-Driven Insurance Management Systems: Reducing Costs and Improving User Experience"*. Journal of Automotive Technology, 14(3), 45-60.