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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER ENGINEERING

UI DESIGN AND IMPLEMENTATION

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1 Introduction

This section outlines the design and frontend structure of the CarCare mobile application. Our goal was to create a user-friendly, functional interface that supports both car owners and mechanics. Through visual planning, mockups, and prototyping, we built a system that is not only easy to navigate but also aligns with the app's identity and intended use cases.

2 App Identity

2.1 App Name

The app is named **CarCare**, representing its goal of helping users identify, understand, and resolve car faults efficiently. It is designed for two user types: **car owners** and **mechanics**. The identity emphasizes approachability, reliability, and intelligent assistance. The app acts as a friendly and practical assistant for vehicle owners, while also allowing mechanics to provide verified service information.

2.2 Logo Design

The logo features a **teal car outline** with a heartbeat line and a wrench symbol, visually representing car diagnostics and repair. This logo helps reinforce our identity as a car maintenance assistant.

3 Visual Design

3.1 Color Scheme

We selected **Teal** as the primary color for the app, which represents calmness, trust, and technology. The supporting colors include **white backgrounds**, **teal accents**, and **navy-blue highlights** chosen for high readability and a sense of professionalism when projected on white walls

- **Primary:** Teal (#00796B)
- **Secondary:** White (#FFFFFF)
- **Accent:** Light Teal / Aqua
- **Text Color:** Black or Navy-Blue

3.2 Fonts and Typography

We used clean, sans-serif fonts that are readable and modern. The font styling is consistent across headings, subheadings, and body text to ensure a polished look.

4 Visual Design Strategy

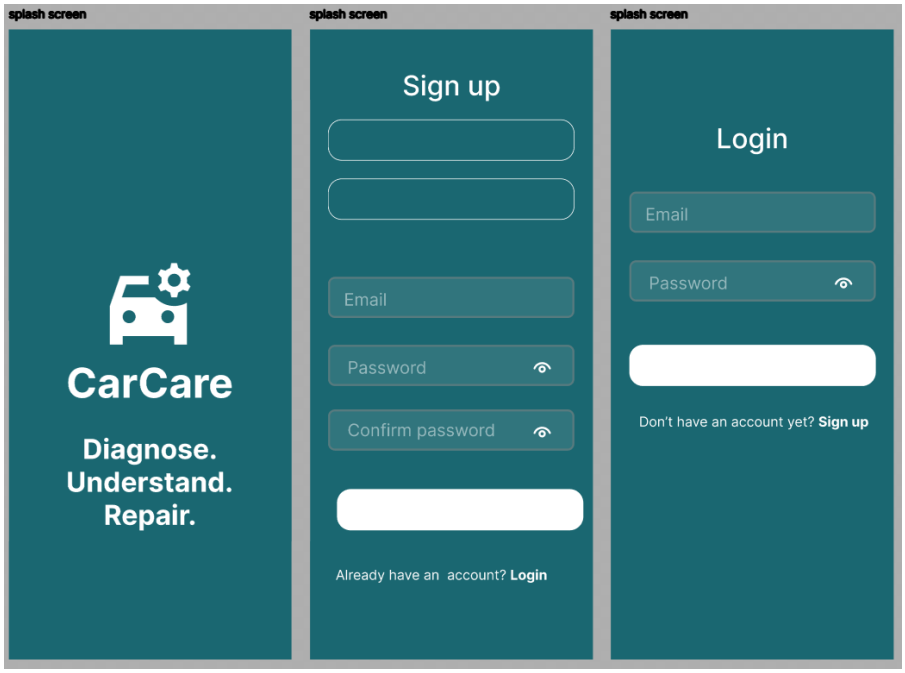
CarCare uses a clean, minimalist visual design to enhance usability and reduce cognitive load.

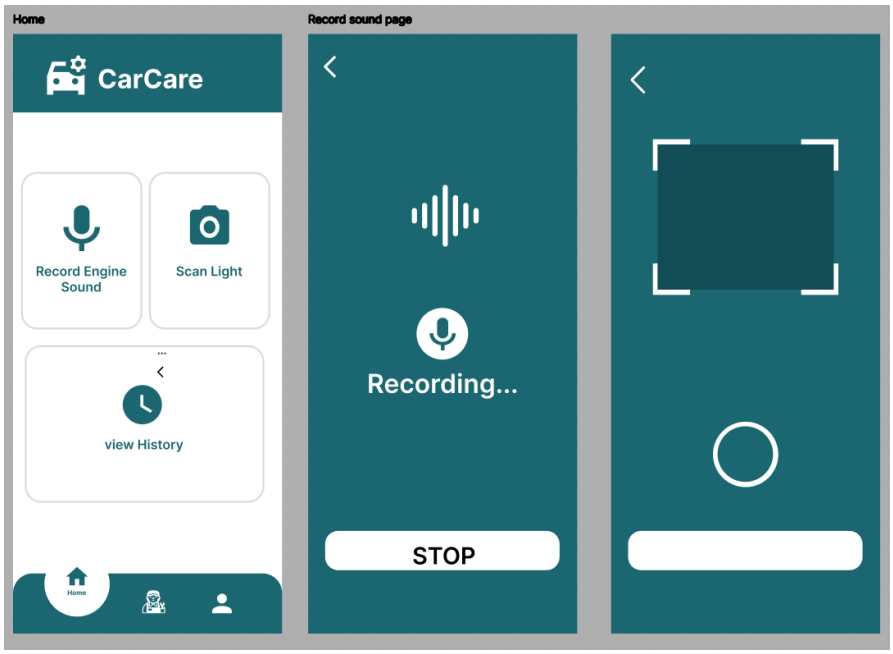
4.1 Design Principles Followed

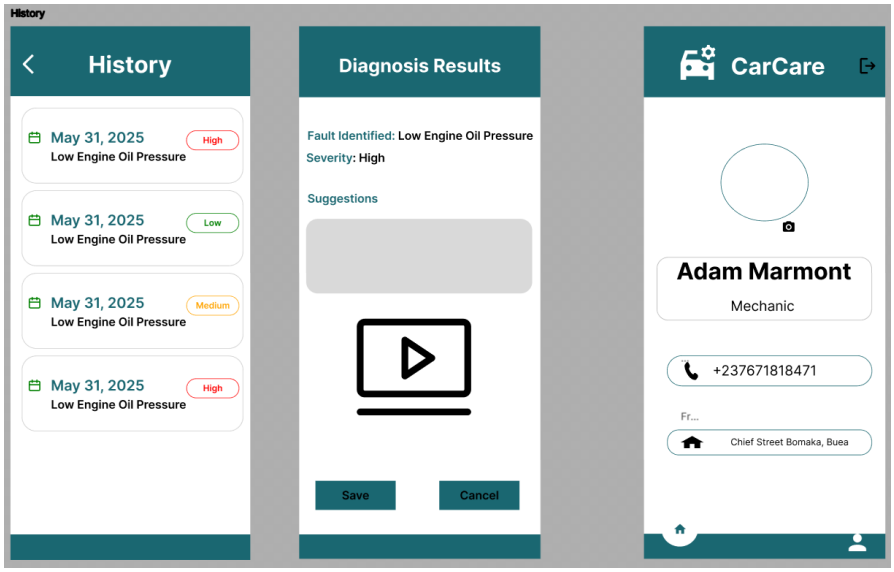
- **Consistency:** All UI elements follow a unified style guide.
- **Responsiveness:** UI components are adaptable to various screen sizes.
- **Minimalism:** The interface is clean with no visual clutter.
- **Accessibility:** Good contrast and readable fonts are used for visibility.

4.2 Wireframes and Mockups

To guide the structure of each screen the Software design tool **Figma** was used to create the mockups of all key screens before development. These include the splash screen, login, sign-up, user dashboard, and diagnostics result screens.


splash screen
CarCare
Diagnose.
Understand.
Repair.
splash screen
Sign up
Email
Password
Confirm password
Already have an account? Login
splash screen
Login
Email
Password
Don't have an account yet? Sign up


Home
CarCare
Record Engine Sound
Scan Light
view History
Record sound page
Recording...
STOP


History
History
May 31, 2025
Low Engine Oil Pressure
High
May 31, 2025
Low Engine Oil Pressure
Low
May 31, 2025
Low Engine Oil Pressure
Medium
May 31, 2025
Low Engine Oil Pressure
High
Diagnosis Results
Fault Identified: Low Engine Oil Pressure
Severity: High
Suggestions
Save
Cancel
CarCare
Adam Marmont
Mechanic
+237671818471
Chief Street Bomaka, Buea

The layout is structured with:

- Large, easy-to-read buttons
- High-contrast fonts
- Consistent spacing
- Simple icons (camera, mic, mechanic, history, etc.)

Each user has a tailored dashboard:

- Car Owners access diagnostic tools and history
- Mechanics can log in to update and manage their service profile

Interactive mockups were created to simulate user flow and ensure intuitive navigation

5 Frontend Implementation

5.1 Technology Stack

The frontend was built using:

- **React Native**
- **Expo** (for cross-platform development)
- **TypeScript**

5.2 Folder Structure

Our project follows a modular folder structure organized into components such as: app, navigation, components, screens, assets etc.

```
- app/
  - tabs/
  - assets/
  - components/
    - screens/
    - ui/
  - constants/
```

5.3 Pages Implemented

So far, the following key pages have been implemented:

- **Splash Screen**
- **Login and Sign-up Pages:** For both car owners and mechanics
- **Car Owner Dashboard**
- **Mechanic Dashboard**
- **Dashboard Light Scan Page:** Screen with live camera access
- **Record Engine Sound Page:** Screen using microphone input

- **Diagnostic Result Page:** Screen showing fault details, repair steps, and video suggestions
- **Mechanic Profile Form:** For submitting contact and service info
- **User Profile and History Pages:** For saved results and personalization

These pages include form validation, conditional rendering, and navigational routes handled by the Expo Router.

All UI components follow a consistent visual system to enhance user experience across both iOS and Android platforms.

6 Conclusion

The user interface of CarCare has been carefully planned and visually structured to ensure usability, accessibility, and purpose-driven interaction. The design supports the app's goal of delivering accurate diagnostics and helpful repair guidance. With role-based dashboards, intuitive screens, and consistent visuals, CarCare is well positioned to offer value to both everyday drivers and professional mechanics.