Car Dealership Management System

IE 403 - HUMAN COMPUTER INTERACTION

Submitted to : Dr. Manish Khare

Group - 11

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Introduction

Overview of the Project:

- The Car Dealership Management System is designed to streamline the process of buying, renting, and managing car services for multiple user groups (customers, admins, and mechanics).
- The project focuses on delivering a seamless and intuitive experience through the application of Human-Computer Interaction (HCI) principles.

Significance of HCI in the Project:

- HCI principles are critical to ensuring the system is user-friendly, accessible, and efficient.
- By emphasizing usability, feedback, and error prevention, the project aims to enhance user satisfaction and productivity.

Objectives

User-Centric Design:

- Create an intuitive interface that caters to the unique needs of customers, admins, and mechanics.
- Ensure tasks can be completed with minimal effort and maximum clarity.

Streamlined Transactions:

- Develop robust features for buying, renting, and selling both new and secondhand cars.
- Incorporate negotiation tools for pricing and establish clear and efficient rental processes.

Efficient Service Management:

- Implement a systematic approach for mechanics to manage service requests effectively.
- Enable timely responses and ensure high-quality service delivery.

Objectives

Feedback Mechanisms:

- Introduce feedback systems allowing customers to rate services and interactions.
- Empower the dealership to improve its offerings and customer service continually.

Integration of Features:

- Ensure seamless integration between different functionalities (e.g., car addition, transactions, service requests).
- Provide a cohesive and consistent user experience across all modules.

System Overview

The *Car Dealership Management System* is a user-centric platform designed to simplify car-related transactions and services. It addresses the needs of three user groups: customers, admins, and mechanics, while ensuring efficiency, usability, and accessibility.

Key Modules:

1. **Buying a New Car:** Browse, compare, and purchase new cars with detailed filters and streamlined steps.
2. **Renting a Car:** Search and book rental cars based on model, pricing, and availability dates.
3. **Buying & Selling Second Hand Cars:**
    - Customers can explore secondhand car listings with advanced filters.
    - Sellers can list cars, set asking prices, and engage in negotiations.
4. **Admin Functions:** Add and manage car listings for both sales and rentals with intuitive tools.
5. **Requesting Mechanic Services:** Submit service requests with detailed issue descriptions for timely responses.

System Overview

User Groups:

- Customers: Buyers, renters, and sellers of cars.
- Admins: Manage car listings and oversee system functionality.
- Mechanics: Handle service requests and provide assistance.

Key Goals:

- Deliver a seamless, integrated experience across all modules.
- Enhance usability by applying HCI principles like feedback, visibility, and consistency.

Design Process

1. Problem Identification:

- Analyzed usability gaps in existing systems.
- Defined project scope and key pain points.

2. User Research:

- Identified three key user groups: Customers, Admins, Mechanics.

3. Defining Requirements:

- Prioritized features like streamlined workflows, feedback mechanisms, and role-based access.

4. Conceptual Design:

- Created wireframes and navigation flows for core modules (e.g., Buy, Rent, Service).

Design Process

5. Task Analysis:

- Conducted Hierarchical Task Analysis (HTA) for workflows to optimize user actions.

6. Visual Design:

- Selected a professional color palette (blue, gray, orange, green).
- Designed consistent UI elements with clear navigation and feedback.

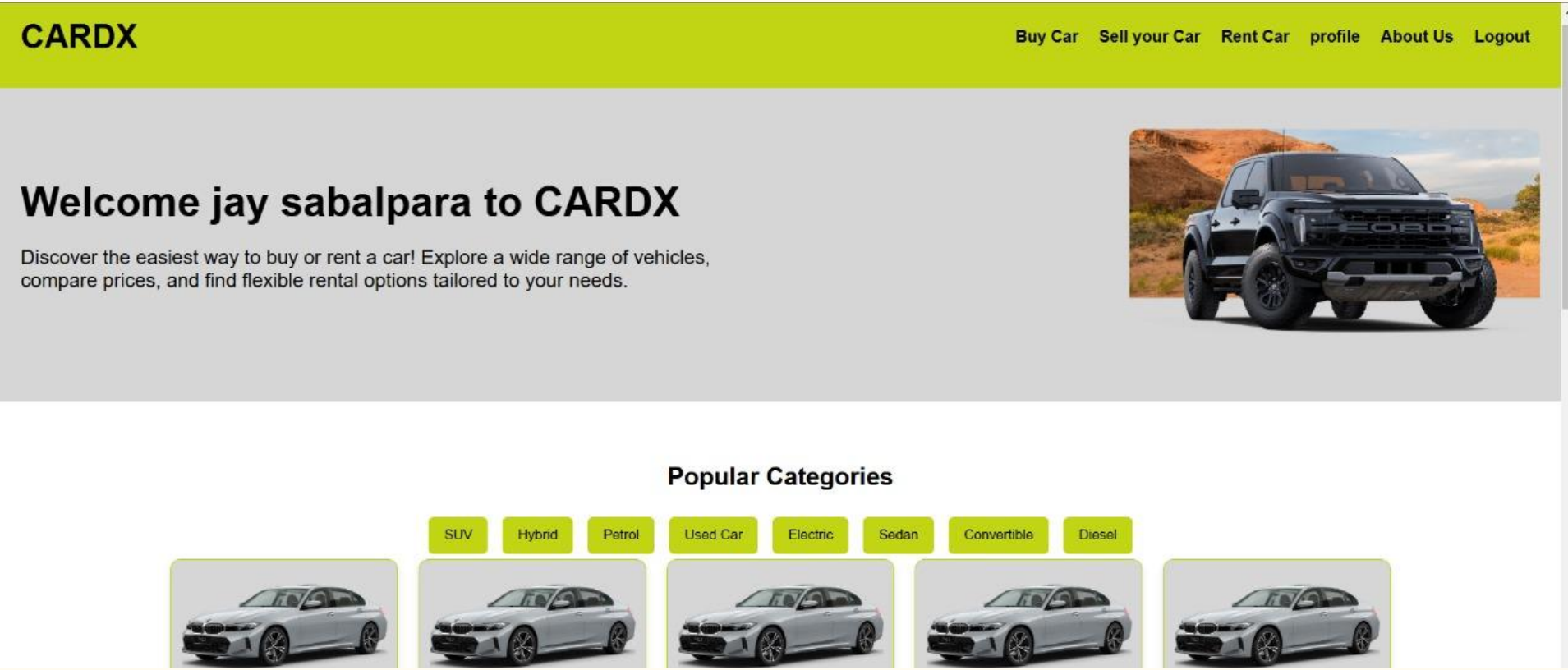
7. Prototyping & Testing:

- Developed interactive prototypes for usability testing.
- Iterated designs based on user feedback to enhance clarity and accessibility.

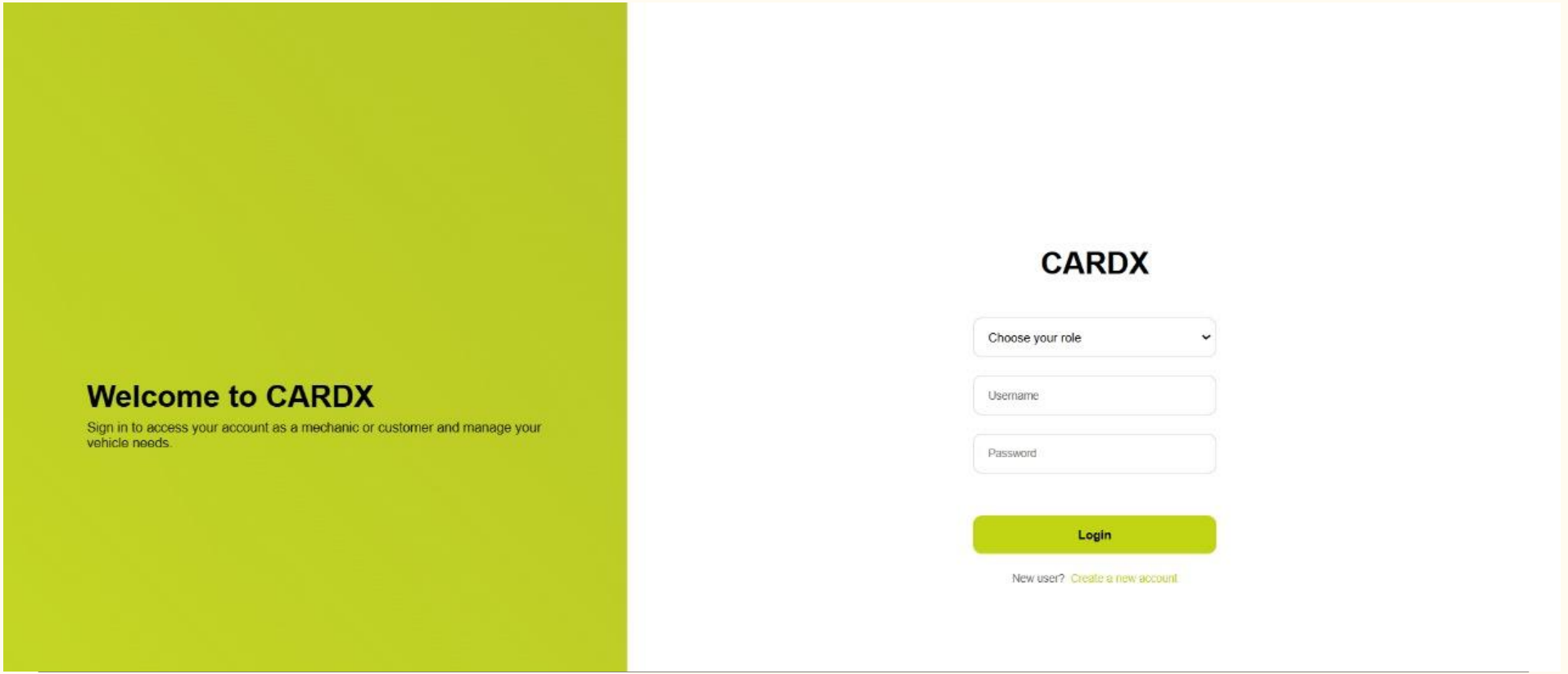
8. Implementation:

- Integrated the frontend and backend systems for a functional and cohesive platform.

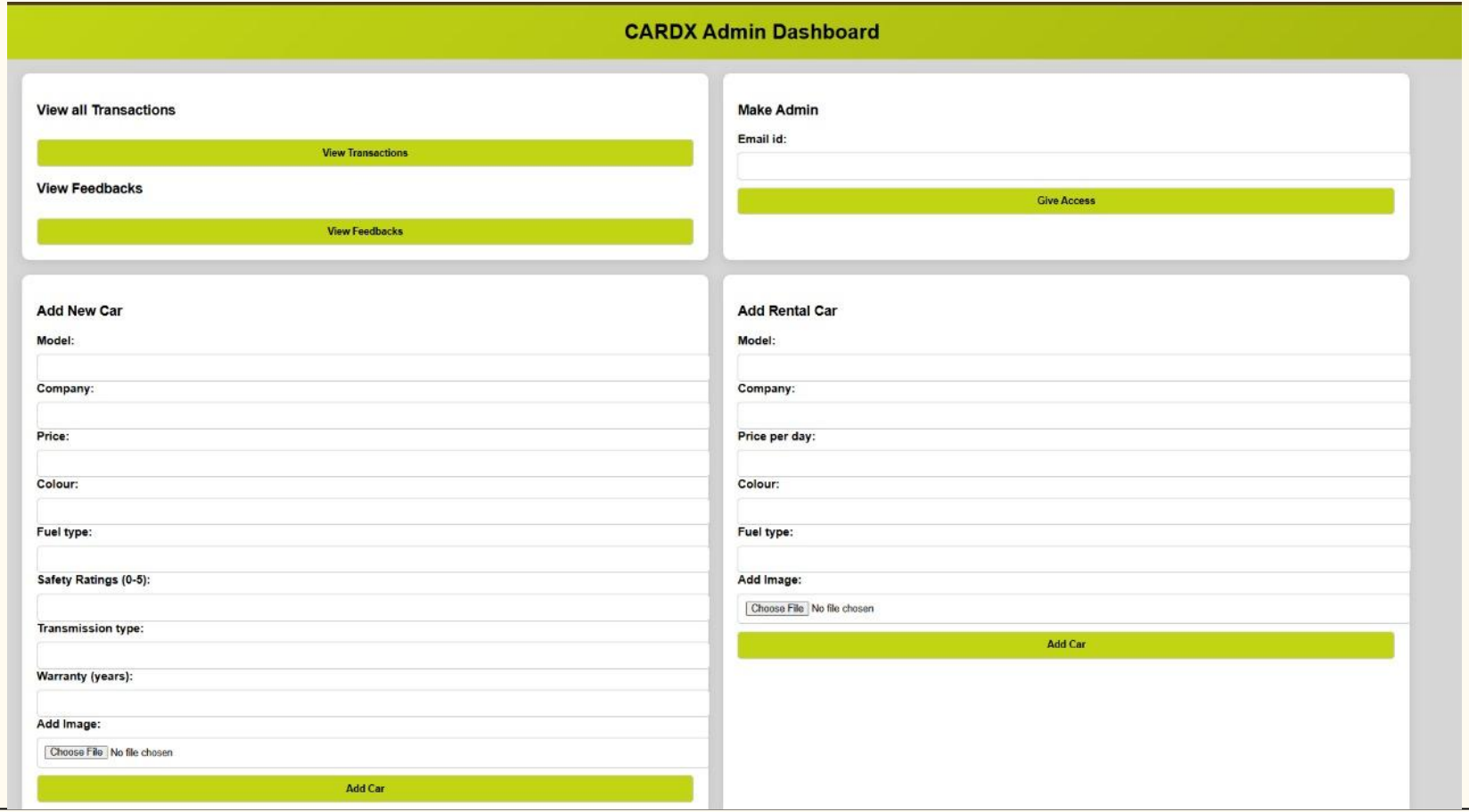
UI Design


CARDX
Buy Car
Sell your Car
Rent Car
profile
About Us
Logout
Welcome jay sabalpara to CARDX
Discover the easiest way to buy or rent a car! Explore a wide range of vehicles, compare prices, and find flexible rental options tailored to your needs.
Popular Categories
SUV
Hybrid
Petrol
Used Car
Electric
Sedan
Convertible
Diesel

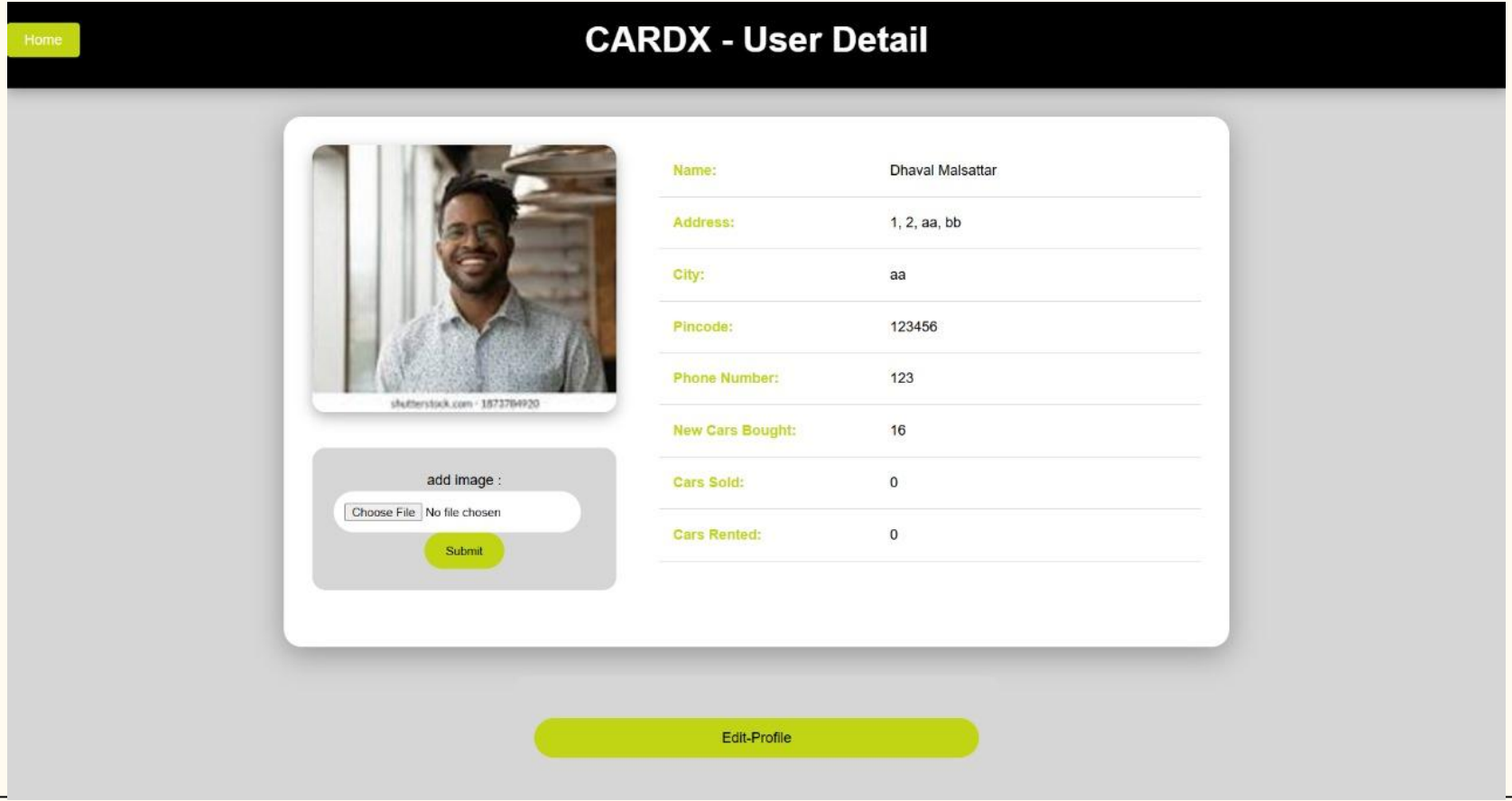
LOGIN PAGE


Welcome to CARDX
Sign in to access your account as a mechanic or customer and manage your vehicle needs.
CARDX
Choose your role
Username
Password
Login
New user? Create a new account

ADMIN DASHBOARD



USER PROFILE



HCI Principles

Visibility:

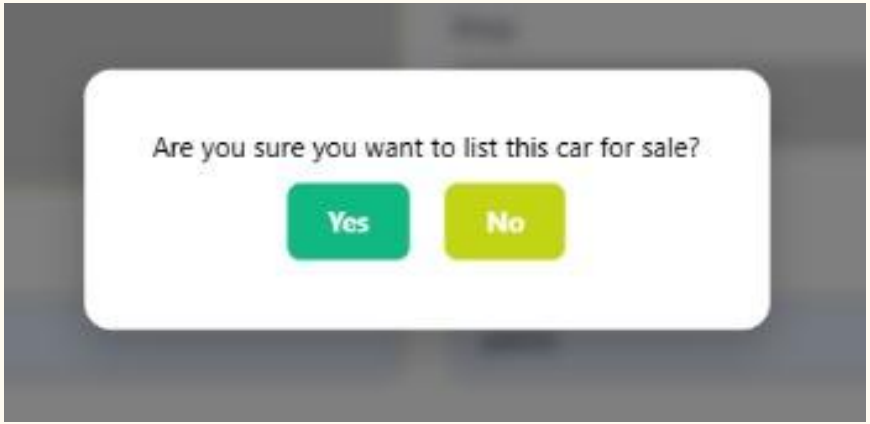
Important actions like "Buy Now," "Rent," and "Request Service" are prominently displayed and easy to find.

Feedback:

- Immediate system responses are provided, such as:
  - "Car listed successfully"
  - "Request sent Successfully"
  - "Are you sure to add this car?"


Car listed successfully!

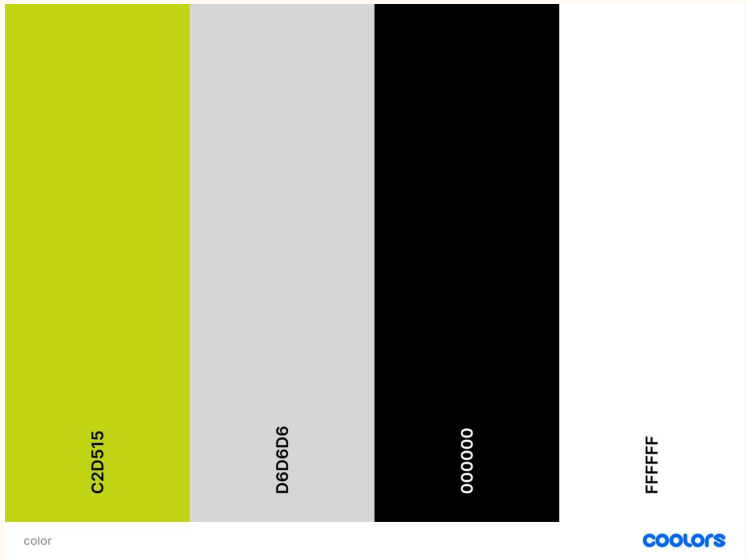

REQUEST SENT SUCCESSFULLY!


Are you sure you want to list this car for sale?
Yes
No

HCI Principles

Consistency:

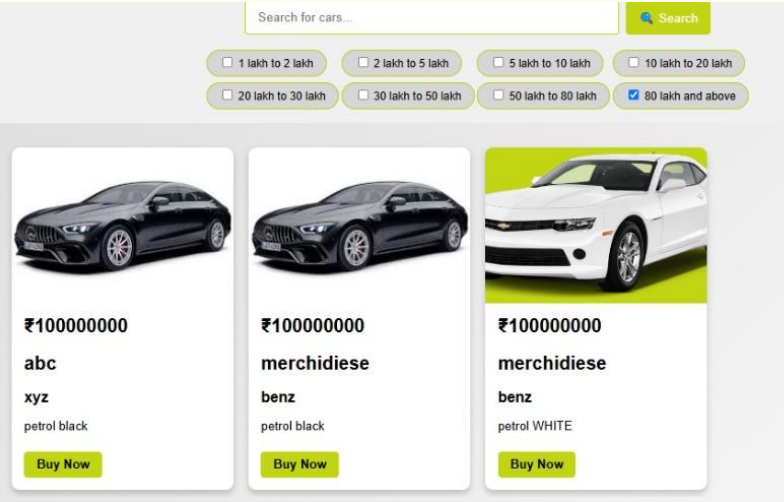
- Uniform layouts, fonts, colors, and button styles across all modules to ensure a cohesive user experience.



HCI Principles

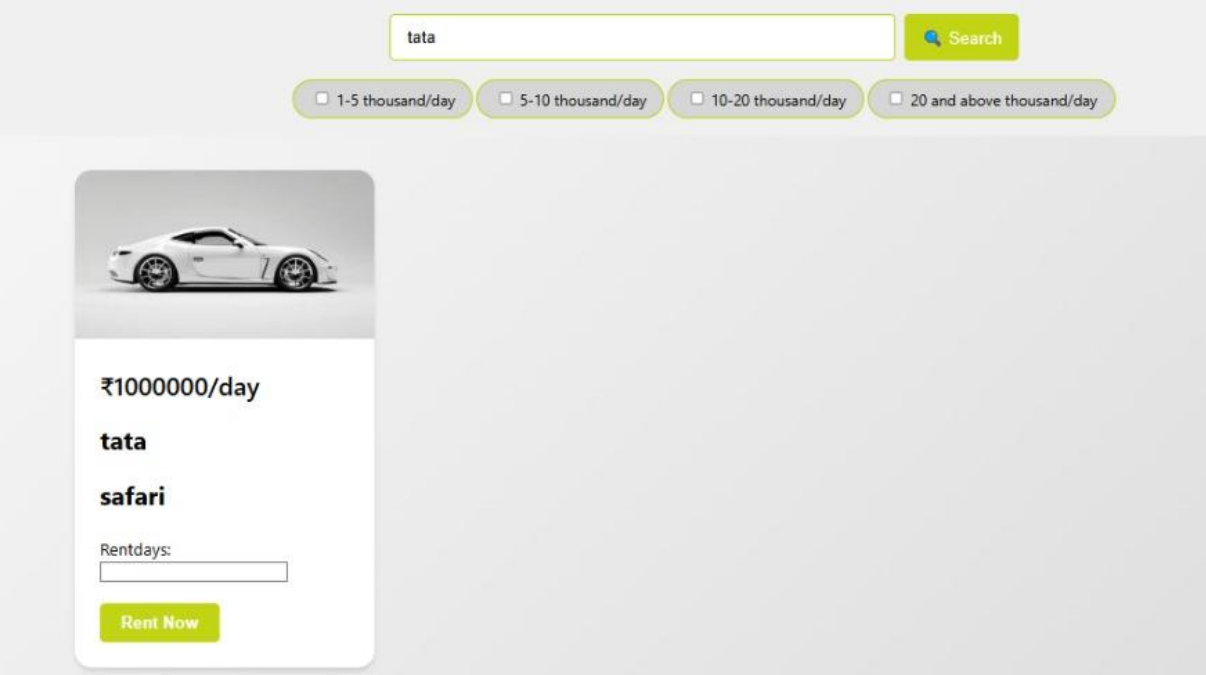
Affordances and Signifiers:

- Clear buttons, icons, and tooltips guide users on actionable elements.
- Hover effects and visual cues indicate interactive elements.



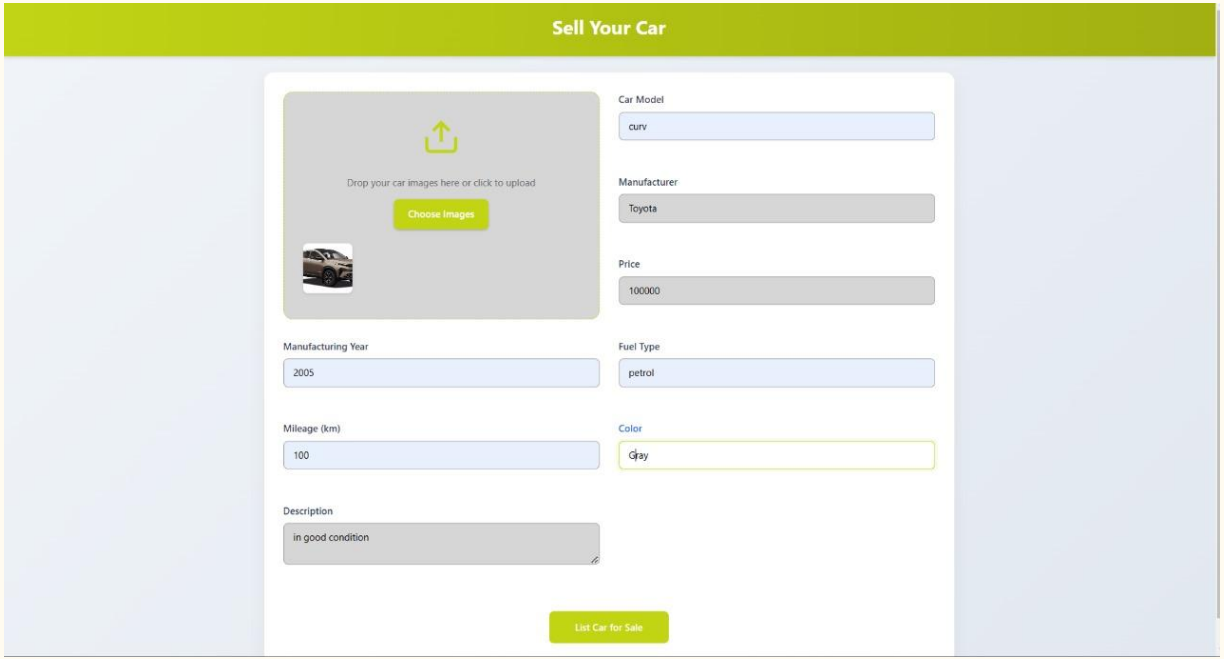
User can filter car option by Price.

HCI Principles



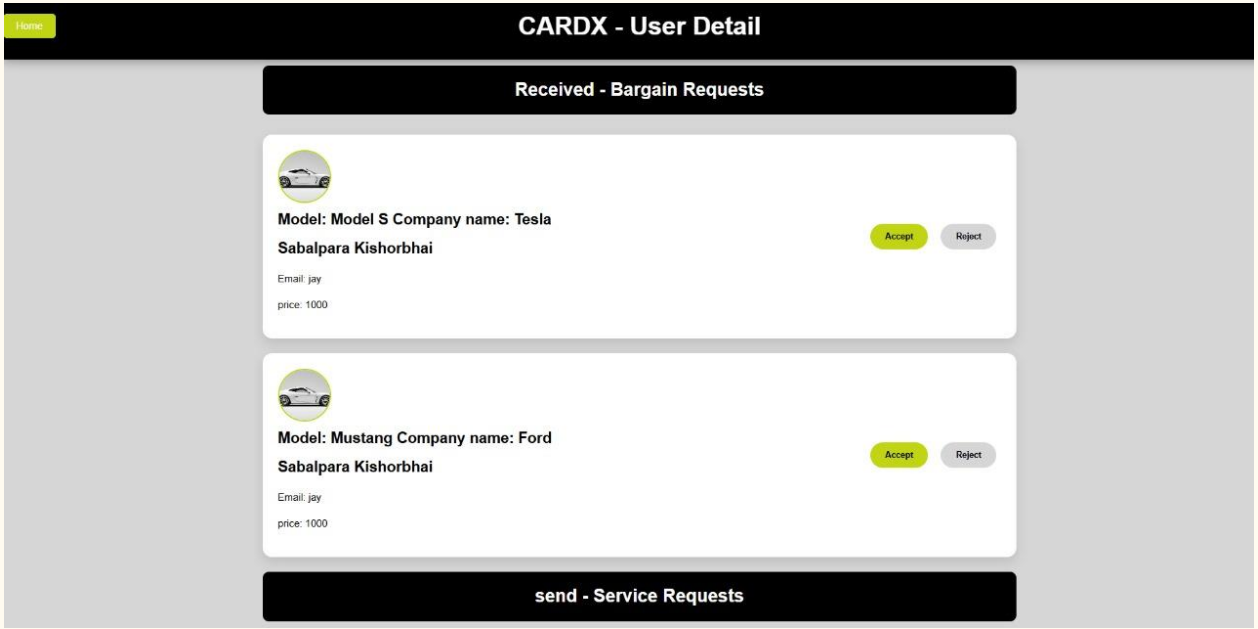
User’s can search car by name.

HCI Principles



Text Box turns Grey as the user fill it.

HCI Principles

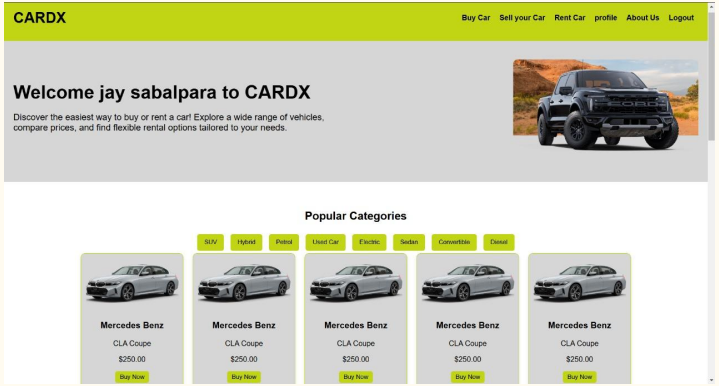


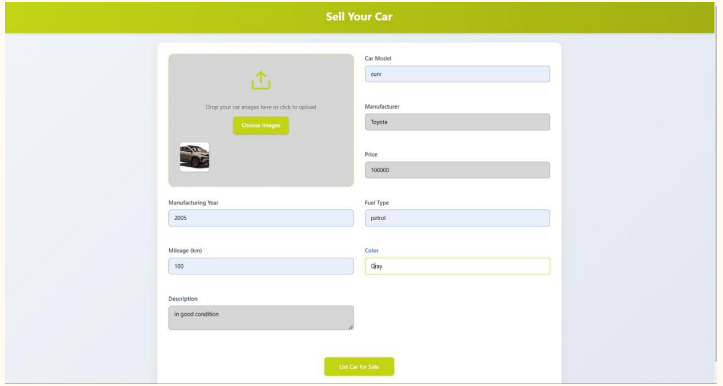
‘Accept’ and ‘Reject’ buttons can be differentiated using colors.

HCI Principles

Mapping:

- Logical Layout: The interface’s layout will map logically to user tasks.
- Sequential Processes: For tasks like renting a car or buying an old car, the mapping can follow a step-by-step process, clearly indicating the next actions required (e.g., selecting a car leads to options for payment or negotiation).





Procedure to sell your car

Development Process

Frontend Development:

- Designed user interfaces (UI) using HTML, CSS, and JavaScript to ensure a clean, responsive, and accessible layout.
- Incorporated HCI principles such as visibility, consistency, and feedback into the UI design.
- Used clear navigation menus, intuitive buttons, and visually appealing color schemes to enhance user experience.

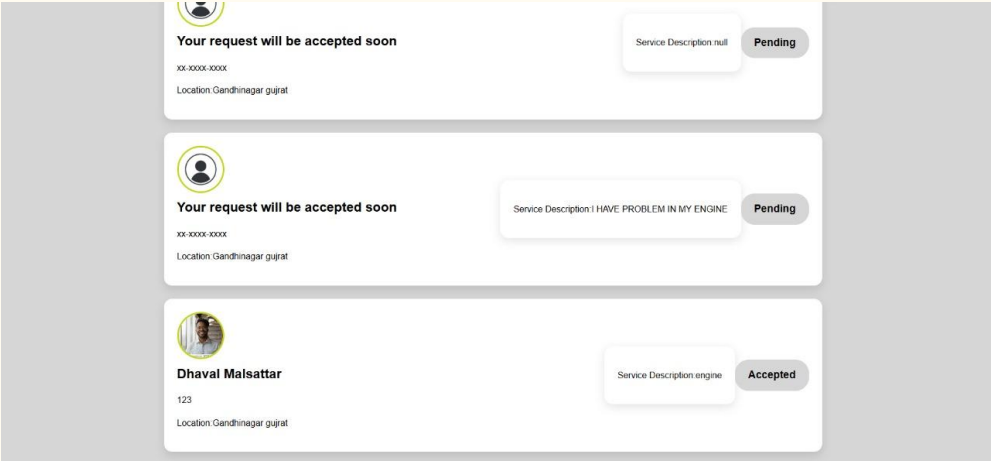
Backend Development:

- Developed the server-side functionality using technologies like Java Server Pages(JSP) and servlet.
- Implemented a database system using PostgreSQL to manage car listings, user accounts, and transaction records.
- Ensured secure role-based access for customers, admins, and mechanics.

Development Process

Integration:

- Integrated the frontend and backend to enable seamless communication between user actions and database responses.
- Features like car addition, rental booking, service requests, and user authentication were fully integrated.



Conclusion

- The *Car Dealership Management System* is a comprehensive platform that addresses the challenges faced by admins, customers, and mechanics in the automotive industry.
- By applying HCI principles, the system delivers a user-centered design, ensuring intuitive workflows, seamless interactions, and accessibility for all users.
- Features such as streamlined transactions, efficient service management, and feedback mechanisms enhance usability, transparency, and customer satisfaction.
- The project provides a robust solution that meets current dealership needs while remaining adaptable to future market demands, fostering innovation and a competitive edge.
- Ultimately, this system creates a foundation for improving operational efficiency and delivering exceptional user experiences, making car dealership interactions more engaging and efficient.