

PROJECT REPORT

aSk Ren (Car Rental Platform)

Submitted by:

Kushagra Chaudhary (12317517)

Shubh Sahu (12320996)

Alok Kumar (12319854)

Degree: B.Tech. Computer Science and Engineering

Trainer: Dr. Siddardha Dasari

University: Lovely Professional University

ACKNOWLEDGEMENT

We express our sincere gratitude to our guide Dr. Siddardha Dasari for continuous support, guidance, and encouragement throughout the development of this project. We also thank Lovely Professional University for providing the infrastructure and academic environment necessary for the successful completion of this work.

TABLE OF CONTENTS

1. [Executive Summary](#)

2. [Introduction](#)

3. [Project Overview](#)

4. [System Analysis](#)

5. [System Architecture & Design](#)

6. [Database Design](#)

7. [Data Flow Diagrams \(DFD\)](#)

8. [Technology Stack](#)

9. [Implementation Plan](#)

10. [System Demonstration / Key Screenshots](#)

11. [Development Team Introduction](#)

12. [Advantages](#)

13. [Future Enhancements](#)

14. [Conclusion](#)

1. Executive Summary

aSk Ren is a comprehensive full-stack digital platform designed to modernize vehicle rental processes. By leveraging the Django framework and MySQL, the project aims to replace manual record-keeping with an automated, secure, and scalable system. The primary objective is to facilitate seamless interactions between car owners and customers through a centralized administrative approval workflow. Expected outcomes include improved transparency, reduced manual errors, and a robust foundation for future commercial deployment.

2. Introduction

With the rapid growth of digital platforms, transportation services have evolved toward online ecosystems. The **aSk Ren** platform aims to digitize conventional rental processes by providing a secure, scalable, and user-friendly system. The application supports three primary roles: Customer, Owner, and Administrator. Customers can browse and book vehicles, owners can manage listings, and administrators monitor and approve activities.

3. Project Overview

3.1 Business Problem Statement

Traditional car rental services frequently depend on manual logs and physical verifications, leading to operational inefficiencies and data inconsistencies. The lack of a structured onboarding mechanism for car owners and transparent approval processes limits growth and trust.

3.2 Project Objectives

- Digitize the conventional vehicle rental ecosystem through a unified platform.
- Implement a secure, role-based access control system (Customer, Owner, Administrator).
- Enable real-time tracking of vehicle availability and booking status.

- Provide an administrative dashboard for monitoring and approving listings.

3.3 Scope (In-Scope)

In-Scope:

- Full-stack web application development using Django MVT.
- Relational database management with MySQL.
- User authentication and role-based permissions.
- Payment integration and review mechanisms.

3.4 Success Criteria

Successful execution of the user registration to payment recording workflow and stable performance under moderate concurrent loads.

4. System Analysis

4.1 Existing System

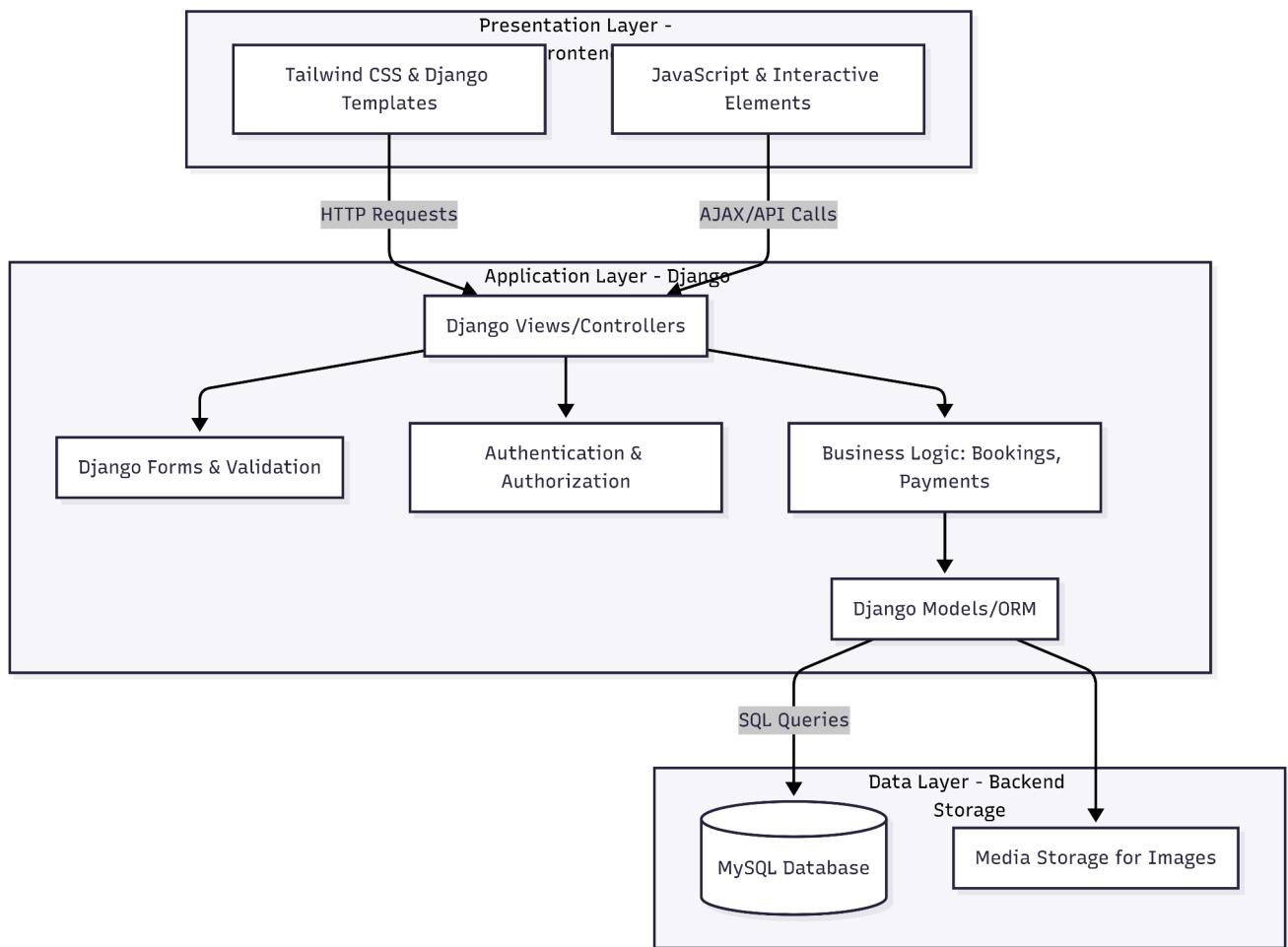
Traditional rental businesses rely on manual records and physical verification. This leads to inefficiencies, errors, and lack of transparency. Customer data is often isolated in localized spreadsheets, causing administrative overhead during audits.

4.2 Proposed System

The proposed web-based system, **aSk Ren**, automates booking validation, maintains real-time availability, enforces role-based permissions, and stores data securely using relational database management. Features such as dashboard analytics and automated notifications significantly reduce the manual workload for managers.

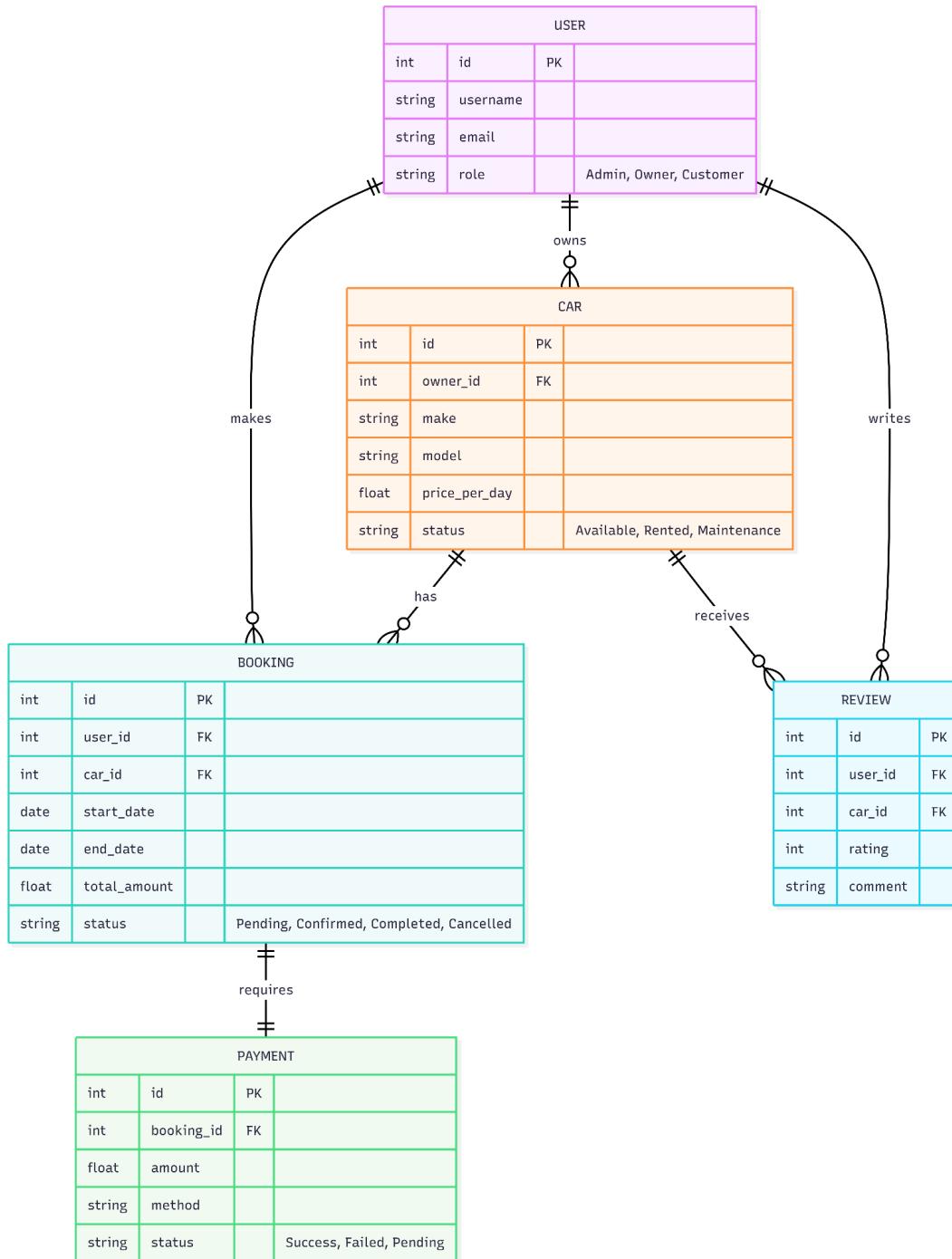
5. System Architecture & Design

The platform utilizes a modular three-tier architecture: the Presentation Layer (Frontend), the Application Layer (Backend), and the Database Layer (Storage). This ensures separation of concerns and facilitates independent scaling.



6. Database Design

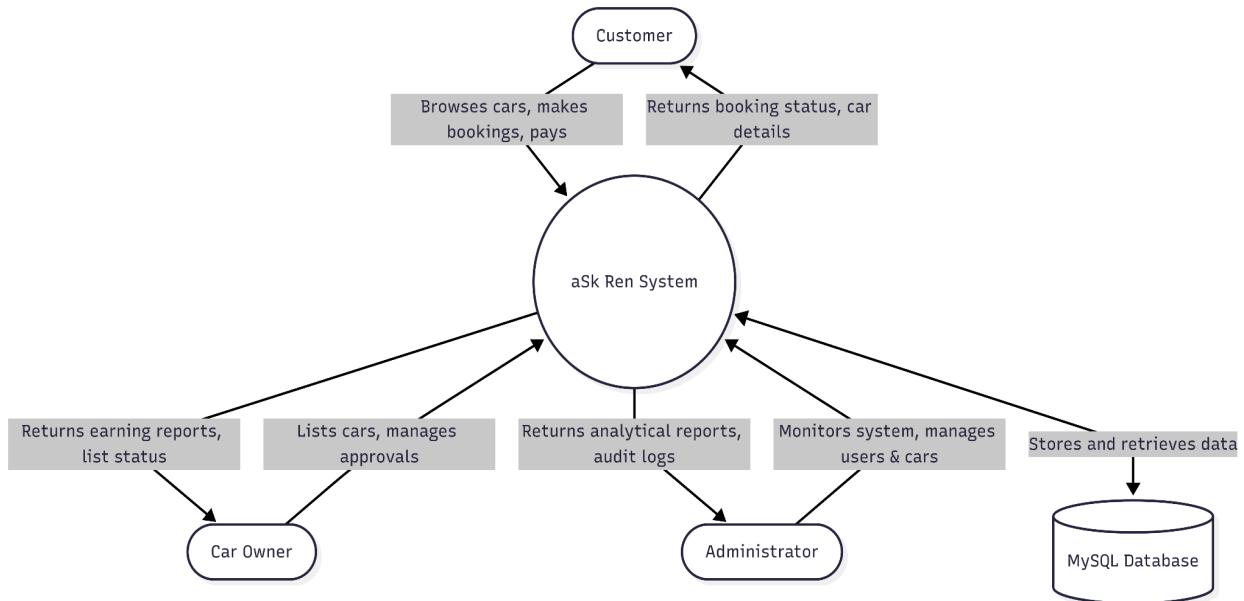
The database schema ensures referential integrity using primary and foreign keys. Relationships define interactions between users, cars, bookings, reviews, and payments.



7. Data Flow Diagrams (DFD)

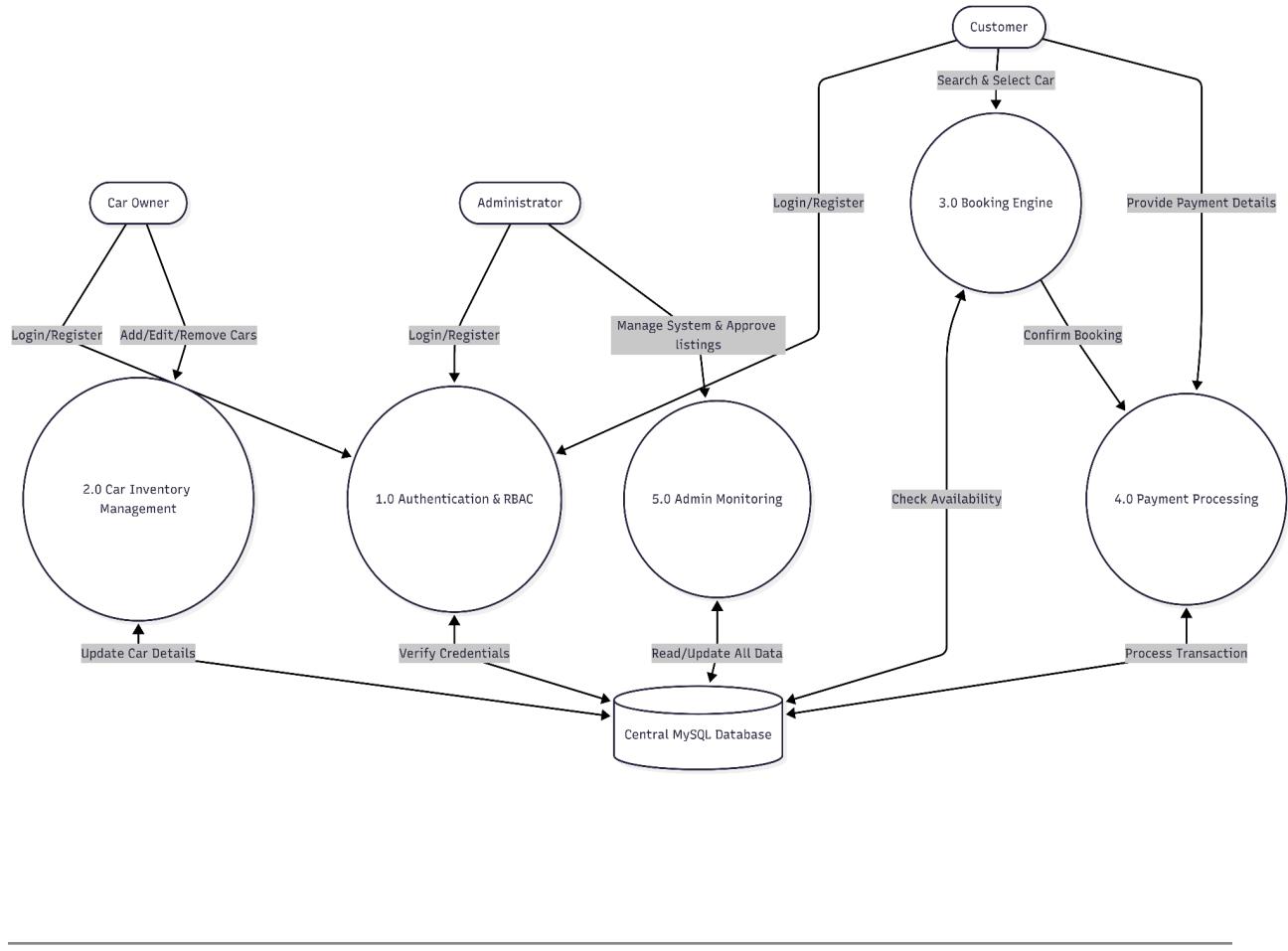
7.1 DFD Level 0 (Context Diagram)

The Context Diagram shows the interaction between the **aSk Ren** system and external entities like Users and Admins.



7.2 DFD Level 1

Level 1 DFD breaks down the system into major processes such as Authentication, Car Management, Booking, Payment Processing, and Admin Control.



8. Technology Stack

- **Frontend:** Tailwind CSS for responsive UI design, accompanied by HTML5 and vanilla JavaScript.
- **Backend:** Django (Python) for business logic, view orchestration, and the booking engine.
- **Database:** MySQL for robust relational storage and referential integrity.
- **Security & Compliance:** The system enforces role-based access control (RBAC) to ensure that sensitive operations like listing approval are restricted to administrators. Django's built-in authentication system provides robust protection against common web vulnerabilities (XSS, CSRF, SQL Injection).

9. Implementation Plan

9.1 Project Phases & Timeline

- **Phase 1: Requirements Gathering & System Analysis** Documenting project scope, analyzing the current state, and defining system architecture.
- **Phase 2: Database Modeling & Backend Development** Establishing Django apps (accounts, bookings, cars, payments), configuring MySQL schema, and implementing business logic.
- **Phase 3: Frontend Integration & Testing** Translating wireframes to Tailwind templates, integrating Django views, and conducting comprehensive integration testing.

9.2 Risk Assessment & Mitigation

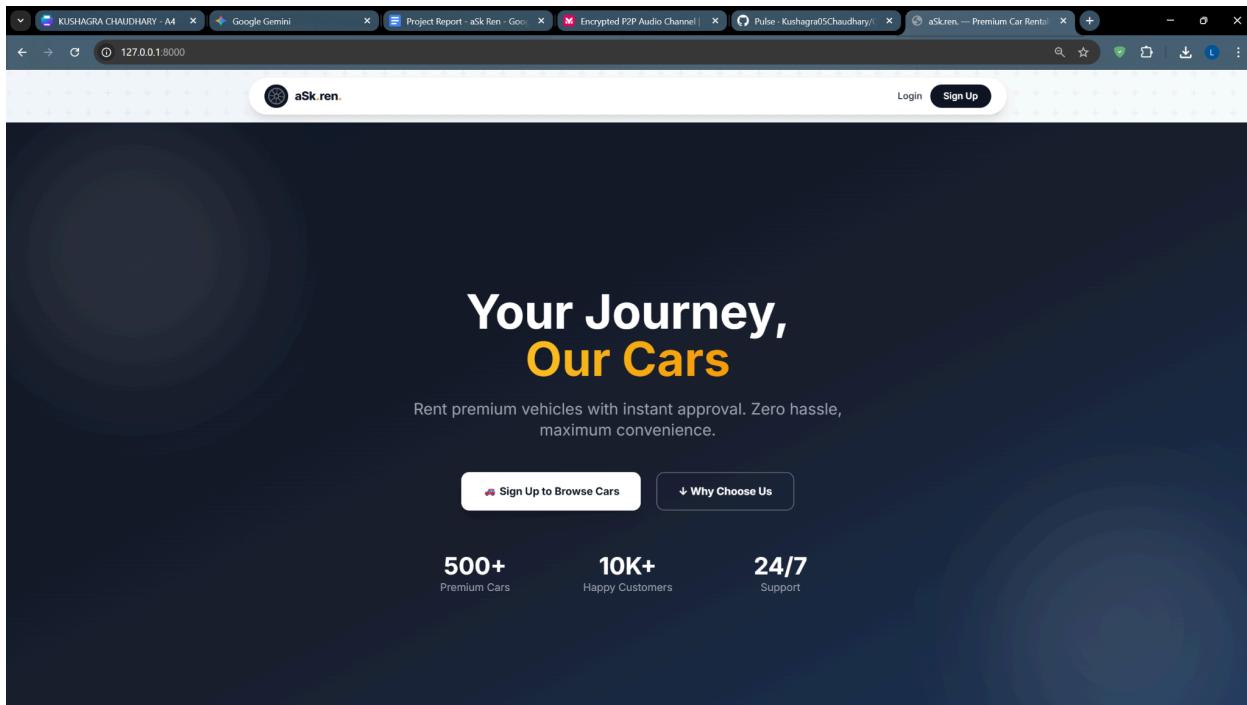
- **Risk:** High concurrent traffic overwhelming the database.
 - **Mitigation:** Optimized database queries, usage of Django's select_related/prefetch_related, and incorporating caching mechanisms for static/semi-static data.
-

10. System Demonstration / Key Screenshots

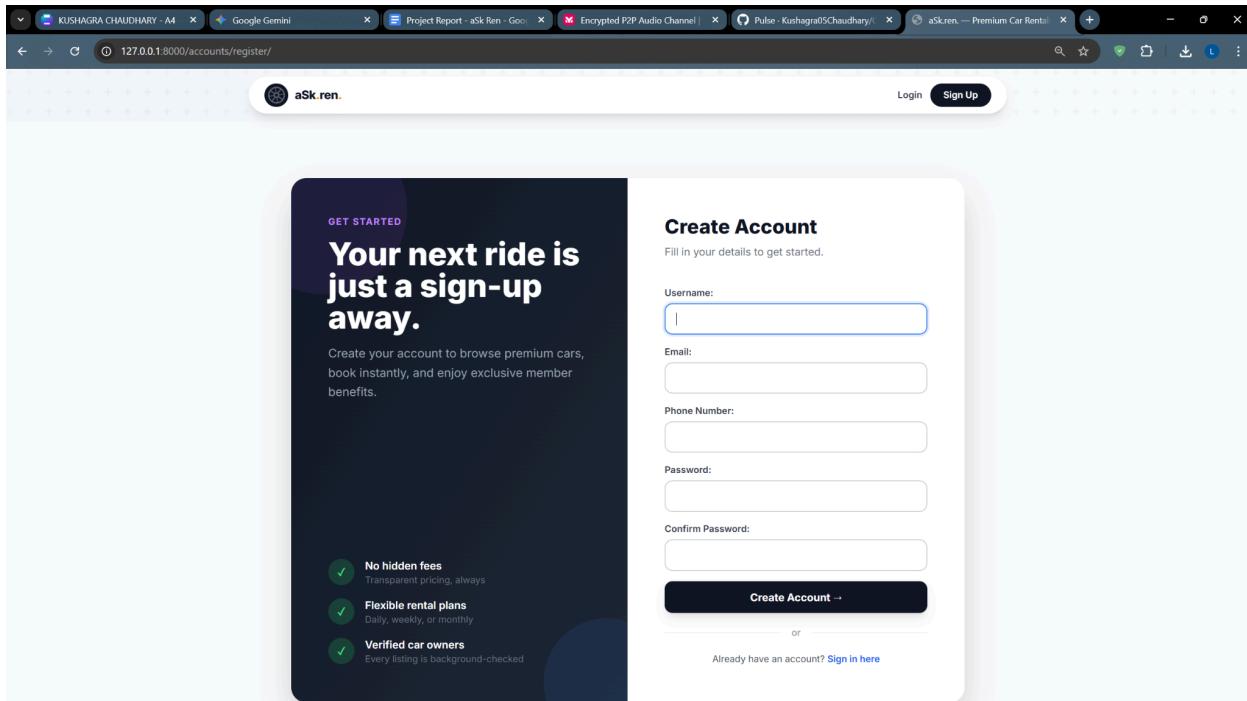
10.1 Login and Registration Page

The application includes the following key user interface screens:

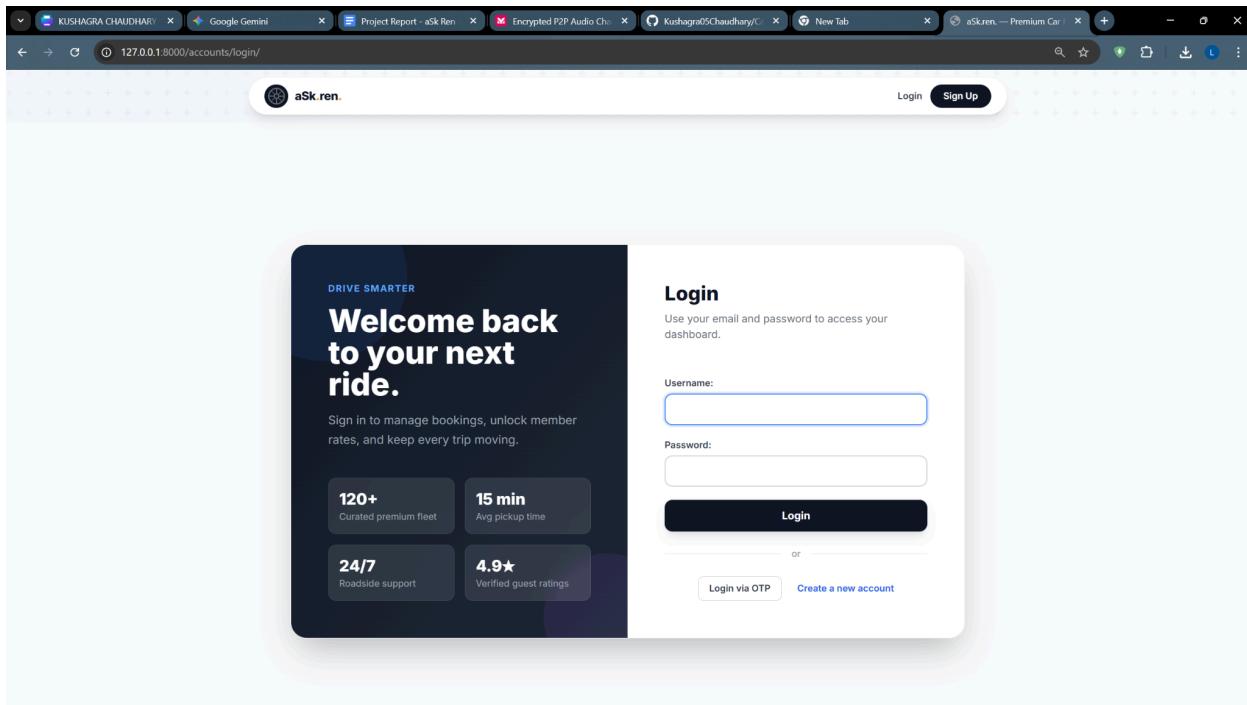
- **Landing Page:** The initial screen users encounter, typically providing an overview of the application and its core features, often with calls to action like 'Register' or 'Login'.



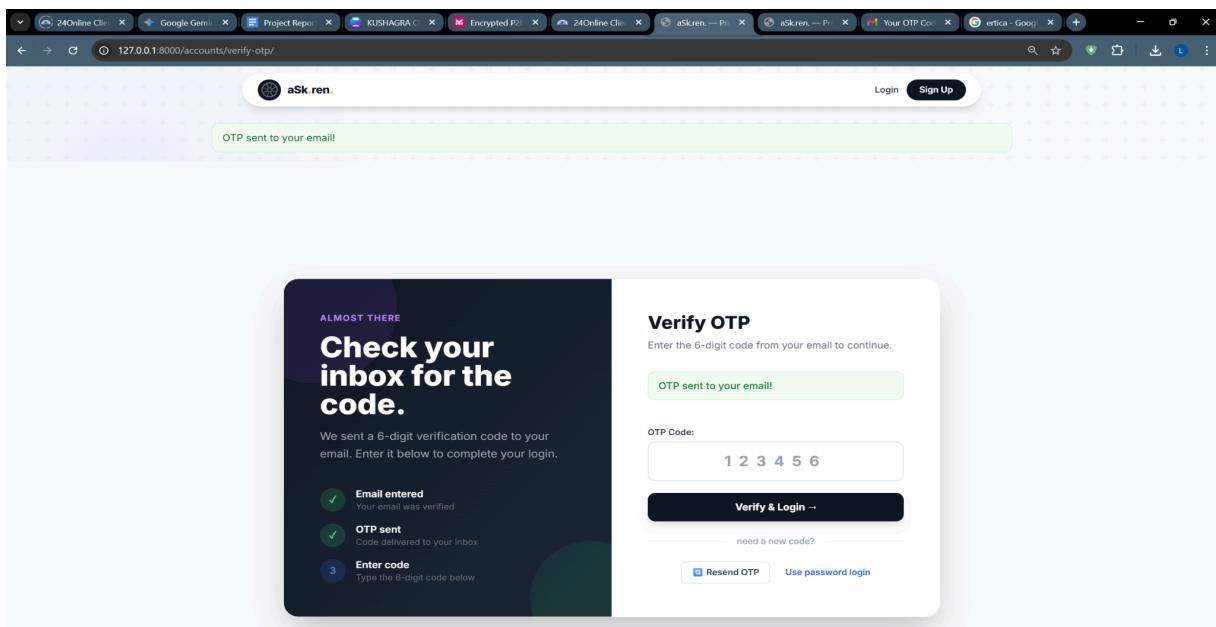
- **Registration Page:** Allows new users to create an account by providing necessary details (e.g., name, email, password, or mobile number).



- **Login Page:** Provides existing users with a mechanism to access their accounts. This page offers users the option to log in using either traditional credentials (username/password) or a One-Time Password (OTP).



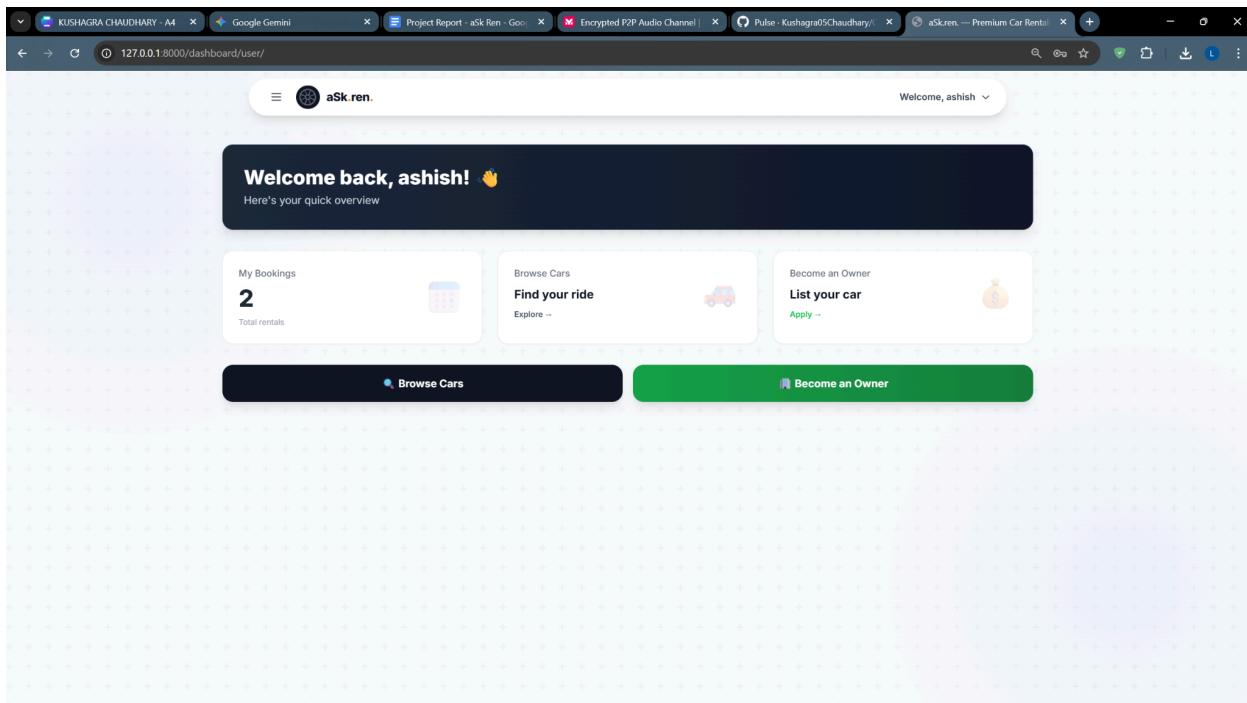
- **OTP Verification Page:** This page is a secure verification step after 'Login with OTP', prompting the user to enter the unique One-Time Password sent to their device to complete the login process.



10.2 User

1. User Dashboard

The logged-in user's central dashboard acts as a landing page, offering an immediate, personalized activity overview. Key features include: a summary of current, upcoming, or past bookings; quick links like "Browse Cars"; personalized recommendations; profile, payment, and notification management; and a display of active promotions.



2. Browse Cars

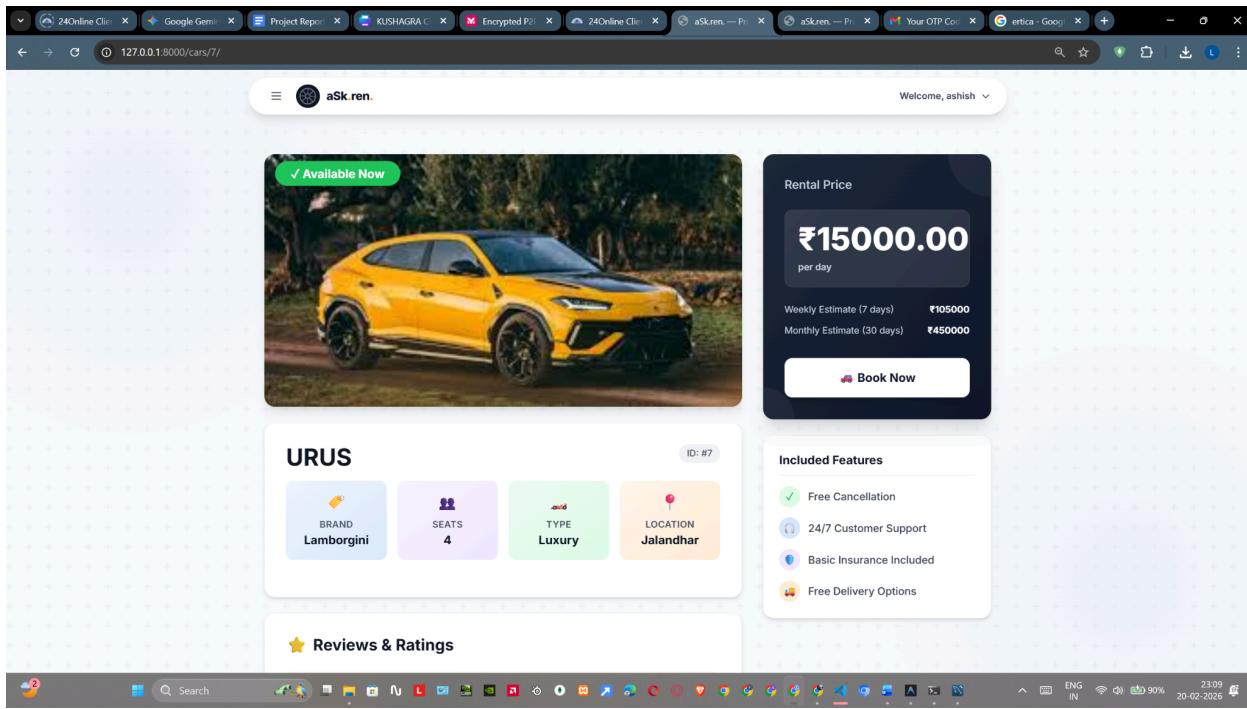
This screen displays the comprehensive catalog of rental vehicles. It features efficient search and filtering, allowing users to: view car listings (image, make, model, price); use robust filters (type, transmission, efficiency, capacity, price range); sort results (relevance, price, rating); and input dates/locations for real-time availability checks.

The screenshot shows a web browser window with multiple tabs open. The main content is a dark-themed page titled "Available Vehicles" from "aSk.ren." It features a search bar and a "Filter Cars" overlay. The filter allows users to search by car name, select car type (All Types), choose location (All Locations), specify min seats (Any), sort by newest first, and set a max price of ₹30000. Below the filter, a message says "6 cars found". A grid of six car cards is displayed:

- Q7** (SUV) - Available, ₹12600.00 per day
- VELLFIRE** (Luxury) - Available, ₹8000.00 per day
- Baleno** (Hatchback) - Available, ₹2400.00 per day
- 911** (Coupe) - Available, ₹12000.00 per day
- PHANTOM** (Luxury) - Available, ₹30000.00 per day
- URUS** (Luxury) - Available, ₹15000.00 per day

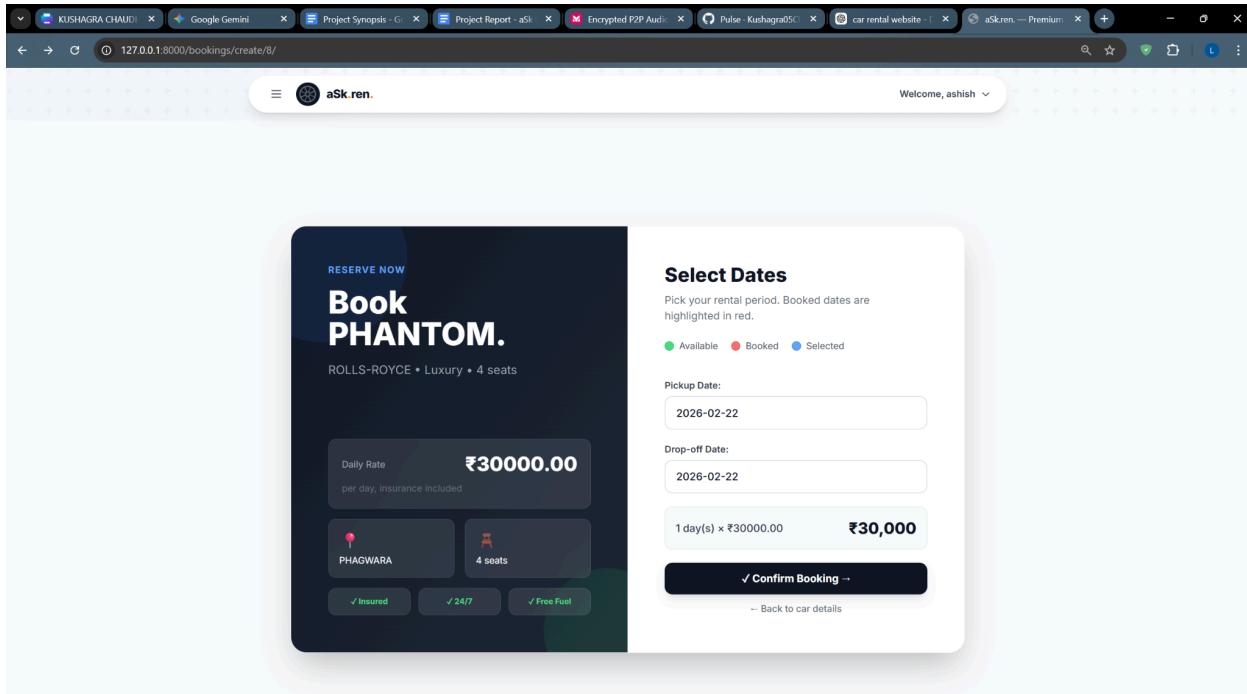
3. View Detail

This final commitment page, reached after selecting a car from "Browse Cars," shows all necessary vehicle information: high-resolution photos, a features/specifications list, a detailed pricing breakdown (daily rate, taxes, insurance, fees), and rental terms. The "Book Now" button starts the booking process.



4. Book Now

This screen captures rental logistics for the transactional workflow, prompting the user to: select precise pickup and drop-off dates/times and locations (including one-way options) and optionally choose add-ons (child seats, GPS, insurance). The user then proceeds to payment confirmation.



The screenshot shows a web browser window with multiple tabs open. The active tab displays a booking confirmation for a Rolls-Royce Phantom. The page title is "Confirm Your Booking". It features a large image of a pinkish-purple Rolls-Royce Phantom. The vehicle details are listed as "PHANTOM" and "ROLLS-ROYCE • Luxury • 4 seats". The booking location is "PHAGWARA" and the rate is "₹30000.00/day". The booking dates are "Feb 22" (Check-in) and "Feb 22" (Check-out), with a total duration of "1 days". To the right, there is a "Price Summary" section showing "Base Fare ₹30000.00", "Days: 1 x ₹30000.00", and "GST (18%) ₹5400.0000", resulting in a "Total Amount ₹30000.00". A "Pay ₹30000.00" button is present. A "Booking Dates" section also includes a note about security: "Secured by Razorpay" with "✓ SSL Encrypted", "✓ PCI Compliant", and "✓ 100% Secure". At the bottom, there is a "Terms & Conditions" link.

This screenshot shows the same car rental booking page, but with a "Test Mode" indicator in the top right corner. The payment interface is displayed in a modal window. The "Payment Options" section shows "UPI QR" with a QR code and instructions to "Scan the QR using any UPI App". Below it, "Payment Options" include "UPI", "Cards", "EMI", "Netbanking", "Wallet", and "Pay Later". A "Price Summary" box on the left shows "₹30,000" and "Using as +91 95062 89312". The "Terms & Conditions" section at the bottom contains three checked checkboxes: "I agree to the Terms of Service and Privacy Policy", "I understand the Cancellation Policy", and "I want to add optional insurance (₹30500)".

5. Confirm Booking and Pay

This final stage requires the user to review the complete transaction summary (car, dates, locations, total cost including taxes/fees) and accept the rental agreement. Payment is processed securely via a third-party gateway (Razor Pay) for credit/debit cards, net banking, etc., ensuring PCI compliance. Successful payment finalizes the booking, sending a confirmation email and updating the User Dashboard.

The screenshot shows the 'Your Booking' page for a booking ID #14. At the top, it displays the booking status as 'Confirmed' and 'Payment: Paid'. Below this, the 'Car Information' section shows a pink Rolls-Royce Phantom with the details: 'ROLLS-ROYCE • Luxury', 'PHAGWARA', '4 Seats', and a daily rate of '₹30000.00/day'. The 'Booking Status' section lists the following events: 'Booking Created' (Feb 22, 2026 - 09:29 AM), 'Payment Paid' (Feb 22, 2026 - 09:29 AM), 'Approved by Owner' (Feb 22, 2026 - 09:30 AM), and 'Active Rental' (Feb 22 - Feb 22, 2026). A green box indicates the booking is confirmed with the message: '✓ Confirmed Your booking is confirmed! Pickup on Feb 22, 2026.' A 'View All Bookings' button is also present.

The screenshot shows the 'Booking Details' and 'Payment Information' sections. In the 'Booking Details' section, the check-in date is 'Feb 22, 2026' (Sunday) and the check-out date is 'Feb 22, 2026' (Sunday). The 'Rental Days' are '1 days' and the 'Total Amount' is '₹30000.00'. In the 'Payment Information' section, the payment method is 'razorpay' and the payment status is 'Completed'. It shows the transaction ID 'pay_538tAU32NgJjoo' and the order ID 'order_538sJH21EGFSP2'. The payment date is 'Feb 22, 2026 - 09:29 AM'. A blue 'Download Invoice' button is at the bottom. The right side of the screen shows the same 'Booking Status' as the previous screenshot.

Welcome, ashish

My Bookings

View and manage all your car rental reservations

PHANTOM
PHAGWARA
Feb. 22, 2026 to Feb. 22, 2026
Total: ₹30000.00

PHANTOM
PHAGWARA
Feb. 22, 2026 to Feb. 22, 2026
Total: ₹30000.00

PHANTOM
PHAGWARA
Feb. 22, 2026 to Feb. 22, 2026

Welcome, ashish

My Transactions

Your complete payment history

Total Spent: ₹119400 (All completed payments)

Refunded: ₹69800 (refund)

Net Spent: ₹49600 (After refund deductions)

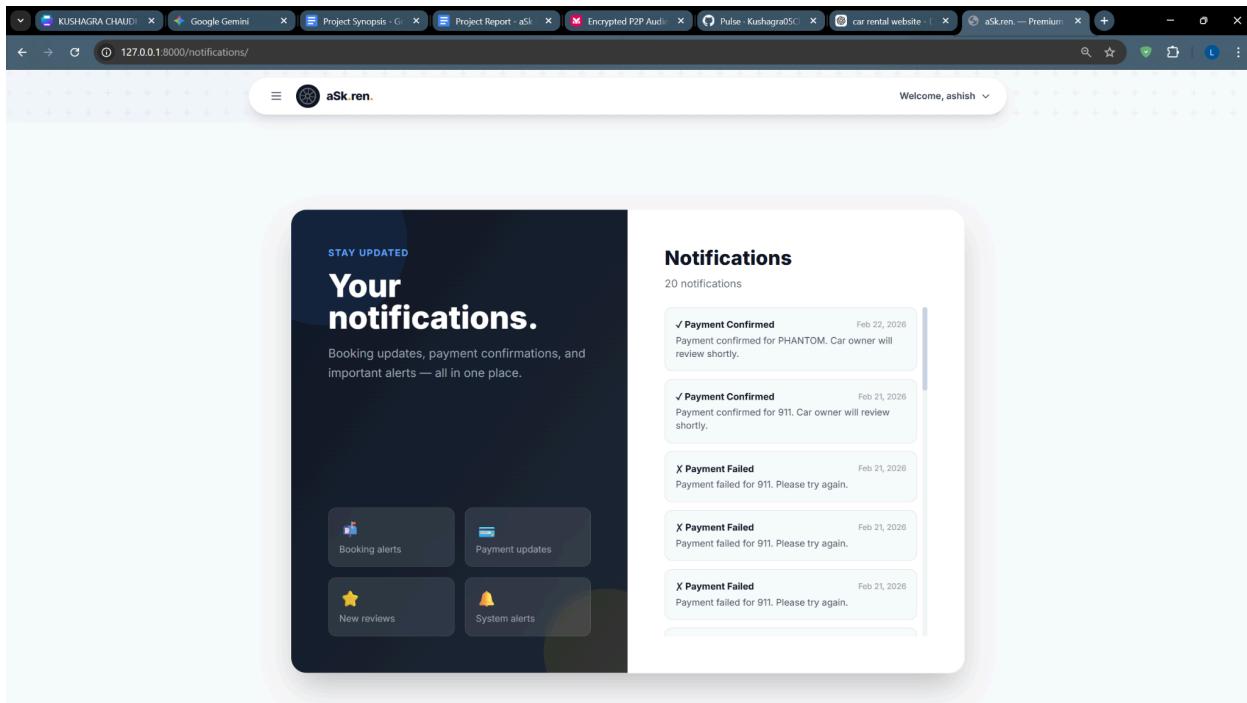
COMPLETED **PENDING** **REFUNDED**

Filter

PHANTOM
ROLLS-ROYCE - Luxury
22 Feb 2026 – 22 Feb 2026
TX ID: pay_538tAU032Pg17oo Date: 22 Feb 2026, 09:29
Amount: ₹30000 Completed Invoice

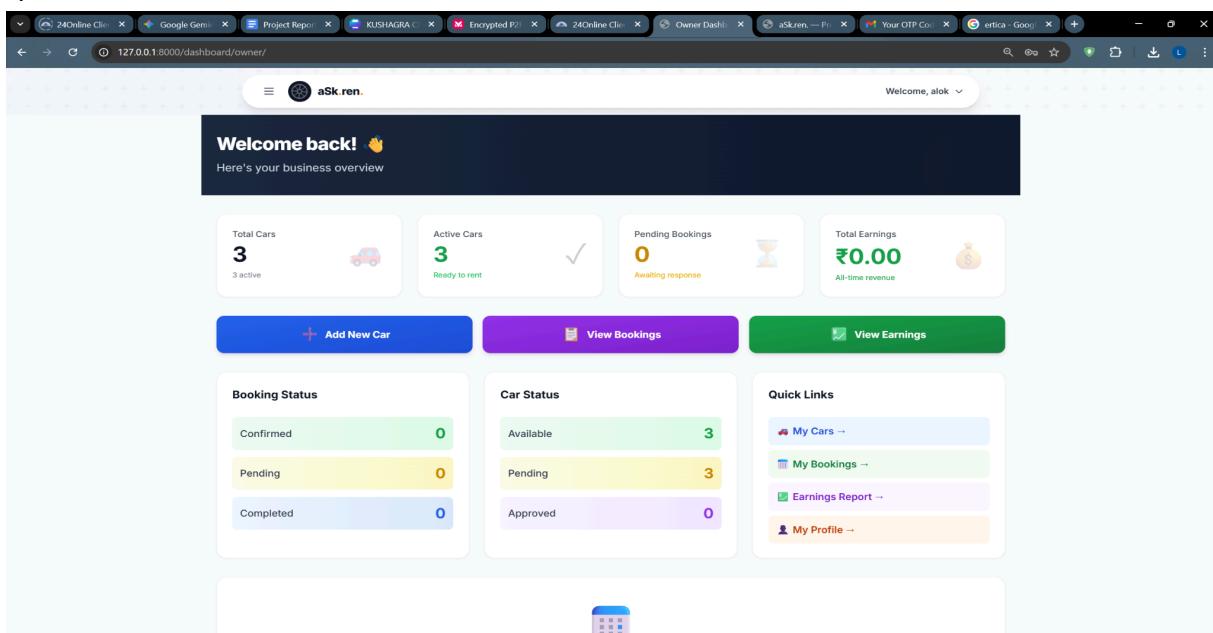
911
PORCHE - Coupe
21 Feb 2026 – 21 Feb 2026
TX ID: pay_511QoHfBLLlIA Date: 21 Feb 2026, 07:25
Amount: ₹12000 Completed Invoice

Q7
Audi - SUV
21 Feb 2026 – 21 Feb 2026
TX ID: pay_511QoHfBLLlIA Date: 21 Feb 2026, 07:25
Amount: ₹12600 Completed Invoice



10.3 Owner

The platform's owner-side functionality offers a full suite of car-sharing business management tools. The central **Owner Dashboard** provides a high-level overview of key KPIs: total cars listed, recent bookings, upcoming reservations, earnings, and car availability, enabling quick operational assessment.



- **My Cars Management Page:**
 - Add New Cars: List new vehicles with photos, specifications, rental rates, and pickup/drop-off locations.
 - Manage Car Availability: Use a calendar to block out dates for unavailability and set operational hours.
 - Edit and Update Listings: Modify car details, pricing, and photos in real-time.

My Cars
Manage your vehicle listings

Total Cars: 3 Active: 3 Pending: 0 Approved: 3

Search Cars: Search by name... Filter: All Status

Car Model	Brand	Type	Location	Seats	Status	Price	Action
911	PORCHE	Coupe	CHANDIGARH	2 seats	Available	₹12000.00	Approved
PHANTOM	ROLLS-ROYCE	Luxury	PHAGWARA	4 seats	Available	₹20000.00	Approved
URUS	Lamborgini	Luxury	Jalandhar	4 seats	Available	₹15000.00	Approved

LIST YOUR VEHICLE
Start earning with your car.
Add your car to our platform and start receiving bookings from verified renters.

Quick Approval: Admin reviews within 24 hours
Full Insurance: Your car is protected during rentals
Set Your Price: You control the daily rental rate
Verified Renters: All users are verified before booking

Add New Car
Fill in the details of your vehicle.

Car Name *	Brand *
PHANTOM	ROLLS-ROYCE
Car Type *	Location *
Luxury	PHAGWARA
Price/Day (₹) *	Seats *
30000	4
Car Image (JPG/PNG, Max 5MB)	
<input type="file" value="phantom.jpg"/>	

Add Car → **Cancel**

Note: Your car will be pending admin approval before it appears on the platform.

- **Booking Management Page:**

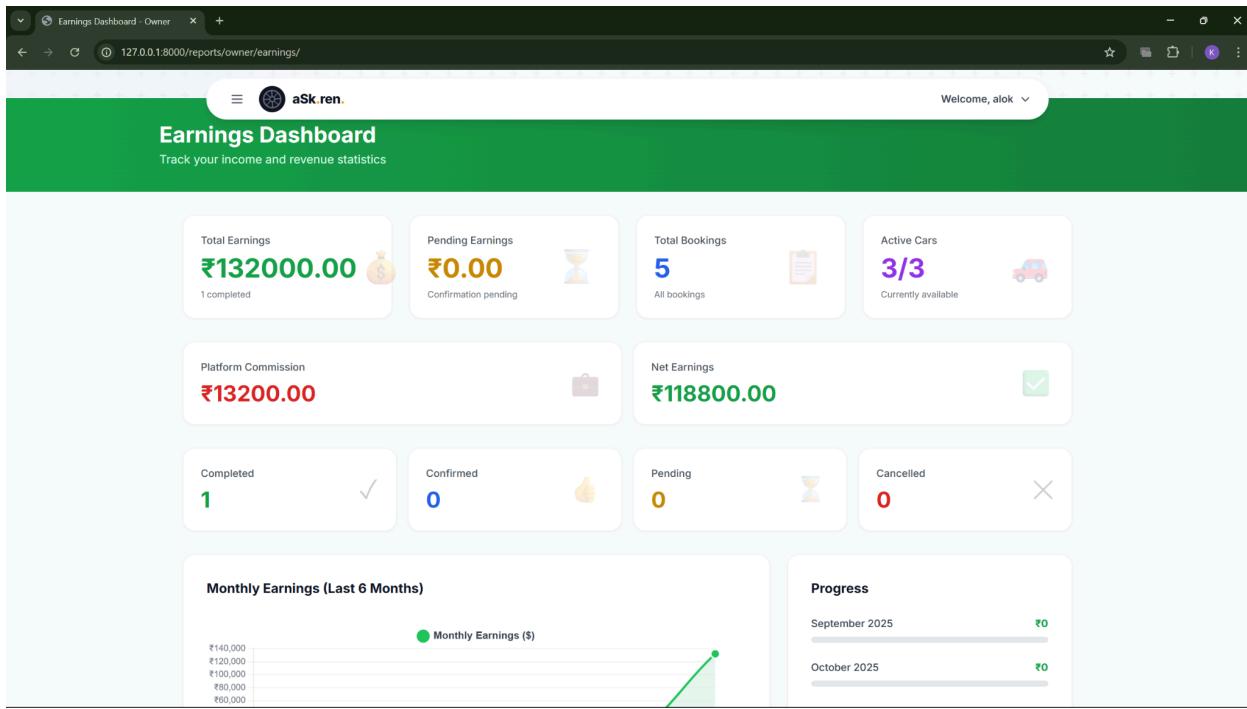
- Approval: Accept a request to confirm the reservation and notify the renter.
- Rejection: Decline a request (with an optional explanation) and inform the renter.
- Viewing Details: Access full booking information, including the rental period, cost, car, and renter profile/history.

The screenshot shows a web-based booking management interface. At the top, there are four status summary boxes: Total Bookings (1), Pending (1), Confirmed (0), and Completed (0). Below this is a filter section labeled "Filter by Status" with dropdowns for "All" and "Filter". The main table lists a single booking entry:

Car	Renter	Rental Period	Amount	Status	Actions
URUS Luxury	ashish kumarashish.dey@gmail.com	Feb 20 – Feb 23, 2026 3 days days	₹60000.00	PENDING	View Details

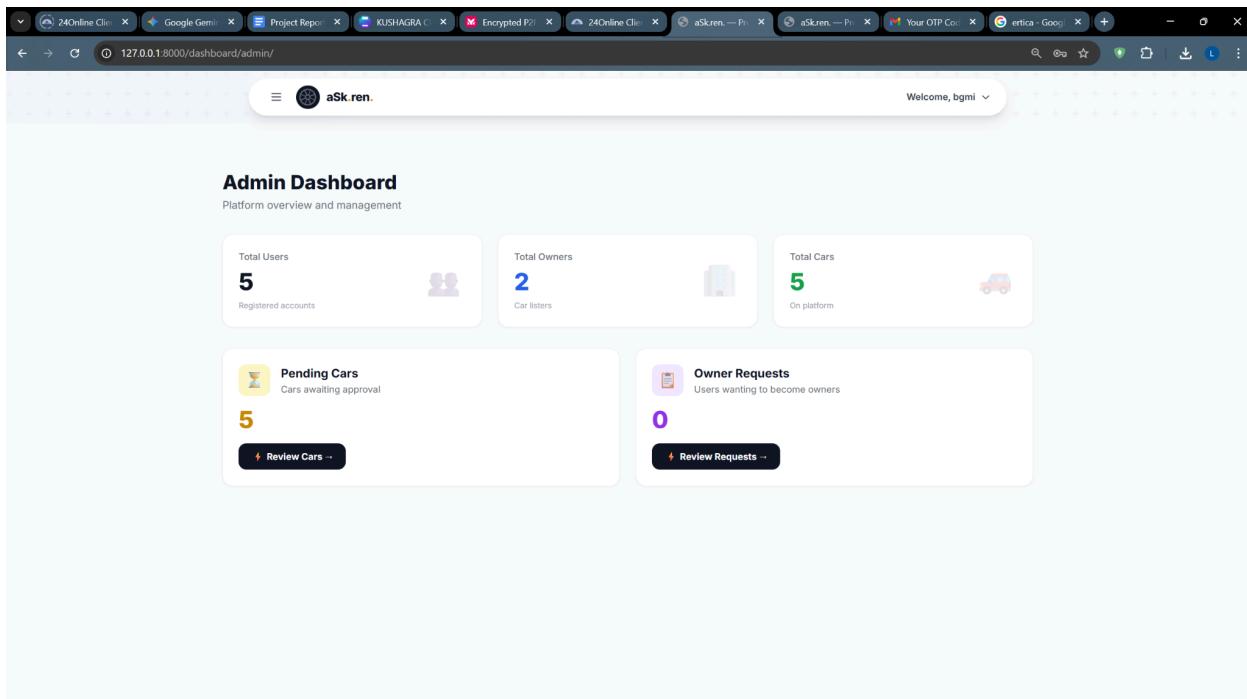
- **Earnings and Financial Reporting Page:**

- Transaction History:** See completed booking records, including gross earnings, platform fees, and net payout.
- Payout Tracking:** Monitor payment status (pending, processed, paid out) and review summaries.
- Financial Summaries:** Access customizable (weekly, monthly, annual) graphical and tabular earnings summaries.



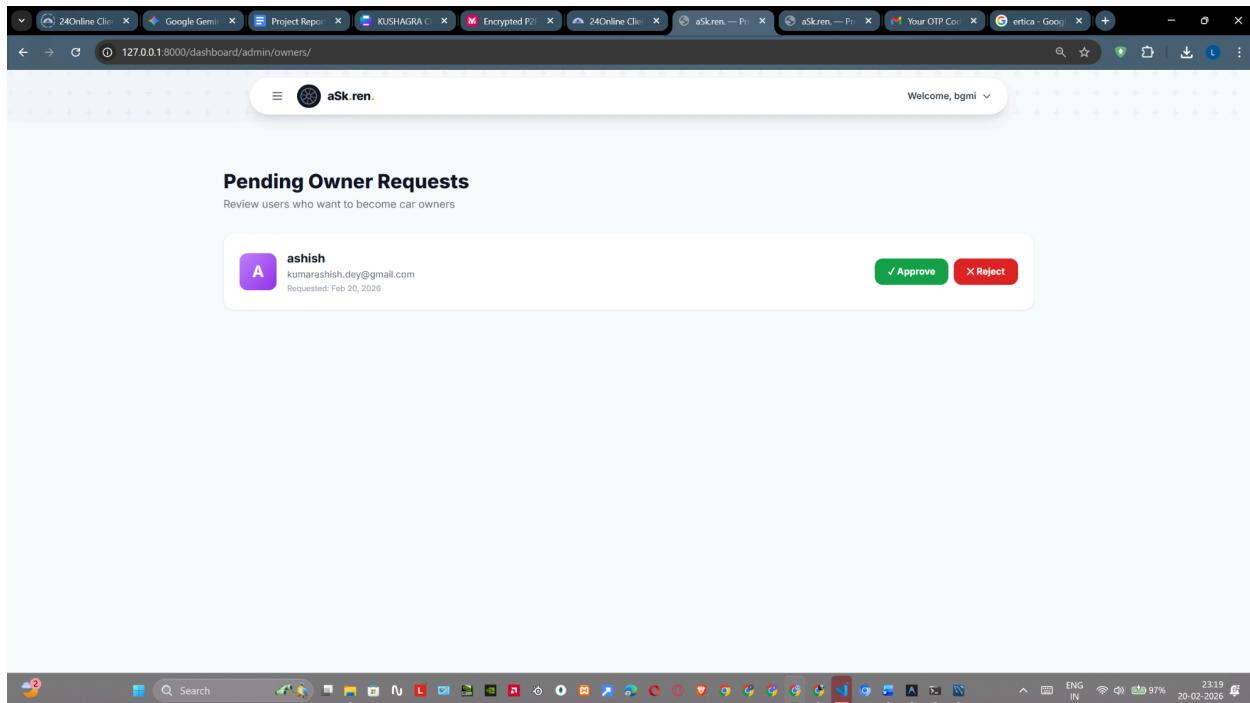
10.4 Admin

The Admin dashboard serves as the central control panel for the entire system, managing and overseeing a comprehensive set of critical functionalities essential for the platform's operation and integrity.



Key functionalities managed by the Admin dashboard include:

- **Owner Request Approval:** This essential module allows the admin to review and either approve or reject new car owner onboarding requests. Approval is contingent on meeting platform criteria and documentation, maintaining vehicle quality and trustworthiness.



- **User Management:** The dedicated admin user management page provides full control over all registered renters and owners, including searching, viewing profiles, monitoring activity, suspending/reactivating accounts, and managing roles/permissions, ensuring a safe and regulated platform.

User Management
Manage all users in the system

Total Users	Regular Users	Owners	Admins
10	3	2	5

Search by username, email, or name... All Roles Filter

USERNAME	EMAIL	NAME	ROLE	STATUS	JOINED	ACTIONS
sidhu	kushagra.chaudhary3605@gmail.com		User	✓ Active	Feb 20, 2026	Block Delete
admin	admin@test.com		Admin	✓ Active	Feb 20, 2026	Block Delete
bgmi			Admin	✓ Active	Feb 19, 2026	Block Delete
ashish	kumarashish.dey@gmail.com		User	✓ Active	Feb 19, 2026	Block Delete
kushagra	kush.c47007@gmail.com		Admin	✓ Active	Feb 18, 2026	Block Delete
leo	demon.d.leo1170013@gmail.com		Owner	✓ Active	Feb 18, 2026	Block Remove Owner Delete
alok	alok.work85@gmail.com		Owner	✓ Active	Feb 18, 2026	Block Remove Owner Delete
kush	kush.c47007@gmail.com		Admin	✓ Active	Feb 18, 2026	Block Delete

- Car Management:** Accessible through the 'All Car' page, this section manages the complete vehicle lifecycle on the platform: initial approval (submission review, verification, compliance), availability tracking (real-time monitoring to prevent double-booking), listing maintenance (editing details, photos, pricing, temporary delisting), and permanent vehicle removal (if standards are not met or upon owner request).

Pending Car Approvals
Review and approve or reject car listings

URUS Lamborghini • Luxury Owner: alok ₹15000.00 /day ✓ Approve X Reject	PHANTOM ROLLS-ROYCE • Luxury Owner: alok ₹30000.00 /day ✓ Approve X Reject	911 PORCHE • Coupe Owner: alok ₹12000.00 /day ✓ Approve X Reject
Baleno Maruti Suzuki • Hatchback Owner: leo ₹2400.00 /day ✓ Approve X Reject	VELLFIRE TOYOTA • Luxury Owner: leo ₹8000.00 /day ✓ Approve X Reject	

The screenshot shows the 'All Cars' dashboard with the following statistics:

- TOTAL:** 5
- APPROVED:** 5
- PENDING:** 0
- REJECTED:** 0
- AVAILABLE:** 5
- UNAVAILABLE:** 0

Search bar: Search by name, brand, location or owner...
 Filter buttons: All Statuses, All Availability, Filter

CAR	OWNER	LOCATION	PRICE/DAY	STATUS	AVAILABILITY	ADDED	ACTIONS
VELLFIRE TOYOTA - Luxury	leo demon.d.leo117013@gmail.com	HARDASPUR	₹8000.00	Approved	Available	20 Feb 2026	Unavailable Delete
Baleno Maruti Suzuki - Hatchback	leo demon.d.leo117013@gmail.com	Ludhiana	₹2400.00	Approved	Available	20 Feb 2026	Unavailable Delete
911 PORCHE - Coupe	alok alok.work85@gmail.com	CHANDIGARH	₹12000.00	Approved	Available	20 Feb 2026	Unavailable Delete
PHANTOM ROLLS-ROYCE - Luxury	alok alok.work85@gmail.com	PHAGWARA	₹30000.00	Approved	Available	20 Feb 2026	Unavailable Delete
URUS Lamborghini - Luxury	alok alok.work85@gmail.com	Jalandhar	₹15000.00	Approved	Available	20 Feb 2026	Unavailable Delete

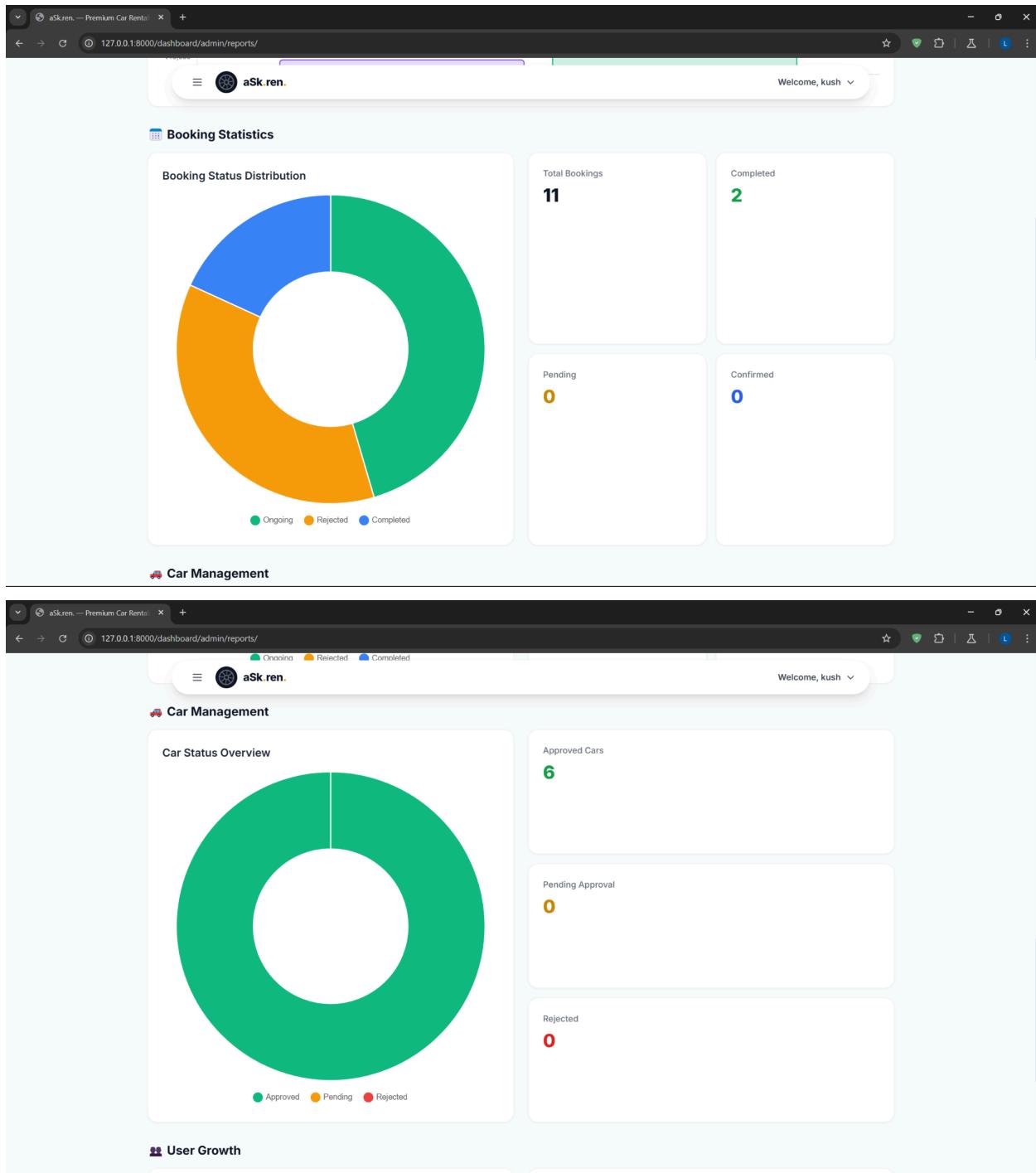
- Analytics and Reporting:** These reports give administrators key data-driven insights across several areas:
 - Web Page Performance:** Metrics on user engagement, traffic sources, page views, and conversion rates, aiding website optimization.
 - Owner Performance:** Detailed reports on owner activity, including booking frequency, ratings, earnings, and compliance, enabling reward and concern resolution.

The screenshot shows the 'Analytics & Reports' dashboard with the following metrics:

- Revenue**
 - Gross Revenue: ₹157400 (All completed payments)
 - Total Refunded: - ₹69800 (3 refunds issued)
 - Net Revenue: ₹87600 (After refund deductions)
- Commission**
 - Net Revenue (Last 30 Days): ₹87600 (Completed minus refunds)
 - Commission Earned: ₹8760 (10% of net revenue)
 - Commission (30 Days): ₹8760 (10% of net last 30 days)

Monthly Revenue (Last 6 Months) chart (Approximate Data):

Month	Revenue (₹)	Commission (₹)
Jan	87600	8760
Feb	87600	8760
Mar	87600	8760
Apr	87600	8760
May	87600	8760
Jun	87600	8760



The screenshot shows the aSkren Premium Car Rental dashboard. At the top, there's a navigation bar with a logo, a search bar, and user information. Below it is a header with the text "aSk.ren." and a circular icon. A progress bar at the bottom indicates "Approved" (green), "Pending" (orange), and "Rejected" (red) status counts.

User Growth

- Total Owners: 2 In the system
- New Owners (30 Days): 2 Recent growth
- New Regular Users (30 Days): 3

Top Earning Owners

OWNER NAME	USERNAME	TOTAL EARNINGS
	@alok	₹132000
	@leo	₹25400

- **Transaction Record:** A distinct and highly detailed transaction page logs and archives all financial data related to the platform's activities. This centralized record is essential for accounting, auditing, and dispute resolution. It captures all transaction types, including rental fees, security deposits, owner payouts, service fees, and any associated refunds or penalties, ensuring complete financial transparency and accountability.

The screenshot shows the aSkren Premium Car Rental dashboard. At the top, there's a navigation bar with a logo, a search bar, and user information. Below it is a header with the text "aSk.ren." and a circular icon. A progress bar at the bottom indicates "Approved" (green), "Pending" (orange), and "Rejected" (red) status counts.

Transactions

Full payment history across the platform

Total Transactions	Total Revenue	Commission (10%)	Refunded
10	Rs. 227200	Rs. 15740	Rs. 69800

COMPLETED	PENDING	FAILED	REFUNDED
7	0	0	3

Search by transaction ID, user, or car...

All Statuses ▾ All Methods ▾ Filter

TRANSACTION ID	USER	CAR	AMOUNT	METHOD	STATUS	DATE	INVOICE
pay_538e1Excgf1lcQ	kushagra kushagra.chaudhary3605@gmail.com	VELLFIRE	Rs. 8000	razorpay	Completed	22 Feb 2026, 12:11	
-	ashish kumarashish.dey@gmail.com	PHANTOM	Rs. 30000	SIMULATED	Completed	22 Feb 2026, 09:47	
...	ashish	PHANTOM	Rs.	razorpay	Completed	22 Feb 2026,	

11. Development Team Introduction

Role	Name	Student's Year	Responsibilities
Tech Lead (Full Stack Developer)	Kushagra Chaudhary	B.Tech. 3rd Year	Users, Booking & Payment features..
Full Stack Developer	Shubh Sahu	B.Tech. 3rd Year	Accounts' dashboard and management interfaces.
Full Stack Developer	Alok Kumar	B.Tech. 3rd Year	Car management, Owner features, and reviews.

12. Advantages

- **Real-time Availability Tracking:** Ensures no over-bookings.
 - **Secure Role-Based Access:** Enforces strict permission levels protecting personal user and payment data.
 - **Scalable Modular Architecture:** Distinct Django apps make the ecosystem maintainable and flexible.
-

13. Future Enhancements

- **Mobile app development:** Bringing similar functionality to Android and iOS architectures.
 - **AI-based pricing engine:** Dynamic pricing scaling proportionally to demand, weather, and time of year.
 - **GPS Tracking:** Embedding tracking APIs in rental cars for precise operational oversight.
 - **Advanced analytics dashboard:** Complex charts utilizing libraries like Chart.js or D3.js.
-

14. Conclusion & Next Steps

The **aSk Ren** Car Rental platform provides a secure and modular foundation for online vehicle commerce. Transitioning from legacy manual procedures to this robust Django-MySQL digital landscape yields extensive time and capital savings. Future strategic steps will prioritize deploying this application on scalable cloud infrastructure, establishing a mobile counterpart, and gradually integrating automated AI-driven logistics.
