WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal Homepage: www.ijrpr.com ISSN 2582-7421

Cloud Fleet Pro Vehicle Fleet Management and Booking System

Mounish K, Niranjan S, Pavithran S, Priyadharshan C, Mrs. I. A Jannathul Firthous

Department of Information Technology, Bachelor of Technology, Sri Shakthi Institute of Engineering and Technology, Coimbatore-641062
Email ID: pavithran24it@srishakthi.ac.in

ABSTRACT

Cloud Fleet Pro is a web-based vehicle fleet management and booking system designed to connect customers with fleet administrators through a centralized interface. The application presents vehicle listings, rental rates, vehicle specifications, pickup and return scheduling, booking history, and administrative tools. Customers can select a vehicle, choose rental dates and locations, provide driver licence details, apply a promotional code, and review an itemized price calculation. The system also provides administrative views for vehicle inventory, booking status, fleet pricing, customer information, vehicle maintenance, and reports. Availability validation is designed to identify scheduling conflicts and show whether a selected rental slot is available. The project uses a React-based user interface with a Node.js and Express backend and MongoDB-based data storage as described in the project baseline. The application aims to improve booking visibility, simplify fleet operations, and make rental charges easier to understand

INTRODUCTION

Cloud Fleet Pro is a full-stack web application intended to support vehicle rental operations for customers and fleet administrators. In a conventional manual workflow, customers may need to contact an operator to check vehicle availability, confirm rental dates, understand charges, and track booking status. Fleet operators also need to maintain vehicle records, coordinate bookings, monitor maintenance, and review rental activity. A centralized digital interface can make these tasks easier to access and manage. The application brings together customer-facing vehicle browsing and booking functions with administrator-facing fleet management tools. Customers can view vehicle categories and specifications, select pickup and return times, choose pickup and drop-off locations, and review the displayed rental quote. The administrative interface includes vehicle inventory, booking management, pricing, customer directory, maintenance, and reports and analytics. The booking interface displays a conflict warning when a selected slot overlaps an existing booking and an availability message when no conflict is found for the displayed selection. Cloud Fleet Pro is designed to provide clearer booking information and more organized fleet administration; the actual results depend on the application data and the tests performed.

LITERATURE SURVEY/REVIEW:

1.Web-Based Vehicle Rental and Reservation Systems Vehicle rental systems commonly provide online vehicle discovery, rental-period selection, booking records, and price information. Bringing these functions into one interface can reduce the need to coordinate each step manually. For Cloud Fleet Pro, the customer interface includes vehicle details, rental dates and times, pickup and drop-off locations, booking status, and booking vouchers.

2. Fleet Inventory and Maintenance Management Fleet administration requires up-to-date vehicle records and a way to distinguish vehicles that can be rented from those that are unavailable or under service. Cloud Fleet Pro includes vehicle inventory fields such as category, registration number, seating capacity, fuel type, transmission, and rental rates. The administrator interface also provides a maintenance module and a control to block maintenance time. The project screenshots demonstrate the relevant interface areas; they do not by themselves verify every operational scenario

3. Booking Availability and Conflict Validation Rental scheduling depends on checking the requested pickup and return period against existing bookings and blocked periods. A useful booking interface should communicate the result clearly so customers do not proceed with a slot shown as unavailable. Cloud Fleet Pro displays both a conflict warning and a successful availability message in the supplied application screenshots. These examples illustrate the intended user experience, while broader reliability would require systematic tests across overlapping and non-overlapping time ranges

4. Transparent Pricing and Operational Analytics Rental quotes can be easier to understand when the base rate, deposit, taxes, and final payable amount are shown separately. Fleet reports can also help administrators review booking counts and displayed revenue summaries. Cloud Fleet Pro includes a quote breakdown and a Reports & Analytics screen. The values shown in the interface are application-displayed figures and should not be interpreted as audited financial records

METHODOLOGY

The Cloud Fleet Pro methodology follows an iterative full-stack development approach. The requirements are organized into customer booking workflows and administrator fleet operations. The frontend presents the pages and forms, while the backend exposes application routes and coordinates data operations. Vehicle and booking information is represented in the application data store. The interface is then checked using representative workflows, including vehicle browsing, date selection, availability messages, quote calculation, booking history, inventory management, and reports. The following steps summarize the project workflow.

1. Requirement Analysis: Identify customer and administrator needs for vehicle discovery, rental booking, fleet management, and reporting.
2. Interface Design: Organize navigation, forms, vehicle cards, booking details, and administrator screens for clear use.
3. Frontend Development: Build the customer and administrator interfaces using React components.
4. Backend Development: Use Node.js and Express to provide server-side application routes and request handling.
5. Data Management: Use MongoDB-based storage for application records as specified in the project baseline.
6. Vehicle Inventory: Display and manage vehicle details, categories, rental rates, and availability status.
7. Booking Workflow: Capture rental dates, pickup and drop-off locations, driver licence details, and booking actions.
8. Availability Validation: Display whether the selected rental period has a conflict or is available based on the application check.
9. Quote and Reporting: Present the price breakdown and administrator summaries for bookings and displayed revenue.
10. System Testing: Check the main customer and administrator workflows and record actual pass/fail outcomes before release.

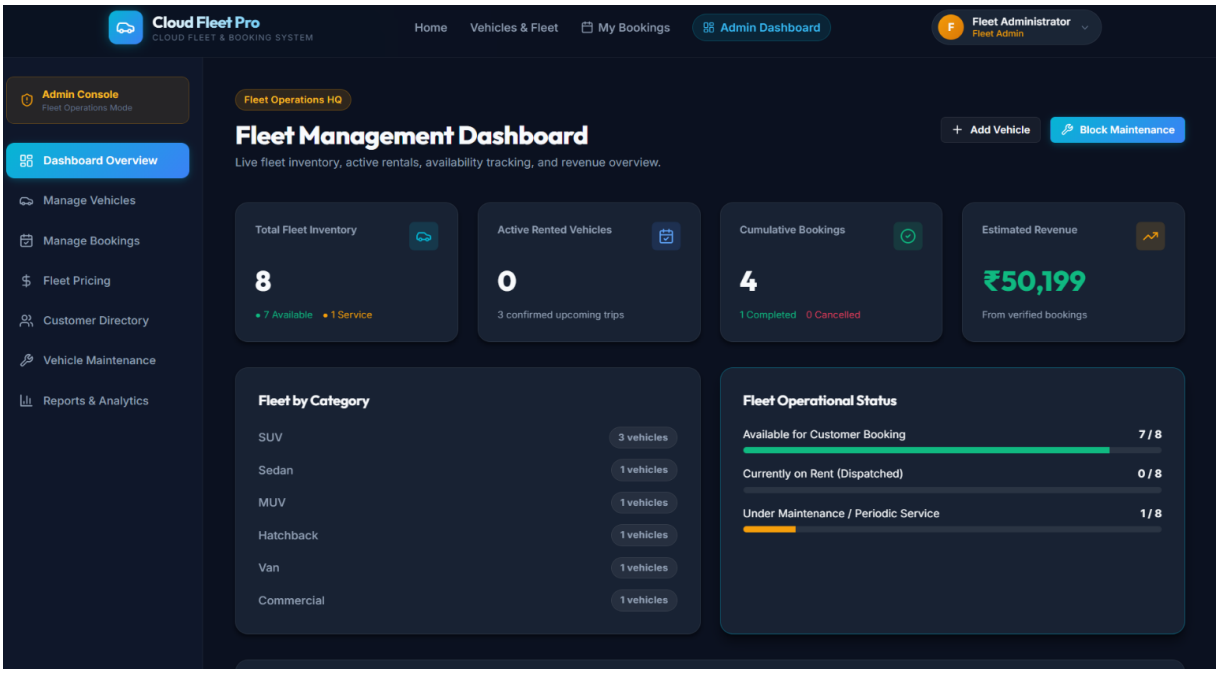
CONTENT

S. No.	Content	Description
1	Authentication and Profile	Provides account navigation and profile fields for contact and driver-license information
2	Home and Vehicle Search	Introduces the booking flow and provides pickup hub and rental date/time inputs.
3	Fleet Inventory	Displays vehicle category, registration, seating, fuel, transmission, and rental-rate details.
4	Booking Management	Allows administrators to review booking references, schedules, amounts, statuses, and available status actions.
5	Availability Validation	Displays a conflict warning or an availability message for the selected rental period.
6	Pricing and Quote	Shows rental rate information and a breakdown of base rate, refundable deposit, taxes/charges, and total payable.
7	Customer Booking History	Displays customer bookings, pickup/return details, status, payment label, voucher and cancellation action where shown.
8	Vehicle Maintenance	Provides an administrator navigation area and a control to block maintenance time.
9	Admin Dashboard	Summarizes fleet inventory, vehicle status, booking counts, and displayed revenue figures.
10	Reports and Analytics	Displays revenue summaries, top revenue-generating vehicle entries, monthly rental volume, and a print-report option.

RESEARCH AND REVIEWS

Vehicle rental and fleet-management applications combine customer-facing reservation features with operational tools for maintaining vehicles, monitoring bookings, and reviewing business activity. A clear reservation flow needs vehicle information, a defined rental period, pickup and return locations, a visible quote, and an understandable booking status. Fleet administrators need to maintain inventory records and identify vehicles that are available, rented, or under maintenance. Cloud Fleet Pro brings these functions together in one application. Based on the supplied screenshots, the interface includes a home booking form, a fleet dashboard, vehicle inventory, booking management, reports and analytics, customer booking history,

profile settings, vehicle detail and availability screens, and a rental quote breakdown. The screenshots provide evidence of the displayed interfaces and sample values; they do not independently prove live payment processing, production-scale performance, or every possible conflict-handling case.



RESULT&DISCUSSION

Cloud Fleet Pro was developed to simplify vehicle fleet management and rental booking. The system provides vehicle inventory management, booking and availability validation, rental price calculation, customer profile management, and administrative reports. The application displays booking details, vehicle status, and revenue summaries through a user-friendly interface. Overall, the project demonstrates how a web-based system can improve the organization, transparency, and efficiency of vehicle rental operations.

CONCLUSION

Cloud Fleet Pro provides a unified web interface for vehicle browsing, rental booking, and fleet administration. Its visible modules cover vehicle inventory, booking status management, pricing, customer booking history, maintenance access, profile details, and reports. The supplied screenshots demonstrate how the application communicates rental schedules, availability messages, and an itemized quote. By bringing customer and administrator tasks together, the project aims to make vehicle rental workflows more organized and transparent. Further validation should include documented test results, backend checks, and confirmation of any payment integration before making claims about production operation

FUTURE SCOPE

Cloud Fleet Pro can be extended with additional features to improve convenience, security, and operational insight. The following items are potential future enhancements and are not claims that these capabilities are already implemented.

1. Online Payment Integration: Connect a verified payment gateway and add transaction confirmation, receipts, and refund handling.
2. Notifications: Send booking confirmations, reminders, cancellations, and maintenance alerts through email or SMS.
3. Advanced Analytics: Add date-range filters, downloadable reports, utilization trends, and verified revenue calculations.
4. Stronger Availability Tests: Add automated tests for overlapping bookings, maintenance blocks, boundary times, and concurrent requests.
5. Customer Enhancements: Add improved profile validation, document verification workflows, reviews, and booking modification where appropriate.

REFERENCES

1. Rai, A., Chauhan, A., Gupta, D., Aswal, A., and Yadav, R. (2023). “Car Rental Website.” International Journal of Advanced Research in Science, Communication and Technology (IJARSCT), Volume 3, Issue 4.

2. “Development of Flexible, Sharing and Leasing a Car Using MERN Stack.” (2023). IEEE Conference Publication. Available through IEEE Xplore.

3. Fielding, R. T. (2000). Architectural Styles and the Design of Network-Based Software Architectures. Doctoral dissertation, University of California, Irvine.

4. MongoDB, Inc. MongoDB Documentation. Available at: "MongoDB Documentation" (https://reference-url-citation.invalid/0)

5. OpenJS Foundation. Node.js Documentation. Available at: "Node.js Documentation" (https://reference-url-citation.invalid/1)

6. OpenJS Foundation. Express.js Documentation. Available at: "Express.js Documentation" (https://reference-url-citation.invalid/2)

7. Meta Platforms, Inc. React Documentation. Available at: "React Documentation" (https://reference-url-citation.invalid/3)

8. Mozilla. MDN Web Docs: HTML, CSS, and JavaScript. Available at: "MDN Web Docs" (https://reference-url-citation.invalid/4)

9. Rehman, S., Sivaiah, B., Chandu, A., and YesuBabu, G. (2026). “A Modern Full-Stack Car and Bike Rental System for Efficient Vehicle Discovery, Booking, and Management.” International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 14, Issue 4. DOI: 10.22214/ijraset.2026.80945.

10. Karche, P., Chaple, N., Kapare, K., Shirsath, P., Bere, S. S., and Jagtap, P. S. (2026). “Car Rental Booking System Using MERN Stack.” International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE). DOI: 10.17148/IJARCCE.2026.154242.