



VEHICLE PARKING MANAGEMENT SYSTEM

¹Mrs. V. S. Patil, ²Afnan Patel, ³Shivalingappa R Tippa, ⁴Kartik Gidaveer

¹Assistant Professor, Department of Information Science and Engineering,

²B.E, Department of Information Science and Engineering,

³B.E, Department of Information Science and Engineering,

⁴B.E, Department of Information Science and Engineering,
Basaveshwar Engineering Collage, Bagalkot, Karnataka, India

Abstract

A Vehicle Parking Management System (VPMS) is an integrated software solution designed to optimize parking operations by automating key processes such as vehicle entry and exit tracking, slot allocation, and security management. The system enhances efficiency by reducing manual interventions, minimizing congestion, and ensuring seamless parking experiences for users.

Users can effortlessly check parking availability, reserve slots in advance, and monitor their parking status in real-time. Administrators benefit from data-driven insights that aid in resource management, occupancy tracking, and space optimization. Additionally, the system integrates with surveillance and access control mechanisms to enhance security and prevent unauthorized parking.

By automating parking-related tasks, VPMS improves operational efficiency, enhances user convenience, and supports sustainable urban mobility solutions. Overall, it helps organizations and urban centres streamline parking management while providing a user friendly and technologically advanced solution.

KEYWORDS

Smart parking, automated parking management, real-time monitoring, user-friendly interface

INTRODUCTION

The Vehicle Parking Management System is a comprehensive software solution designed to automate key operations of parking facilities. It simplifies tasks such as vehicle registration, parking space allocation, entry/exit tracking, providing an efficient and user-friendly experience for both drivers and parking staff. Drivers can easily book parking spaces. For parking administrators, the system offers tools for managing parking space availability, tracking vehicle movement, and generating performance reports. With integrated data analytics, parking facility owners gain insights into space utilization, revenue, and operational efficiency, supporting informed decision-making. The system aims to reduce manual effort, improve accuracy, and enhance the overall management of parking operations, ensuring a seamless experience for parking facilities of all sizes.

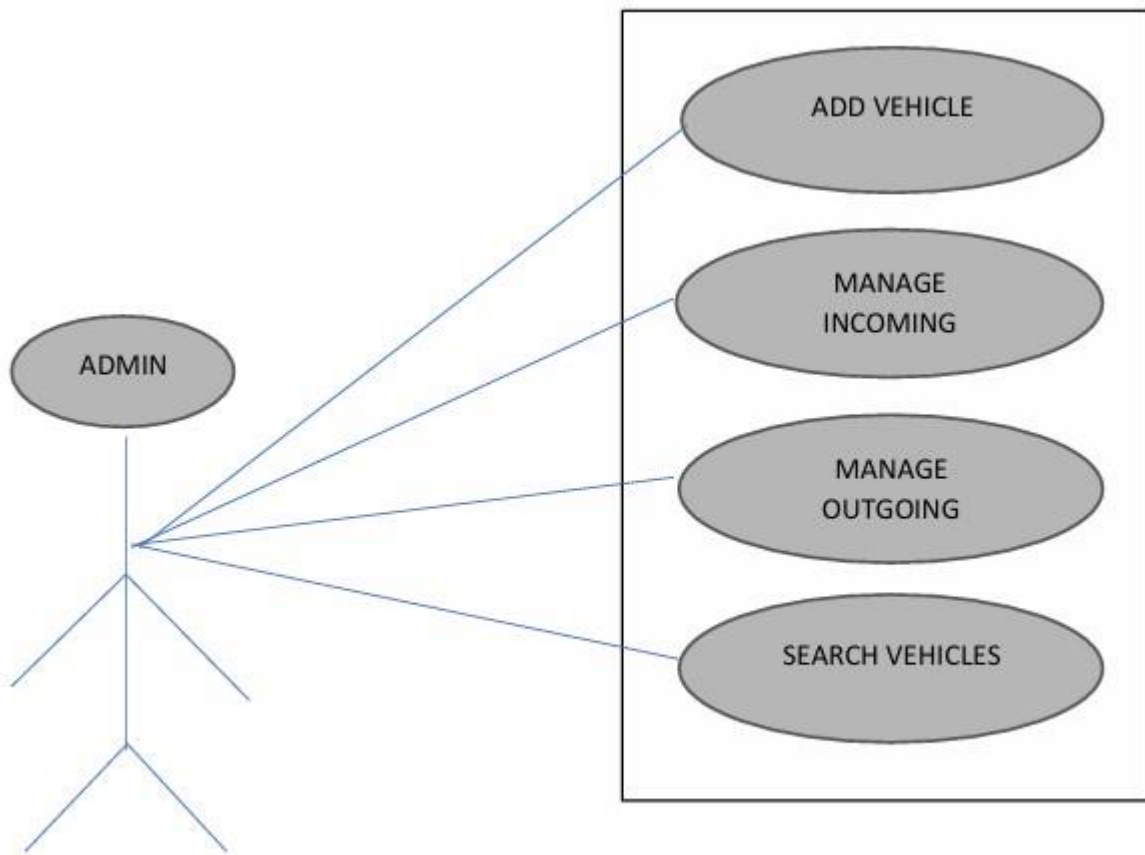
LITERATURE SURVEY

Serial no.	Project title	Author	Source	Journal name	Year	Key points
1	Smart Parking System Using IoT	S. Kumar, P. S. Nair	International Journal of Advanced Research in Computer Engineering and Technology	IJARCE&T	2020	Implementation of IoT for monitoring parking space availability and vehicle tracking for optimized parking management.
2	Vehicle Parking System with Mobile Application	R. Singh, V. K. Sharma	International Journal of Innovative Technology and Exploring Engineering	IJITEE	2019	Proposal for a mobile app integrated with IoT for parking slot booking, tracking, and user notifications.
3	RFID and GSM-Based Parking System	M. Patel, S. Mehta	International Journal of Engineering Research and Applications	IJERA	2018	Description of RFID and GSM technology for automated vehicle entry, exit, and parking management.
4	Cloud-Based Vehicle Parking Management System	K. R. Suresh, L. R. Rao	International Journal of Scientific Research in Computer Science, Engineering and Information Technology	IJSRCSEIT	2017	Development of a cloud-based system for managing parking slots, payments, and user data.
5	Design and Implementation of Vehicle Parking System	P. Joshi, D. Patel	International Journal of Advanced Research in Computer Science and Software Engineering	IJARCSSE	2016	Comprehensive design and implementation of a vehicle parking system, focusing on automated slot allocation and user interaction.

Serial no	Project Title	Author	Source	Journal Name	Year	Key points
6	Real-Time Vehicle Monitoring and Parking Slot Management	S. N. Gupta, R. K. Bansal	International Journal of Computer Science and Mobile Computing	IJCSMC	2015	Real-time vehicle monitoring and parking slot management using IoT and sensor technologies.
7	Android-Based Application for Parking Management	M. P. Verma, N. P. Deshmukh	International Journal of Advanced Research in Computer Science and Software Engineering	IJARCSSE	2014	Development of an Android-based app for vehicle parking management, including slot booking, tracking, and notifications
8	Biometric Access Control for Parking Systems	J. V. Pillai, K. R. Radhakrishnan	Journal of Advanced Research in Dynamical and Control Systems	JARDCS	2013	Use of biometric technology for secure parking access and efficient vehicle entry/exit management.
9	Web-Based Vehicle Parking System	L. B. Nair, P. M. Sharma	International Journal of Advanced Research in Computer Science and Software Engineering	IJARCSSE	2012	Web-based parking system for monitoring parking slots, tracking vehicle entry/exit, and user management.
10	IoT and Cloud-Based Parking Management System	S. V. Deshmukh, R. R. Joshi	International Journal of Engineering and Advanced Technology	IJEAT	2011	Integration of IoT and cloud computing for smarter parking management, enabling real-time slot availability and data analytics.

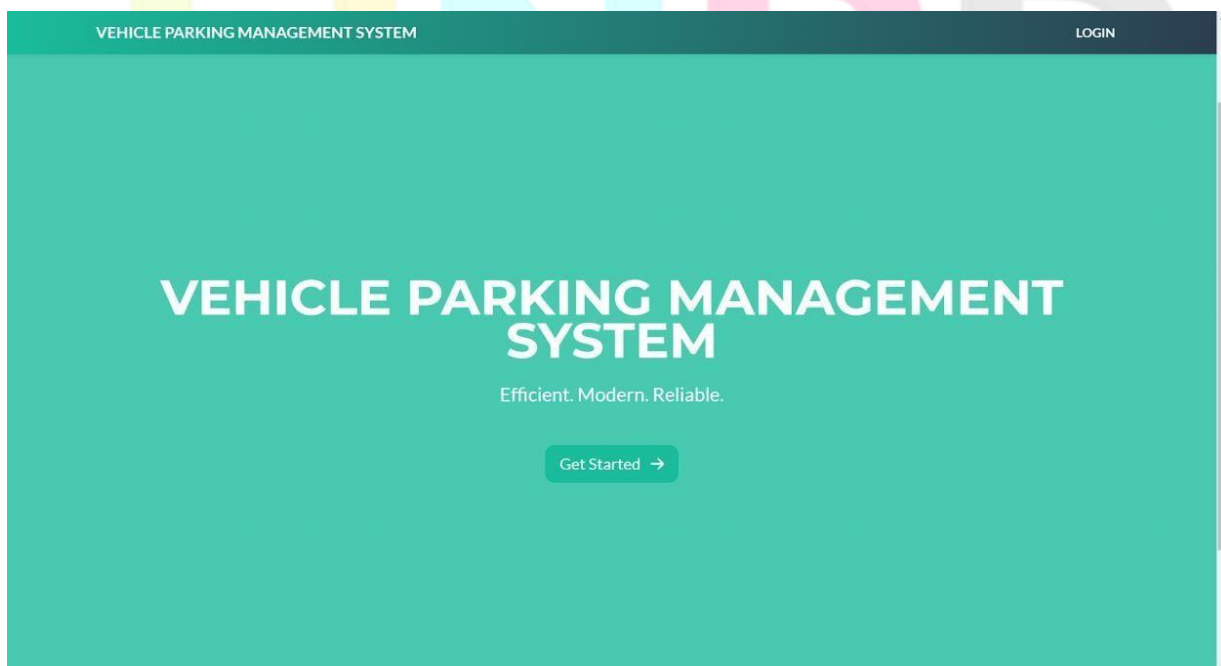
Research Through Innovation

USECASE DIAGRAM

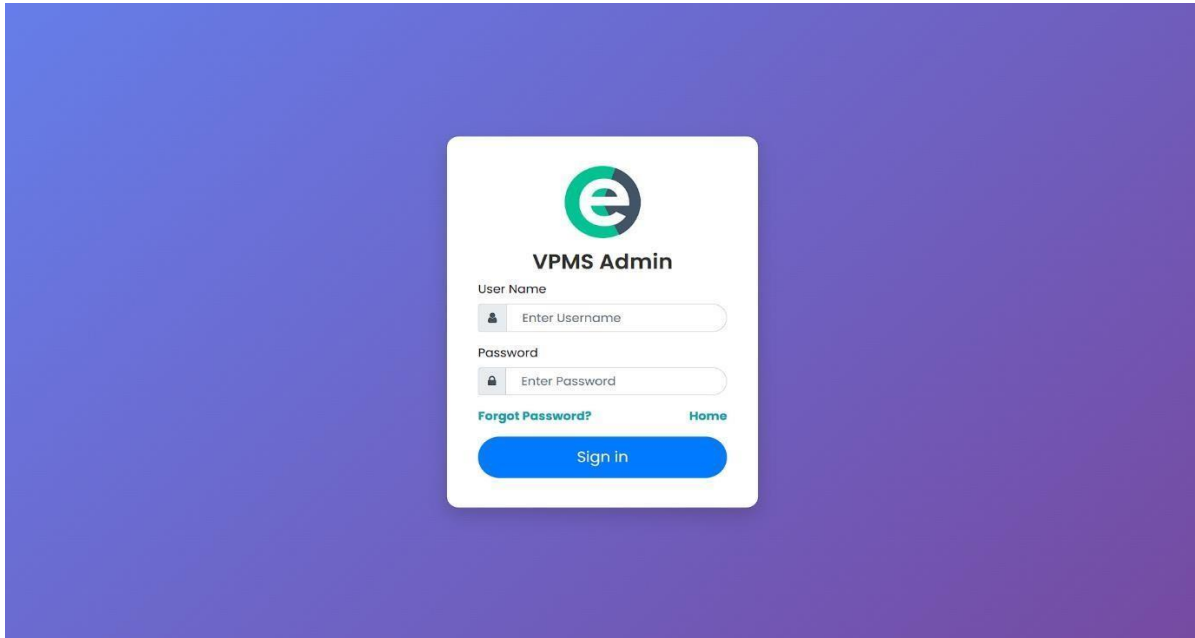


SNAPSHOTS OF THE OUTPUT

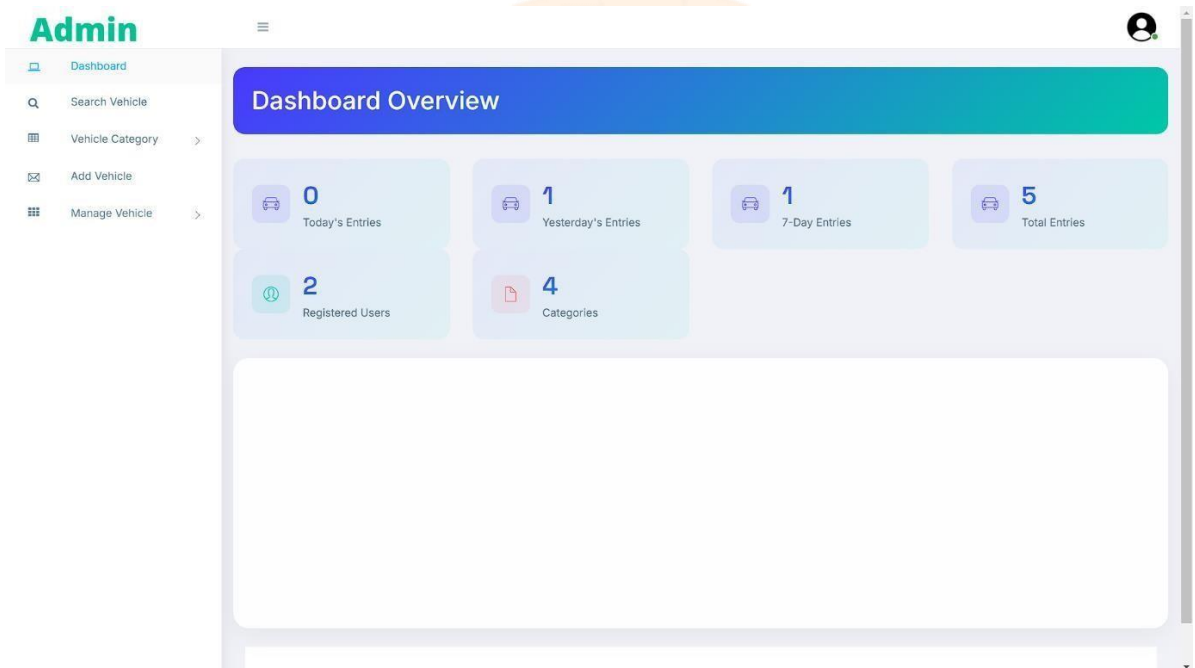
1. Home page of the Vehicle Parking Management System



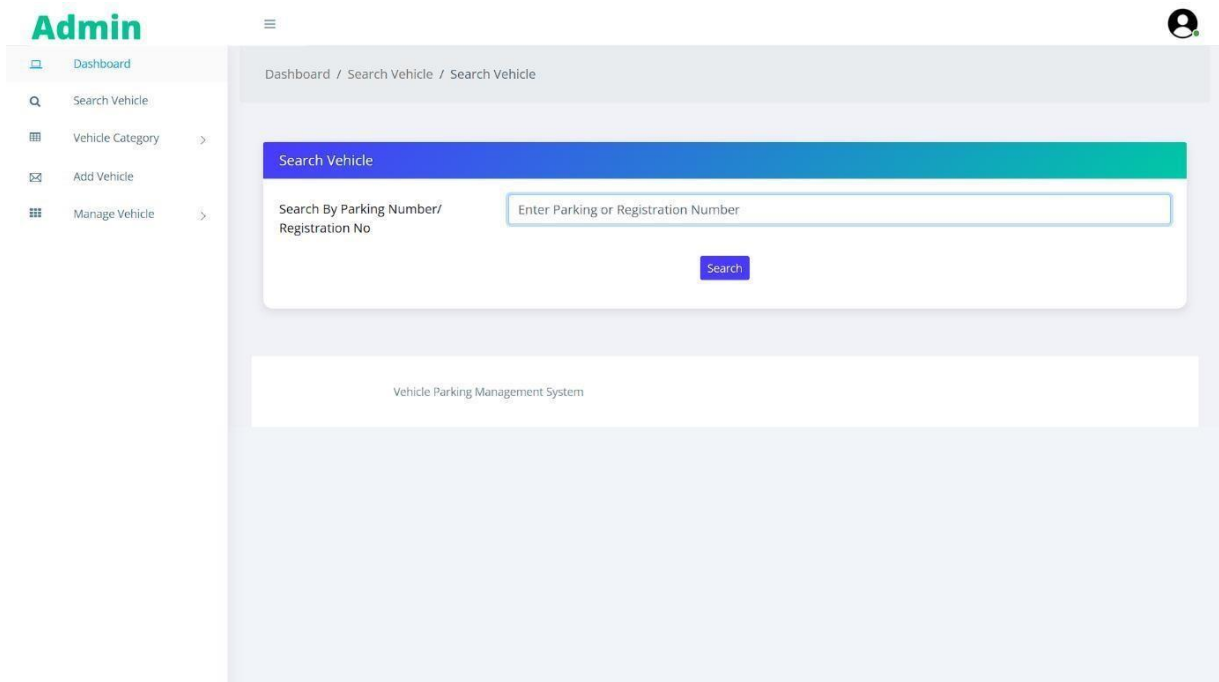
2. Login Page



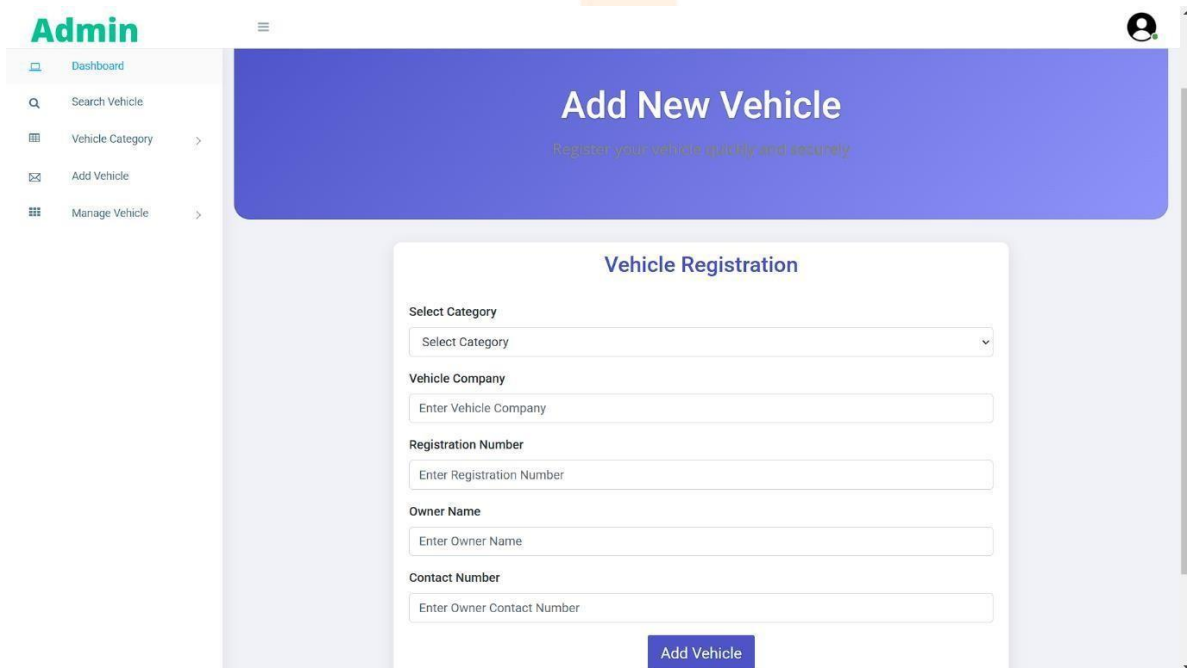
3. User Dashboard



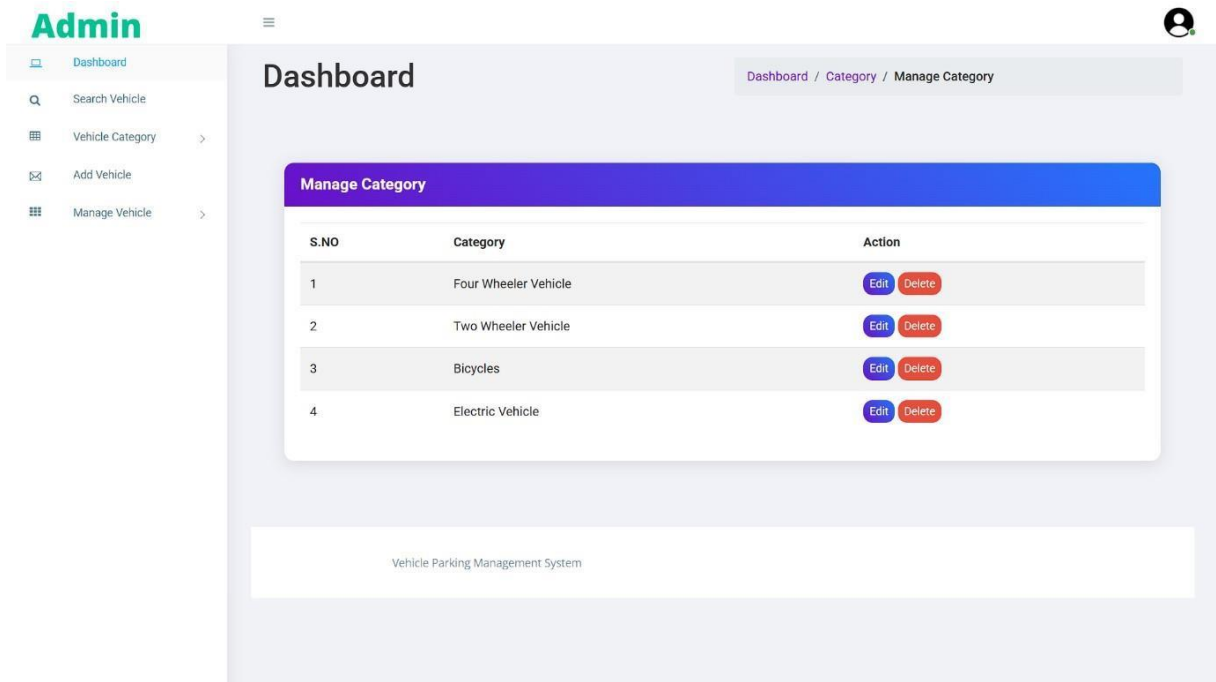
4. Search Vehicle Page



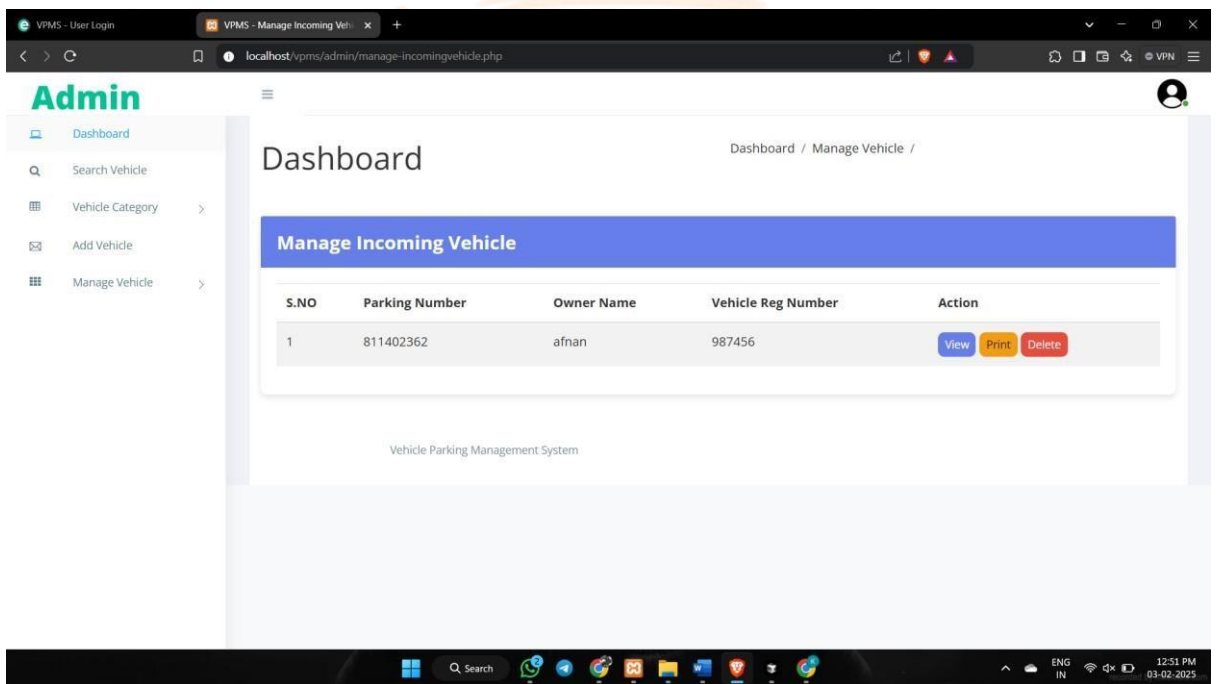
5. Add Vehicle Page



6. Manage Category Page



7. Manage Incoming Vehicle



8. Manage Outgoing Vehicle

Admin

Control Panel Home / Vehicles / Outgoing

Outgoing Vehicle Administration Export CSV

#	Parking ID	Driver	Registration	Operations
1	125061388	Amit	DL8CAS1234	View Print Delete
2	787303637	Anuj kumar	UP81AN4851	View Print Delete
3	901288727	Anuj Kumar	DI6CAs1234	View Print Delete
4	322854775	Kartik	KA28HK8938	View Print Delete

Vehicle Parking Management System

9. Vehicle Page Report

Vehicle Receipt
Monday, February 3, 2025, 8:23 AM

Receipt No: 125061388
 Owner Name: Amit
 Reg. Number: DL8CAS1234
 Category: Electric Vehicle
 Company: Tata Nexon
 Contact: 1233211230
 In Time: 2024-08-16 12:12:36
 Out Time: 2024-08-16 12:13:43
 Charge: 50
 Remark: NA

Thank you for using our service!
 © 2025 Vehicle Parking Management System

[Print Receipt](#)

IMPLEMENTATION

Implementing a Vehicle Parking Management System involves several key steps to ensure a smooth transition and effective utilization. First, identify the specific needs of your facility, such as vehicle tracking, slot allocation, or automated billing, and choose a system that best fits these requirements. Next, migrate existing parking data into the new system, ensuring accurate and complete information. Train your staff on how to use the software, focusing on key features like vehicle check-ins, slot reservations, and monitoring. Customize the system settings to match your facility's policies, such as parking plans and slot preferences. Integrate the system with any existing tools, such as access control devices or surveillance cameras, to streamline operations. Finally, communicate the new system to users, highlighting benefits like real-time slot updates and easy reservations. Regularly monitor the system's performance and gather feedback to make ongoing improvements, ensuring the system remains effective and user-friendly.

REQUIRED MODULES

Software Requirements:

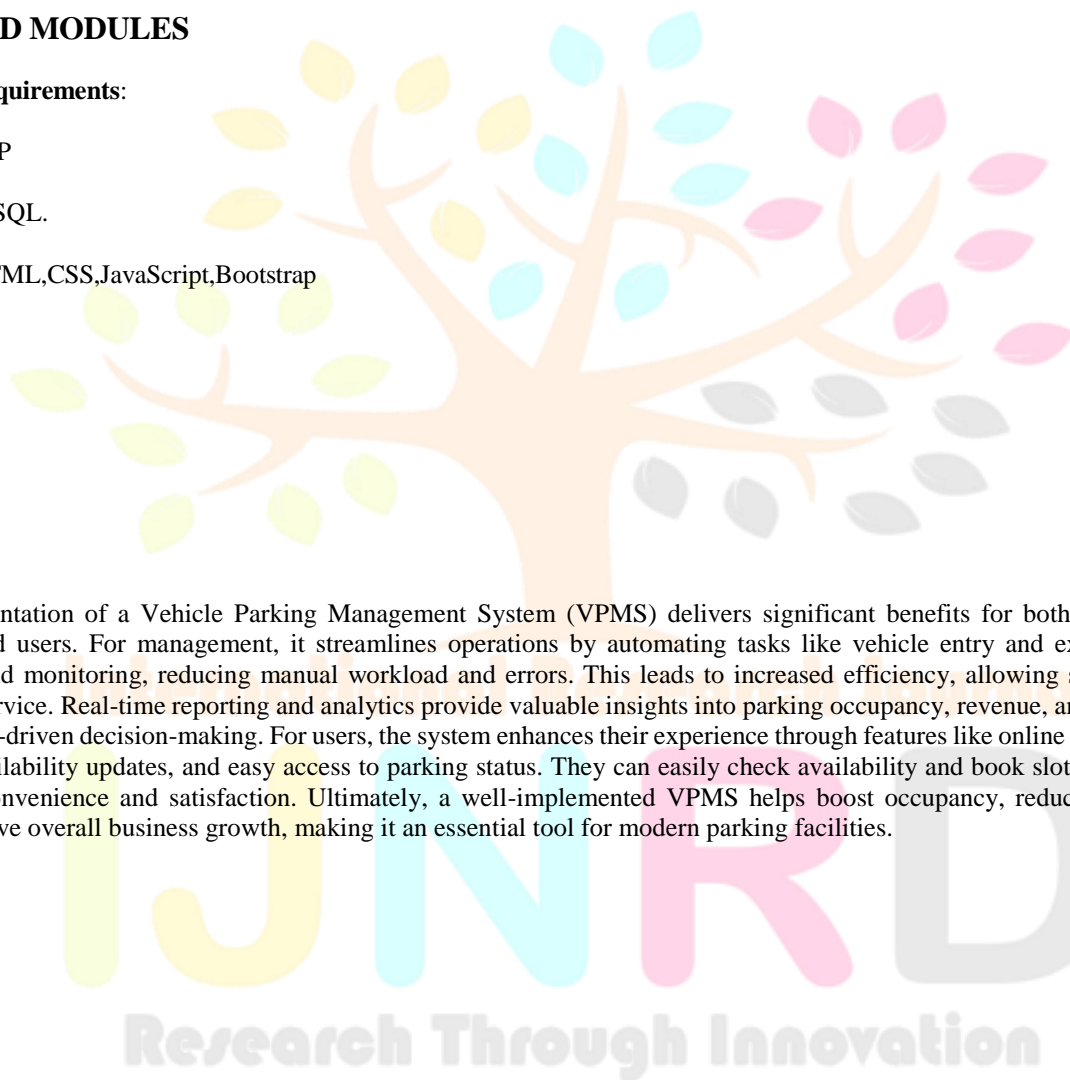
Backend: PHP

Storage: MYSQL.

Frontend: HTML,CSS,JavaScript,Bootstrap

RESULT

The implementation of a Vehicle Parking Management System (VPMS) delivers significant benefits for both parking facility managers and users. For management, it streamlines operations by automating tasks like vehicle entry and exit tracking, slot allocation, and monitoring, reducing manual workload and errors. This leads to increased efficiency, allowing staff to focus on improving service. Real-time reporting and analytics provide valuable insights into parking occupancy, revenue, and user behavior, aiding in data-driven decision-making. For users, the system enhances their experience through features like online slot reservations, real-time availability updates, and easy access to parking status. They can easily check availability and book slots via user portal, improving convenience and satisfaction. Ultimately, a well-implemented VPMS helps boost occupancy, reduce administrative costs, and drive overall business growth, making it an essential tool for modern parking facilities.



SCOPE

The scope of a Vehicle Parking Management System (VPMS) encompasses various functionalities aimed at optimizing parking operations and improving user experience. Key areas include:

1. **Parking Slot Management:** Automating slot allocation and availability tracking, ensuring efficient use of parking spaces and providing real-time updates on slot occupancy.
2. **Vehicle Entry and Exit Tracking:** Implementing automated systems for tracking vehicle entry and exit, allowing for seamless vehicle monitoring and minimizing congestion.
3. **User Registration and Reservation:** Offering user registration, login, and advance parking slot reservations, ensuring a smooth and convenient parking experience.
4. **Access Control and Security:** Integrating access control mechanisms, such as barrier gates and number plate recognition, to restrict unauthorized access and enhance security.
7. **Reporting and Analytics:** Providing detailed reports on parking utilization, revenue generation, and peak usage times, aiding administrators in optimizing space and improving decision-making.
8. **System Integration:** Integrating the VPMS with other systems such as payment gateways, accounting software, and facility management tools to ensure seamless operations and enhance overall functionality.

The Vehicle Parking Management System will ultimately serve as a comprehensive solution for efficient parking space management, improving operational performance and enhancing user satisfaction.

CONCLUSION

A Vehicle Parking Management System (VPMS) streamlines the operations of a parking facility by integrating key functions such as vehicle entry and exit tracking, slot allocation, and user communication into a single platform. By leveraging this system, parking facility owners and staff can enhance operational efficiency, reduce manual workload, and provide a better experience for users. The implementation of automated processes ensures accurate vehicle monitoring and real-time availability updates, which can improve user convenience and satisfaction. Overall, a well-designed VPMS is crucial for optimizing parking space utilization, improving operational performance, and delivering a seamless and secure service to parking users.

REFERENCES

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- [5] W3Schools. Available: <https://www.w3schools.com/>.
- [6] XAMPP Documentation. Available: <https://www.apachefriends.org/docs/>.