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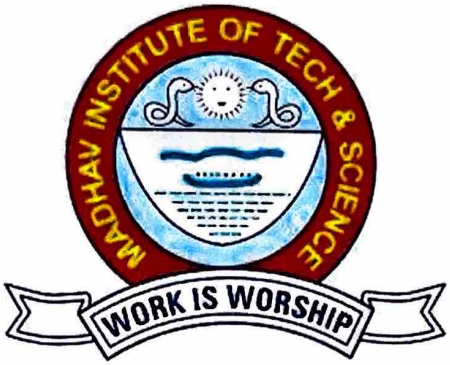

Project Report

On

Development of Vehicle Parking management system

A project report submitted in partial fulfilment of the requirement for the degree of

MASTER IN COMPUTER APPLICATION

in

COMPUTER SCIENCE AND ENGINEERIN

Submitted By

Satyam Sharma

0901CA221058

Industry Mentor:

Mr. Aniket Parashar, SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT

Faculty Member:

Dr. Parul Saxena, Assistant Professor

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

GWALIOR - 474005 (MP) ESTD. 1957

JAN-JUNE 2024

SHRIRAM TECHNOLOGIES
RESEARCH&DEVELOPMENT

CERTIFICATE

REG NO: – S/1847630

ate: 24.04.2024

This Certificate is awarded to *Mr. Satyam Sharma*
In appreciation for his accomplishment of completion of project in the company as an
Position Titled: Web Developer
Project Title: Parking Management System
At Shriram Technologies Research & Development Center
From : 04 Jan 2024 to 24 Apr 2024
We take this opportunity to wish you a long, Happy and Successful Career

SHRIRAM TECHNOLOGIES
RESEARCH & DEVELOPMENT
Anuradha

Anuradha Rajpoot
SHRIRAM TECHNOLOGIES
RESEARCH & DEVELOPMENT (DIRECTOR)
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CERTIFICATE

This is certified that **Satyam Sharma (0901CA221058)** has submitted the project report titled **Vehicle Parking management system** under the mentorship of **Mr. Ankit Parashar** in partial fulfilment of the requirement for the award of degree of Master In Computer Application in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

Saxena 25/4/24

Dr. Parul Saxena
Faculty Coordinator
Assistant Professor
Computer Science and Engineering

25/4/24

Dr. Manish Dixit
Professor and Head,
Computer Science and Engineering

Dr. Manish Dixit
Professor & HOD
Department of CSE
M.I.T.S. Gwalior

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DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Master In Computer Application in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original-record of my work under the mentorship of **Mr. Ankit Parashar, Project Manager (Full Stack Developer Team)**, Shriram technologies (Delhi).

I declare that I have not submitted the matter embodied in this report for the award of any degree ordiploma anywhere else.

Satyam Sharma

0901CA221058

2nd year,

Master In Computer Application

Computer Science and Engineering

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ACKNOWLEDGEMENT

The full semester project has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary project. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering,** for allowing me to explore this project. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I would like to extend my heartfelt appreciation to **Mr. Ankit Parashar**, Project Manager (Full Stack Developer Team, Shriram technologies (Delhi) for their exceptional mentorship, guidance, and assistance throughout the project. Their valuable inputs and feedback have helped me enhance my knowledge and skills. Their constant encouragementand support have been instrumental in the successful completion of this project.

I am sincerely thankful to my faculty coordinator. I am grateful to the guidance of **Dr. Parul Saxena**, Assistant Professor, Computer Science and Engineering, for her continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Satyam Sharma
0901CA221058
2nd year,
Master In Computer Application
Computer Science and Engineering

Abstract

The Vehicle Parking Management System (VPMS) is a sophisticated software solution designed to streamline the management of vehicle parking facilities. Tailored to meet the needs of both users and administrators, the VPMS offers a comprehensive set of features aimed at enhancing efficiency, improving user experience, and optimizing parking operations.

The Vehicle Parking Management System presents a holistic approach to tackling the hurdles encountered in conventional parking management. Through the integration of state-of-the-art technologies, the system not only enhances user convenience but also optimizes parking space utilization and boosts operational efficiency for parking lot owners. This concerted effort contributes significantly to fostering a more sustainable and accessible urban environment.

The Vehicle Parking Management System (VPMS) is a web-based technology designed to streamline the management of incoming and outgoing vehicles within a parking facility. This abstract discusses the system's capability to efficiently handle vehicle records, providing administrators with easy access to data retrieval based on vehicle identification numbers. The VPMS operates as an automatic system, ensuring rapid data processing with systematic organization. This abstract highlight the VPMS's contribution to enhancing parking operations through its speed, accuracy, and systematic approach to data management.

For users, the VPMS provides a seamless registration process, allowing individuals to create accounts and access personalized dashboards. From their dashboard, users can easily manage their parking activities, view parking status, and generate receipts for transactions. Additionally, the system offers convenient options for users to register their vehicles, view reports on parking history, and receive notifications on parking availability.

Overall, the Vehicle Parking Management System offers a user-friendly interface, robust functionality, and advanced features to streamline parking management processes. By facilitating efficient management of parking spaces, providing insights through reports, and ensuring seamless user interactions, the VPMS emerges as a valuable tool for optimizing parking facilities and enhancing overall user satisfaction.

सार

वाहन पार्किंग प्रबंधन प्रणाली (वीपीएमएस) एक परिष्कृत सॉफ्टवेयर समाधान है जिसे वाहन पार्किंग सुविधाओं के प्रबंधन को सुव्यवस्थित करने के लिए डिज़ाइन किया गया है। उपयोगकर्ताओं और प्रशासकों दोनों की जरूरतों को पूरा करने के लिए तैयार, वीपीएमएस दक्षता बढ़ाने, उपयोगकर्ता अनुभव में सुधार और पार्किंग संचालन को अनुकूलित करने के उद्देश्य से सुविधाओं का एक व्यापक सेट प्रदान करता है।

वाहन पार्किंग प्रबंधन प्रणाली पारंपरिक पार्किंग प्रबंधन में आने वाली बाधाओं से निपटने के लिए एक समग्र दृष्टिकोण प्रस्तुत करती है। अत्याधुनिक प्रौद्योगिकियों के एकीकरण के माध्यम से, सिस्टम न केवल उपयोगकर्ता की सुविधा को बढ़ाता है बल्कि पार्किंग स्थान के उपयोग को भी अनुकूलित करता है और पार्किंग स्थल मालिकों के लिए परिचालन दक्षता को बढ़ाता है। यह ठोस प्रयास अधिक टिकाऊ और सुलभ शहरी वातावरण को बढ़ावा देने में महत्वपूर्ण योगदान देता है।

वाहन पार्किंग प्रबंधन प्रणाली (वीपीएमएस) एक वेब-आधारित तकनीक है जिसे पार्किंग सुविधा के भीतर आने वाले और बाहर जाने वाले वाहनों के प्रबंधन को सुव्यवस्थित करने के लिए डिज़ाइन किया गया है। यह सार वाहन रिकॉर्ड को कुशलतापूर्वक संभालने की प्रणाली की क्षमता पर चर्चा करता है, जिससे प्रशासकों को वाहन पहचान संख्याओं के आधार पर डेटा पुनर्प्राप्ति तक आसान पहुंच मिलती है। वीपीएमएस एक स्वचालित प्रणाली के रूप में कार्य करता है, जो व्यवस्थित संगठन के साथ तेजी से डेटा प्रोसेसिंग सुनिश्चित करता है। यह सार डेटा प्रबंधन के लिए अपनी गति, सटीकता और व्यवस्थित दृष्टिकोण के माध्यम से पार्किंग संचालन को बढ़ाने में वीपीएमएस के योगदान पर प्रकाश डालता है।

उपयोगकर्ताओं के लिए, वीपीएमएस एक निर्बाध पंजीकरण प्रक्रिया प्रदान करता है, जिससे व्यक्तियों को खाते बनाने और वैयक्तिकृत डैशबोर्ड तक पहुंचने की अनुमति मिलती है। अपने डैशबोर्ड से, उपयोगकर्ता आसानी से अपनी पार्किंग गतिविधियों को प्रबंधित कर सकते हैं, पार्किंग की स्थिति देख सकते हैं और लेनदेन के लिए रसीदें उत्पन्न कर सकते हैं। इसके अतिरिक्त, सिस्टम उपयोगकर्ताओं को अपने वाहनों को पंजीकृत करने, पार्किंग इतिहास पर रिपोर्ट देखने और पार्किंग उपलब्धता पर सूचनाएं प्राप्त करने के लिए सुविधाजनक विकल्प प्रदान करता है।

कुल मिलाकर, वाहन पार्किंग प्रबंधन प्रणाली पार्किंग प्रबंधन प्रक्रियाओं को सुव्यवस्थित करने के लिए एक उपयोगकर्ता के अनुकूल इंटरफेस, मजबूत कार्यक्षमता और उन्नत सुविधाएँ प्रदान करत

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CHAPTER 1- Introduction

Vehicle Parking management in urban areas has become increasingly complex with the rise in vehicle numbers juxtaposed against limited parking space availability. Conventional methods often lead to inefficiencies, including traffic congestion, difficulty in securing parking, and revenue loss for parking lot proprietors. In light of these challenges, there arises a demand for innovative approaches that harness advanced technologies to optimize parking utilization, improve user satisfaction, and streamline operations.

Responding to this imperative, the Vehicle Parking Management System (VPMS) project emerges as a beacon of change in urban parking management. By seamlessly integrating state-of-the-art technologies like sensors, cameras, mobile applications, and centralized management platforms, IPMS presents a holistic solution beneficial to both parking lot proprietors and users.

The Vehicle Parking Management System is a web-based technology designed to oversee the records of incoming and outgoing vehicles within a parking facility. Admins can conveniently retrieve data by inputting the vehicle's number, facilitating efficient record management. Operating as an automatic system, it processes data swiftly and systematically, ensuring high-speed data processing.

1.1 Problem Identification

In today's fast-paced world, fashion industry is undergoing in an enhancement phase due to enhancement in technology, consumer behaviors and changing market dynamics. Traditional marketplace is over-shadowed by digital marketplace because digital platforms offer greater convenience, accessibility and choice to consumer.

(a) Inefficient Space Utilization: - Conventional parking management systems frequently depend on manual approaches to monitor parking space occupancy, resulting in inefficiencies in space utilization. In the absence of real-time data regarding available parking spots, individuals might waste unnecessary time hunting for parking, while parking facilities may encounter underutilization or overutilization of spaces.

(b) Traffic Congestion: -Inadequate parking management contributes to traffic congestion, as vehicles circle parking lots in search of available spaces. This not only increases greenhouse gas emissions but also disrupts traffic flow in surrounding areas, impacting overall urban mobility.

(c) Lack of User Convenience: - Traditional parking systems often lack user-friendly interfaces and convenient payment options, leading to a poor user experience.

(d) Ineffective Enforcement: -Manual enforcement of parking regulations is time-consuming and prone to errors, leading to ineffective enforcement of parking rules.

(e) **Inefficient Vehicle and Category Management:** -The current system may not provide efficient methods for administrators to add new vehicles, categorize them appropriately, and manage the database effectively, leading to potential errors and inconsistencies.

(f) **Challenges in Parking Management:** -There may be difficulties in managing outgoing and incoming vehicles efficiently, leading to delays, overcrowding, and confusion in parking areas.

(g) **Limited Reporting Capabilities:** -The system may lack comprehensive reporting features, hindering administrators' ability to generate insightful reports on parking occupancy, revenue, and other essential metrics.

(h) **Ineffective Search Functionality:** -Users may face challenges in searching for their vehicles based on parking numbers, leading to frustration and delays in retrieving their vehicles.

1.2 Parent Organization

Shriram Technologies is a leading organization in the field of Information Technology (IT), dedicated to delivering innovative and cutting-edge solutions to its clients. With a strong focus on technological advancement and customer satisfaction, Shriram Technologies has established itself as a trusted partner for businesses seeking to leverage IT for their growth and success.

At Shriram Technologies, our dedicated team of experienced professionals specializes in a wide range of IT domains, including but not limited to software development, web design and development, mobile application development, cloud computing, cybersecurity, and more. With a deep commitment to excellence, we continuously strive to innovate and adapt to the ever-evolving landscape of technology. By staying at the forefront of industry trends and leveraging the latest advancements, we ensure that our clients receive cutting-edge solutions tailored precisely to their unique requirements. Our holistic approach to problem-solving enables us to deliver not just efficient but also effective solutions that drive tangible results for our clients. At Shriram Technologies, we don't just meet expectations; we exceed them, delivering unparalleled value and reliability in every project we undertake.

Our client engagement strategy revolves around comprehensively understanding their business objectives and challenges. This enables us to craft bespoke solutions aimed at generating tangible outcomes and fostering long-term value. We prioritize building robust relationships with our clients, emphasizing trust, transparency, and collaboration to ensure that our solutions consistently surpass their expectations.

With an unwavering commitment to quality, innovation, and customer satisfaction, Shriram Technologies stands ready to maintain its position as a frontrunner in the IT sector. We are dedicated to empowering businesses to leverage technology effectively, enabling them to reach their objectives and thrive in today's dynamic digital environment.

Through our client-centric approach, we recognize that each business is unique, with its own set of challenges and aspirations. Therefore, we invest time and effort in thoroughly understanding our clients' needs, objectives, and pain points. This deep understanding forms the foundation upon which we build tailored solutions that not only address immediate concerns but also lay the groundwork for sustained growth and success.

1.3 Hardware and Software Specifications

1.3.1 Hardware Specification

Hardware Requirement: To ensure optimal performance and reliability, we've meticulously outlined the hardware specifications essential for our project. Initially, we've selected a Core i3 CPU from the 3000 series boasting a 2.30 GHz frequency. This processor's robust processing capability is vital for effectively managing our project's computational requirements. Our system will be equipped with ample memory to support multitasking and effortlessly handle large datasets, complemented by 4GB of RAM. For storage, we've opted for a 512 GB hard disk drive, providing ample space for project files and data. Additionally, we'll integrate a 512 GB SSD (Solid State Drive), enhancing overall system performance and accelerating data access rates. Operating on a 64-bit OS X64 H Processor ensures maximum performance and seamless compatibility with contemporary software. These meticulously chosen hardware components instill confidence as we embark on our project, knowing our system is adept at meeting the demands efficiently and effectively.

1.3.2 Software specification

Window 11 operating system: We've chosen Windows 11 as our operating system for its array of advanced features, fortified security measures, and streamlined user interfaces. Its contemporary design and refined performance not only enhance the user experience but also ensure a stable and secure environment conducive to software development.

Visual Studio Code: As our primary coding environment, VS Code presents an abundance of features finely tuned for modern development workflows. Its broad support for multiple programming languages, vast libraries of extensions, and seamless integration with version control systems all contribute to streamlining the coding process. This fosters enhanced productivity and facilitates collaboration among team members.

MySQL: Opting for MySQL for database management guarantees the efficient handling of data across the development lifecycle. Its user-friendly graphical interface simplifies tasks like database design, modeling, and administration, empowering developers to effortlessly create and optimize databases. Moreover, its seamless compatibility with Windows 11 ensures smooth integration into the development environment

XAMPP: XAMPP serves as a fundamental component in our project development due to its multifaceted utility in facilitating local web development environments. By integrating Apache, MySQL, PHP, and Perl, XAMPP offers a comprehensive solution for setting up a server environment on a local machine. This is particularly advantageous during the development phase as it allows us to emulate the production environment locally, enabling seamless testing and debugging of web applications before deployment.

Harnessing the strengths of Windows 11, VS Code, Workbench, and XAMPP, our software development process is primed for scalability and peak performance. Whether managing extensive data loads, testing intricate APIs, or deploying software across varied environments, this comprehensive software stack furnishes the essential tools and resources to address the rigors of contemporary software development. In summary, the integrated use of Windows 11, Workbench, VS Code, and XAMPP constitutes a unified and robust software development ecosystem, adept at navigating the complexities of today's dynamic and interconnected digital terrain.

CHAPTER 2- System Analysis

2.1 Problem Analysis

Through the identification and resolution of these core challenges, the Vehicle Management System endeavor endeavors to establish a seamless, tailored experience for users, enhancing their ability to efficiently navigate, explore, and procure automotive products with assurance and ease.

(a) User Management

Creating a robust user registration and login system is crucial for seamless access to parking information. This involves implementing stringent security measures to protect user data while ensuring a user-friendly experience. By prioritizing simplicity and security, users can efficiently manage their parking details with confidence.

(b) Vehicle and Category Management

Efficient management of vehicles and categories is essential for smooth operation. Administrators require a user-friendly interface to add new vehicles seamlessly, categorize them effectively, and maintain a well-organized database. Streamlining these processes ensures accurate tracking and easy retrieval of vehicle information, enhancing overall system efficiency.

(c) Parking Management

A robust parking management system is indispensable for handling both incoming and outgoing vehicles with precision. It involves tracking vehicle movements meticulously and maintaining accurate records of parking durations. By enabling seamless management of vehicles in real-time, the system optimizes parking operations, enhances efficiency, and improves overall user experience.

(d) Reporting Capabilities

Enhancing the system with comprehensive reporting features empowers administrators to extract valuable insights on critical aspects like parking occupancy, revenue generation, and vehicle trends. By providing access to detailed analytics and customizable reports, the system enables informed decision-making and strategic planning, ultimately optimizing parking management processes and maximizing efficiency.

(e) Security and Data Integrity

Maintaining robust security measures is paramount to safeguard user data and uphold the integrity of parking information within the system. By implementing stringent security protocols, including encryption, access

controls, and regular audits, the system mitigates the risk of unauthorized access or tampering. This ensures that user privacy is preserved, and the integrity of parking data remains intact, instilling trust and confidence in the system's reliability and confidentiality.

(f) User Experience

In addition to robust security measures, prioritizing user experience is essential for fostering satisfaction and usability within the system. By implementing intuitive interfaces, responsive design elements, and streamlined workflows, users can navigate the system effortlessly and access parking information with ease. This focus on user-centric design enhances engagement, minimizes frustration, and promotes a positive interaction with the platform, ultimately contributing to overall user satisfaction and loyalty.

2.2 Feasibility Study

2.2.1 Economical Feasibility Study

Personnel Expenses:

S.no	Personnel Expenses	Cost
1	System Analyst (1) [8 days/month]	5000/-
2	Programmer (1) [25 days/month]	5000/-
3	Database Specialist (1) [10 days/month]	3000/-
	Total	13000/-

Other Expenses:

S.no	Other Expenses	Cost
1	Electricity (200 unit @ 8rs/unit)	1600/-
2	Stationary (for documentation)	500/-
3	Workspace facility (table, chairs)	1500/-
4	Wi-fi	1500/-
	Total	5100/-

Hardware & Software expenses:

S.no.	Specification	Cost
1.	Development Server (Express JS)	3000/-
2.	Server Software (O.S.)	1000/-

3.	DBMS Server (MYSQL)	1000/-
	Total	Rs. 23,100/-

2.2.2 Technical Feasibility Study

Programming Languages:

S.no.	Specification	Details
1.	Frontend	HTML,CSS,JAVASCRIP
2.	Backend	PHP
3.	Database	MySQL

Hardware Requirements:

S.no.	Specification	Description
1.	Processor	Intel core i3 and above generation
2.	RAM	Up to 4 GB
3.	SSD	256 GB
4.	Hard-disk	1TB

Software requirements:

S.no.	Specification	Description
1.	Front-End	HTML,CSS,JAVASCRIP
2.	Back-End	PHP
3.	Application	Visual Studio Code, MySQL

4.	Operating System	64 bit (Window 11)
5.	Network	MySQL

2.2.3 Behavioral Feasibility Study

(a) User Interaction Analysis

This involves a comprehensive evaluation of how administrators interact with the system. It includes tasks such as adding vehicles, managing categories, tracking incoming and outgoing vehicles, and utilizing reporting tools to extract valuable insights. By assessing the efficiency and user-friendliness of these interactions, we can ensure that the system meets the needs of administrators effectively.

(b) User Registration and Login Process

The user registration and login process is a crucial aspect of the system's usability and security. It's essential to evaluate the simplicity and security of these processes to ensure a seamless user experience while also safeguarding user data. Identifying any potential complexities or security vulnerabilities will allow us to streamline the registration and login process for users.

(c) Vehicle Management Functionality

Efficient vehicle management is key to the smooth operation of the system. This involves assessing the ease of adding vehicles, creating categories, and updating vehicle information as needed. The system should provide administrators with flexibility and customization options to effectively manage the vehicle database and ensure accurate records.

(d) Parking Management Efficiency

Effective parking management is essential for optimizing parking operations and enhancing user experience. This includes evaluating the accuracy of parking duration records, the effectiveness of vehicle tracking systems, and the system's ability to manage congestion and optimize parking space utilization. By improving parking management efficiency, we can minimize delays and congestion, leading to a smoother parking experience for users.

(e) Reporting Capabilities

Reporting features play a crucial role in providing administrators with valuable insights into parking operations. It's important to assess the comprehensiveness and usability of reporting tools to ensure that administrators can

extract meaningful insights on parking occupancy, revenue generated, and vehicle trends. By enhancing reporting capabilities, we can empower administrators to make informed decisions and optimize parking operations effectively.

(e) User Accessibility

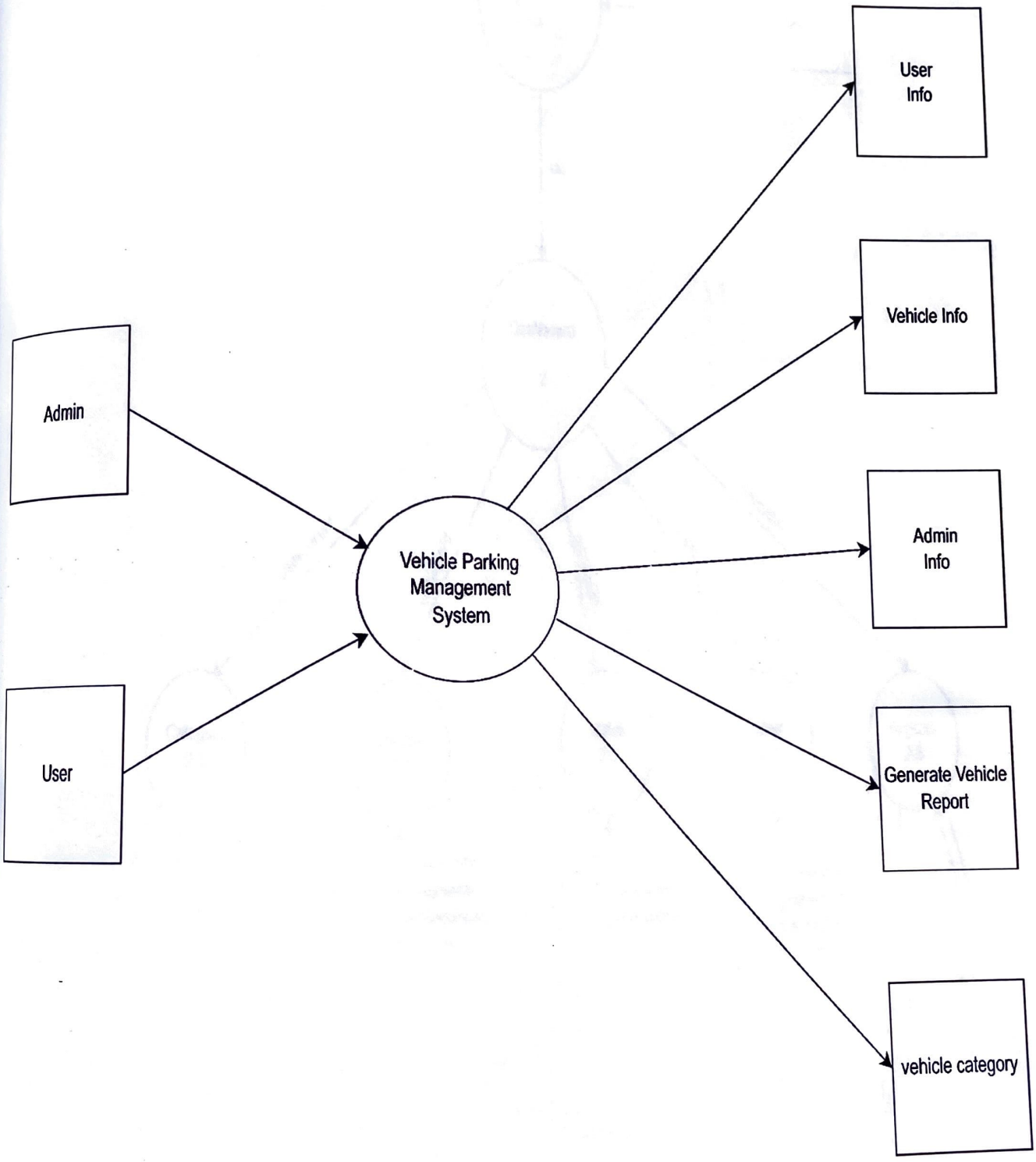
User accessibility is paramount in ensuring that users can easily access and retrieve their parking information. This involves assessing the simplicity and effectiveness of vehicle search functionality, particularly the ability to search for vehicles using parking numbers. By improving user accessibility, we can enhance user satisfaction and streamline the process of retrieving parking information.

(e) Scalability and Future Growth

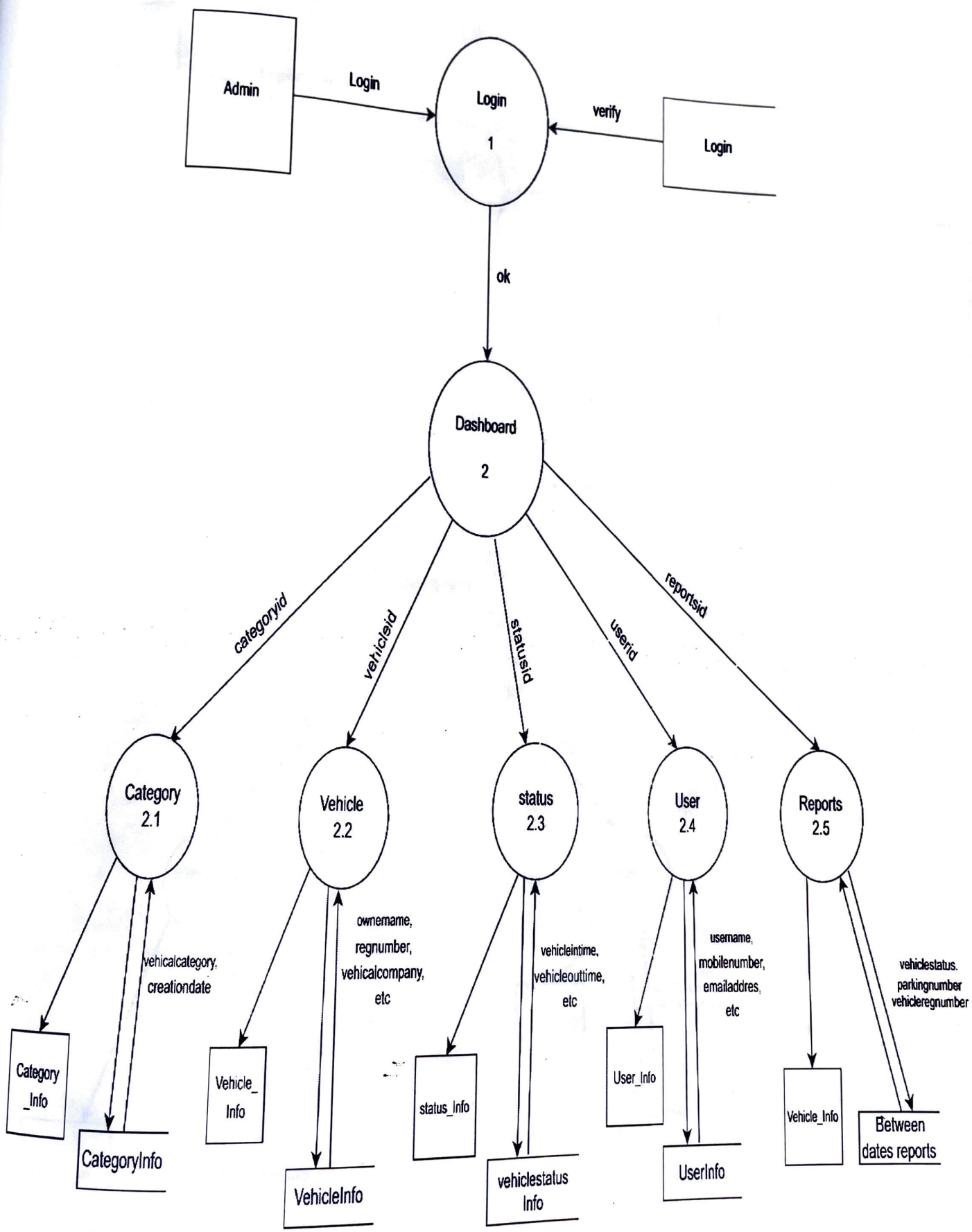
Assessing the system's scalability is important to ensure that it can accommodate future growth and evolving user needs. This involves evaluating whether the system can handle increased vehicle and user volumes and adapt to technological advancements without significant modifications. By ensuring scalability, we can future-proof the system and ensure its long-term viability and effectiveness

2.3 Data Flow Diagram

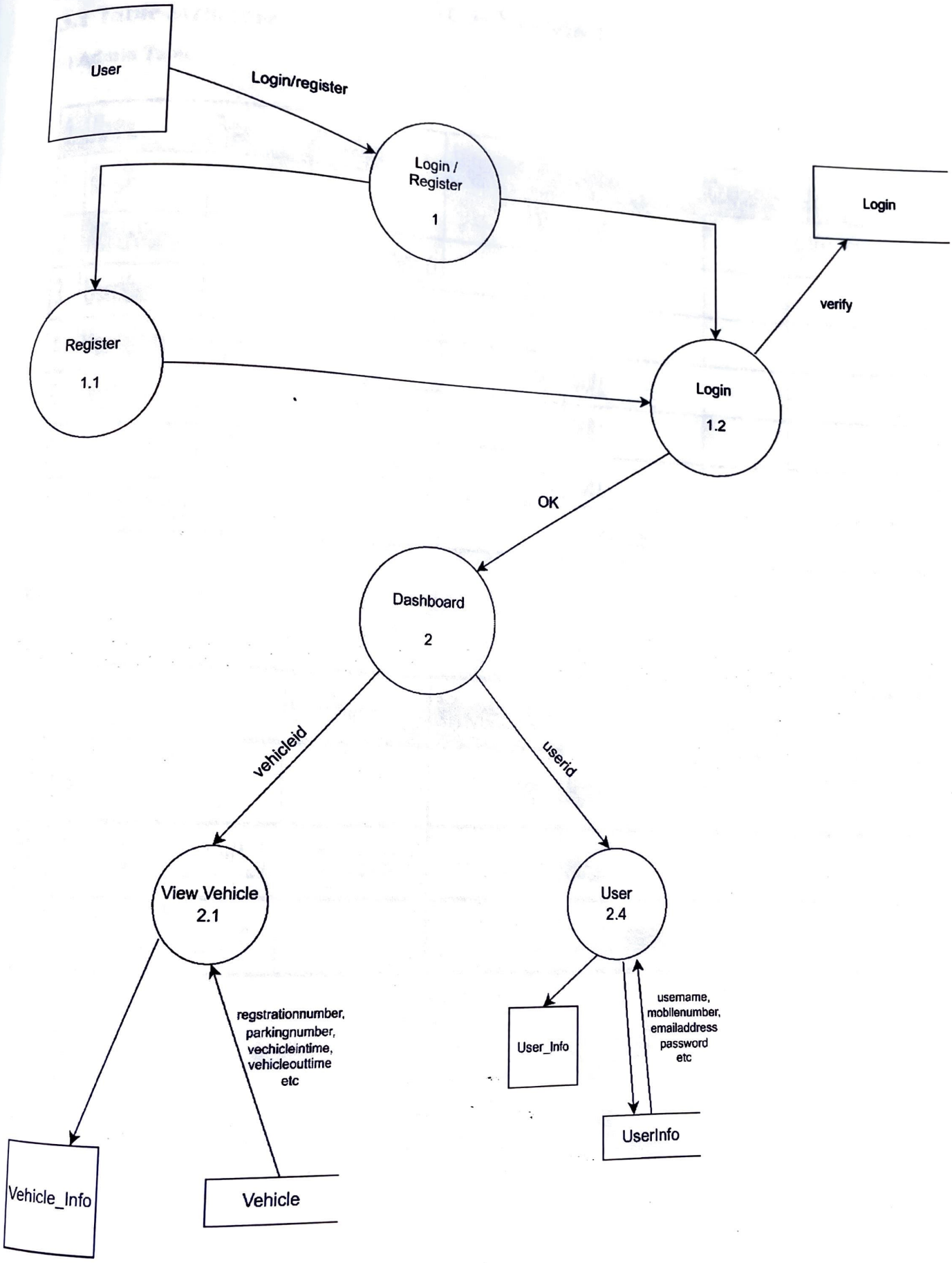
2.3.1 DFD 0



2.3.2 DFD 1 For Admin



2.3.2 DFD 1 For User



CHAPTER 3- System Design

3.1 Table Structure

a) Admin Table

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	ID	int(10)			No	None		AUTO_INCREMENT
2	AdminName	varchar(120)	latin1_swedish_ci		Yes	NULL		
3	UserName	varchar(120)	latin1_swedish_ci		Yes	NULL		
4	MobileNumber	bigint(10)			Yes	NULL		
5	Email	varchar(200)	latin1_swedish_ci		Yes	NULL		
6	Password	varchar(120)	latin1_swedish_ci		Yes	NULL		
7	AdminRegdate	timestamp			Yes	current_timestamp()		

b) Category Table

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	ID	int(10)			No	None		AUTO_INCREMENT
2	VehicleCat	varchar(120)	latin1_swedish_ci		Yes	NULL		
3	CreationDate	timestamp			Yes	current_timestamp()		

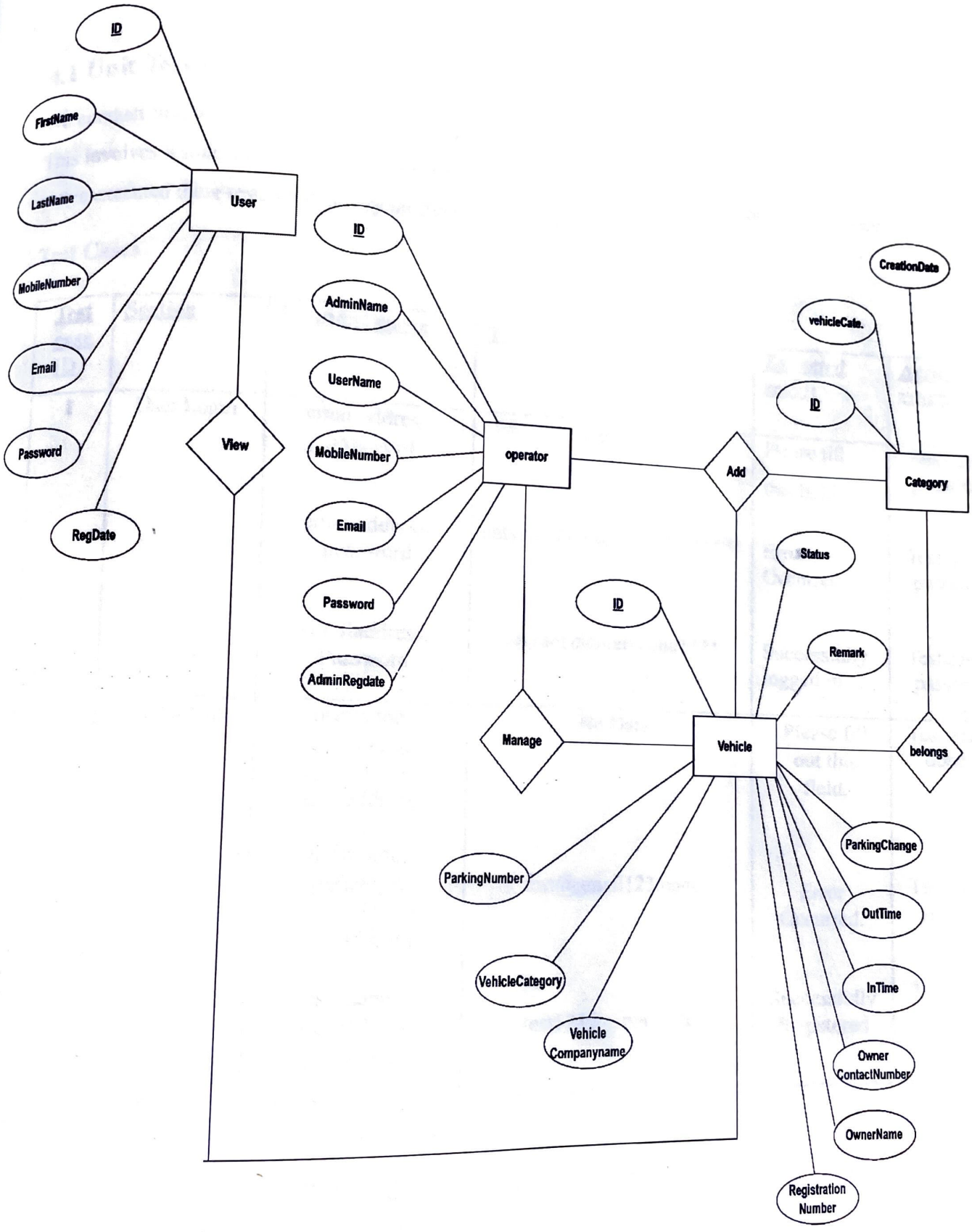
c) Vehicle Table

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	ID	int(10)			No	None		AUTO_INCREMENT
2	ParkingNumber	varchar(120)	latin1_swedish_ci		Yes	NULL		
3	VehicleCategory	varchar(120)	latin1_swedish_ci		No	None		
4	VehicleCompanyname	varchar(120)	latin1_swedish_ci		Yes	NULL		
5	RegistrationNumber	varchar(120)	latin1_swedish_ci		Yes	NULL		
6	OwnerName	varchar(120)	latin1_swedish_ci		Yes	NULL		
7	OwnerContactNumber	bigint(10)			Yes	NULL		
8	InTime	timestamp			Yes	current_timestamp()		
9	OutTime	timestamp			Yes	NULL		ON UPDATE CURRENT_TIMESTAMP()
10	ParkingCharge	varchar(120)	latin1_swedish_ci		No	None		
11	Remark	mediumtext	latin1_swedish_ci		No			
12	Status	varchar(5)	latin1_swedish_ci		No	None		

d) User Table

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	ID	int(5)			No	*None*		AUTO_INCREMENT
2	FirstName	varchar(250)	latin1_swedish_ci		Yes	*NULL*		
3	LastName	varchar(250)	latin1_swedish_ci		Yes	*NULL*		
4	MobileNumber	bigint(10)			Yes	*NULL*		
5	Email	varchar(250)	latin1_swedish_ci		Yes	*NULL*		
6	Password	varchar(250)	latin1_swedish_ci		Yes	*NULL*		
7	RegDate	timestamp			Yes	current_timestamp()		

3.2 Entity Relationship Diagram



CHAPTER 4- Testing

4.1 Unit Testing

We conduct unit testing on each small component of the website individually to ensure proper functionality. This involves testing various inputs to validate their corresponding outputs and overall behavior. Specifically, we've executed these tests extensively on the user login feature.

Test Cases

Test case ID	Section	Element name	Testdata	Expected result	Actual result
1	User Login	emailaddress, password	No Data	Please fill this field.	Test case passed.
		emailaddress, password	satyam@gmail,com/********	Error Occurred.	Test case passed.
		emailaddress, Password	satyam@gmail.com/****	Successfully logged in.	Test case passed.
2	User Signup	username, mobileno, password useraddress	No Data	Please fill out this field.	Test case done
		username, password mobileno useraddress	test@gmail123.com	Error Occurred.	Test case passed
		username, useraddress, password, mobileno	test123@gmail.com	Successfully Registered	Test case passed

The login button on the Login Page is disabled by default until the user enters both their valid email and password in the input fields. This measure ensures that the admin has provided the required information before attempting to log in. Once both fields are filled, the user is able to log in and access the dashboard, but only if

the entered data is valid and correct. Logging in as a user will navigate to the user dashboard, and will allow users to make changes to their profiles, vehicle view, and access the available features on it

4.2 System testing

System testing is a type of software testing that evaluates the entire system including all its components. Tests how the different component of the application navigate to another component. Verify that only user can able to access the user module. Verify that user dashboard has all the required option to manage all types of data.

Test Case ID	Description
Test Case 1	Only authorized user can login
Test Case 2	Only the login user can give review
Test Case 3	Verify that user dashboard has all the required option to manage all the types of data

4.3 Compatibility Testing

Compatibility testing refers to the process of testing its compatibility across different platforms, devices, browsers, operating system, and network environments. The objective is to ensure that the website functions work properly and consistently for users.

Test Cases

Test Scenario	Element Name	Element Type	Input	Expected Result	Actual Result	Test Result
1	Device Compatibility	Responsiveness on different devices	Checking Responsiveness on devices for e.g., Laptops, tablets, Smartphones	Website will adapt different screen sizes on different devices without any disbalancing	As expected, the website is full responsive and working perfectly	Passed
2	Operating System Compatibility	Checking website behavior on different operating systems	Working on different Operating Systems e.g., Android systems, macOS, iOS, Windows, etc.	There shouldn't be any changes in website Designing, Working, Accessibility and Performance speed, while switching the Operating System	As Expected, The Website is working all same even on different Operating System expect Linux operating system	Passed
3	End-user Security	Data Security	Testing security measures of users	The logged in user will be able to see his/her own details related information only or correct user-profile is opened for user while logging in	As Expected, Details of login Email is shown, no details of other user are visible to all. Hence Secured	Passed

CHAPTER 5- Implementation

5.1 Visual studio Code

a. Firstly go to the official website of visual studio code https://visualstudio.microsoft.com/downloads.
b. Now select the one which you want to install according to your system click on the download button.
c. Now click on install button
d. Follow up installation process and choose options that are suitable to your need
e. Click on exit

5.2 MySQL

a. First go to the official website of MySQL https://www.mysql .
b. There you will find the download button
c. Then click on MySQL community (GPL) downloads
d. Click on MySQL installer for windows
e. Click on the first download link
f. Then click on he custom button
g. Expand MySQL server then expand MySQL server 8.0
h. Then double click on the latest version
i. Click on next
j. Click on execute
k. Set your password click on next
l. Then automatically MySQL workbench window will open

5.3 XAMPP

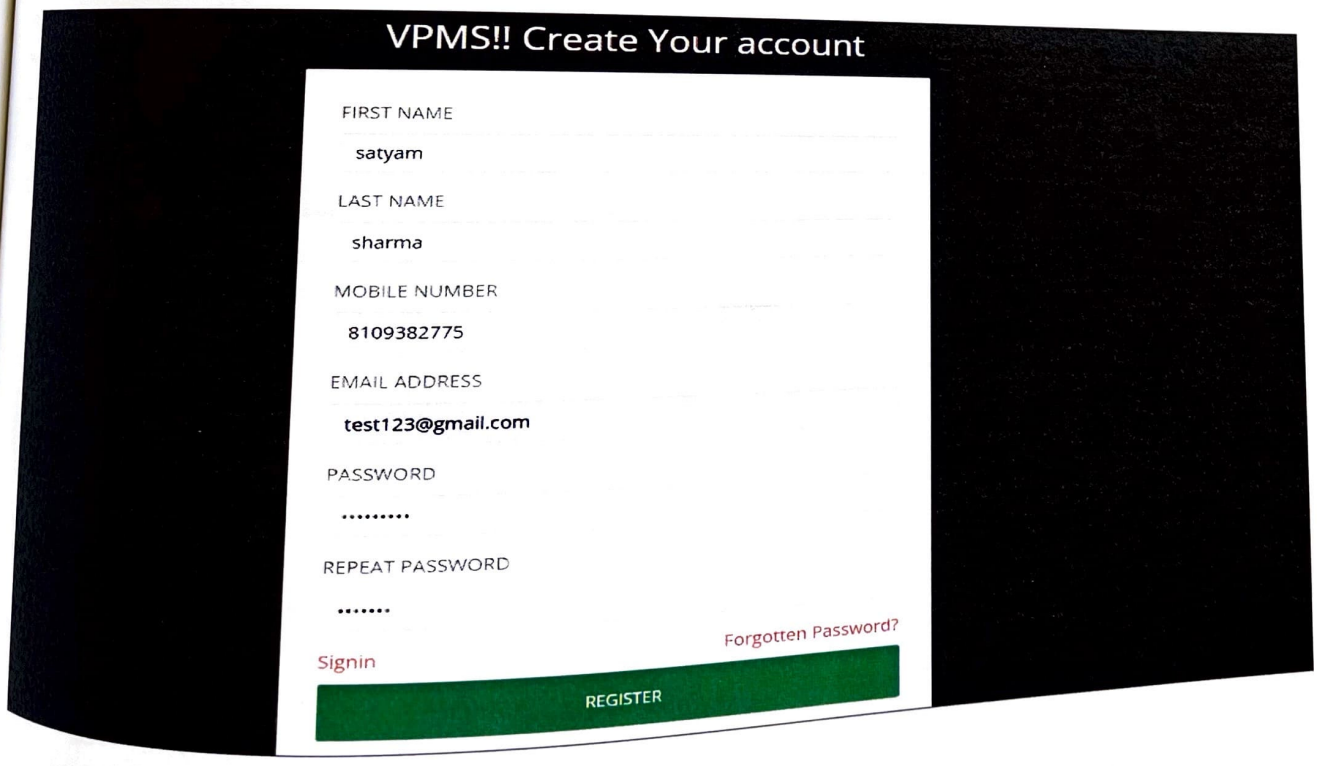
a. Visit the official XAMPP website at https://www.apachefriends.org
b. Navigate to the download section.
c. Choose the appropriate version for your operating system (Windows, macOS, Linux).
d. Set the destination folder where you want to install XAMP select next.
e. Click on next and then finish.
f. Verify the XAMPP properly installed or not.

In this project, the user journey begins with the registration process, where individuals are required to create an account by providing necessary details such as name, email address, and password. Upon successful registration, users gain access to the platform's functionalities. A key feature of the dashboard is the ability for users to view parking status and receipts for vehicles registered under their mobile number. Users can input their registered mobile number and retrieve information regarding the parking status of their vehicles. This includes details such as current parking location, duration, and any associated fees.

CHAPTER 6- Sample Forms and Reports

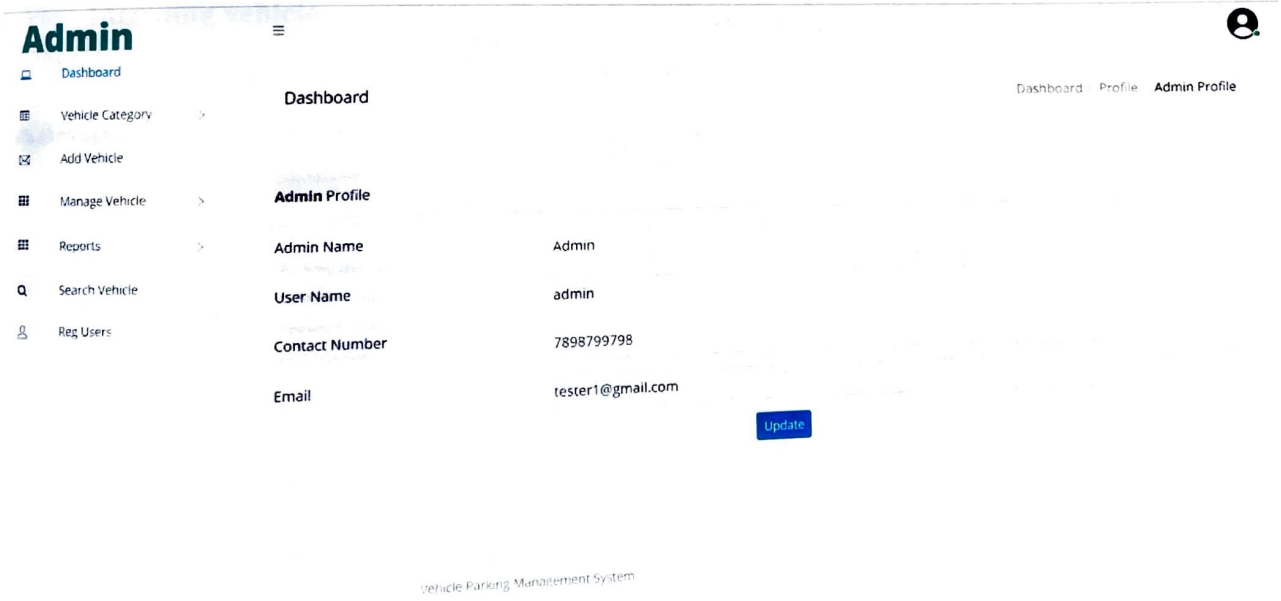
a) *Home Page*

b) **Sign Up Page**

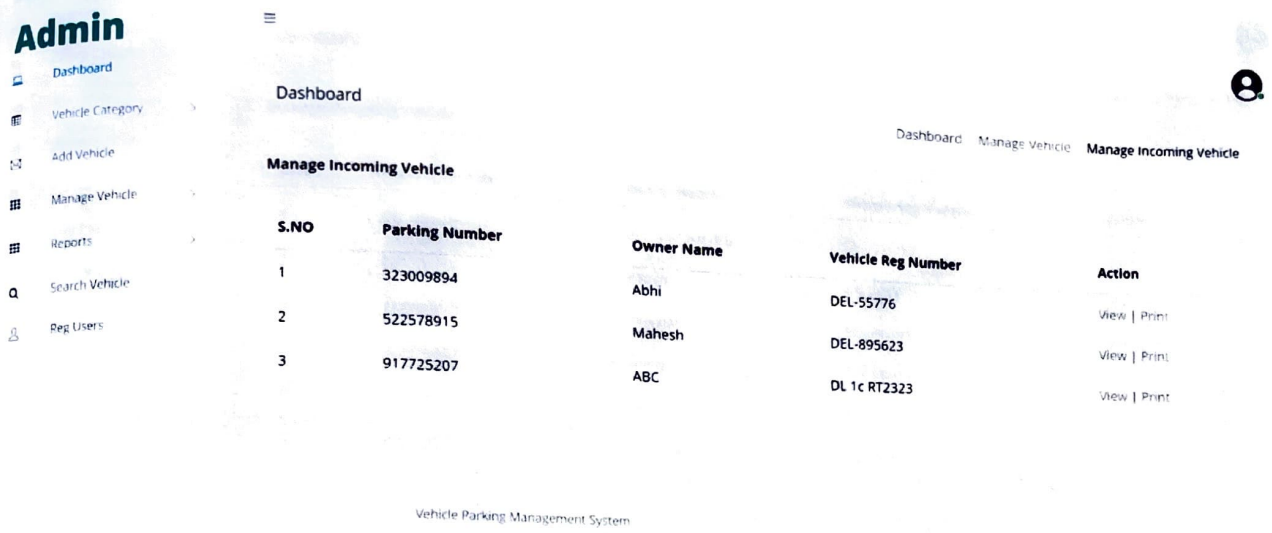


c) Admin Dashboard

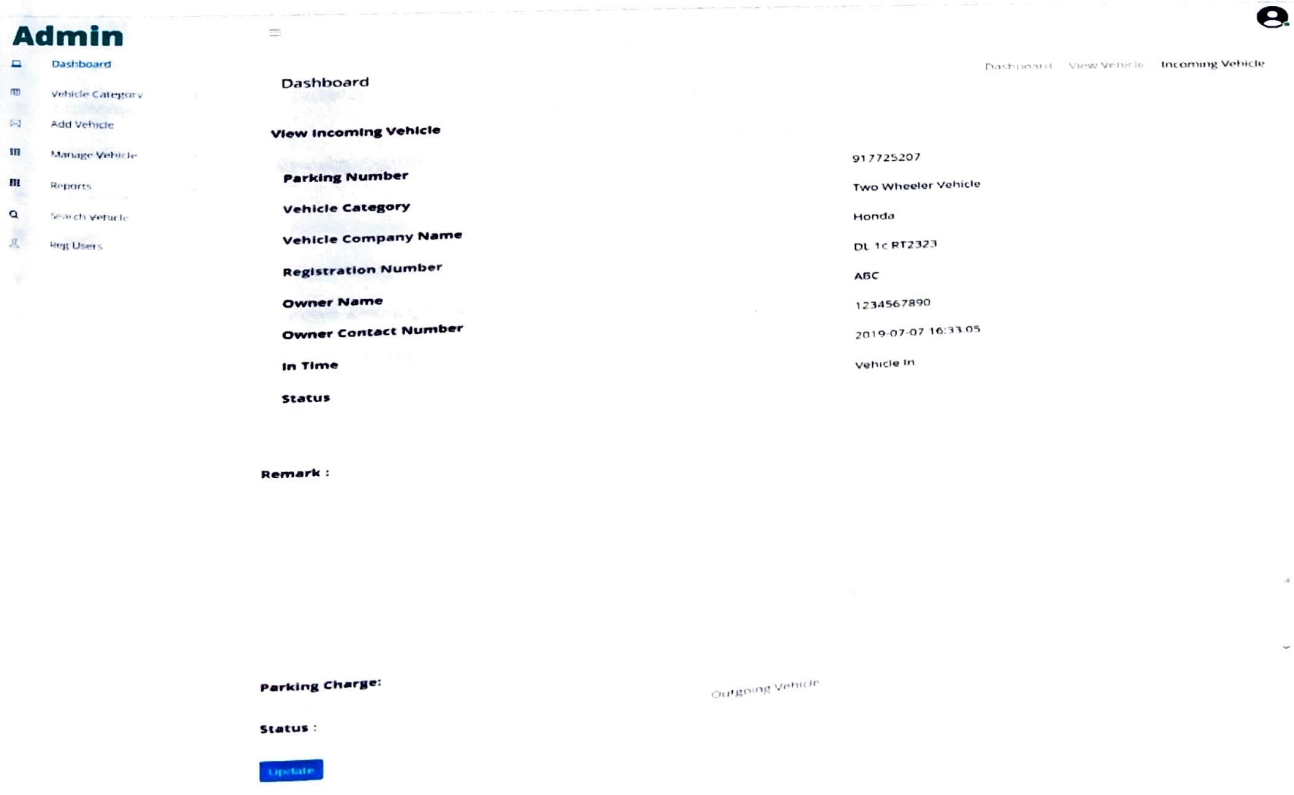
d) Admin Profile



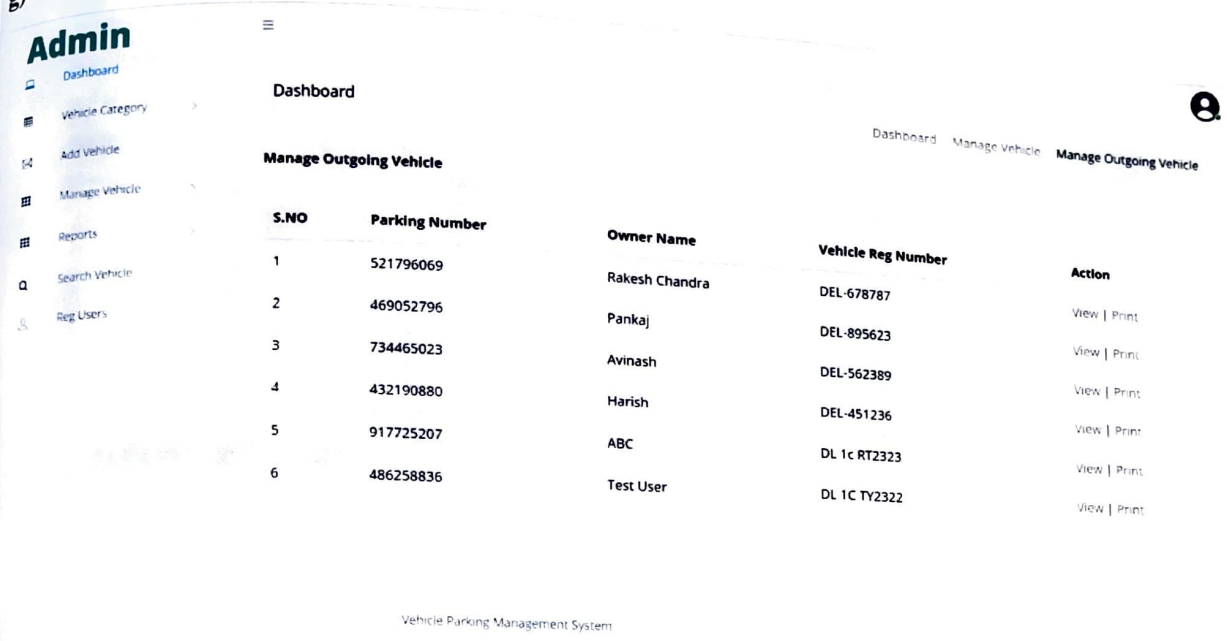
e) Manage Incoming Vehicle



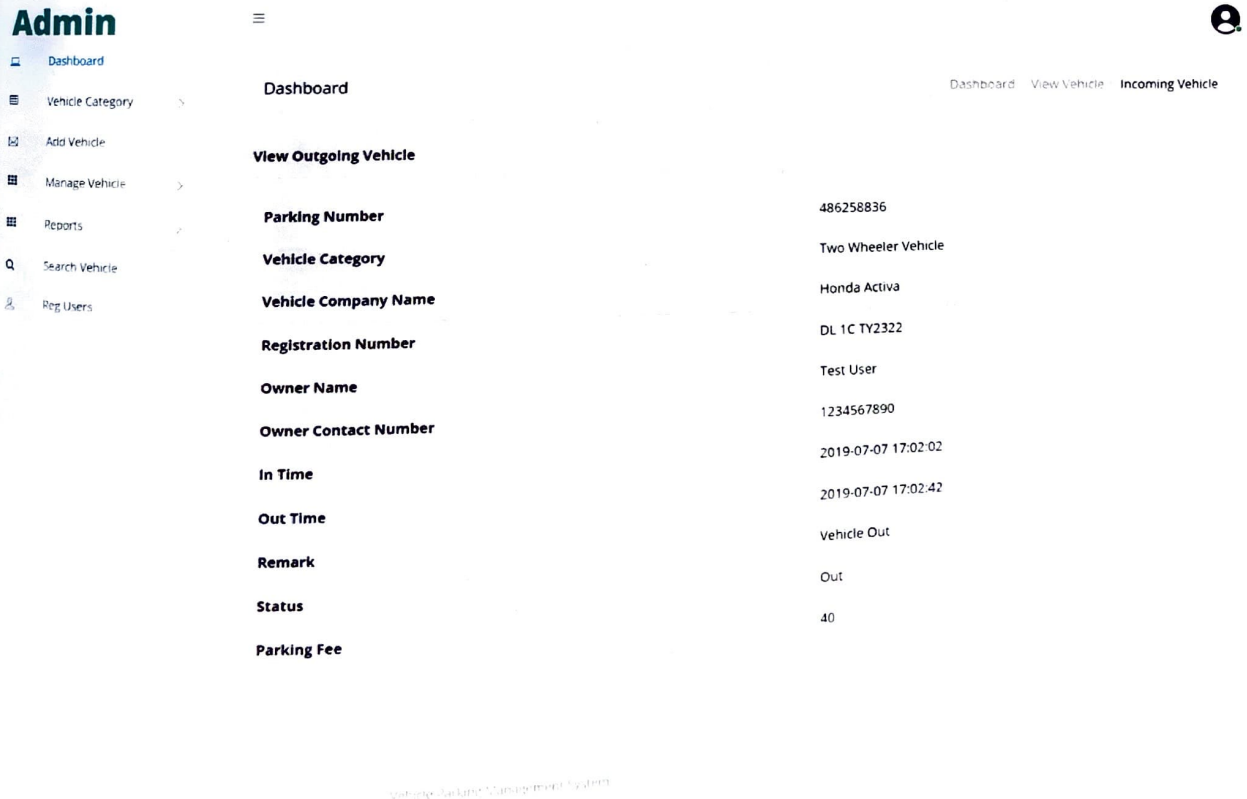
f) View Incoming vehicle



g) Manage Outgoing Vehicle



h) View Outgoing Vehicle



i) Vehicle Parking Receipt

Vehicle Parking receipt

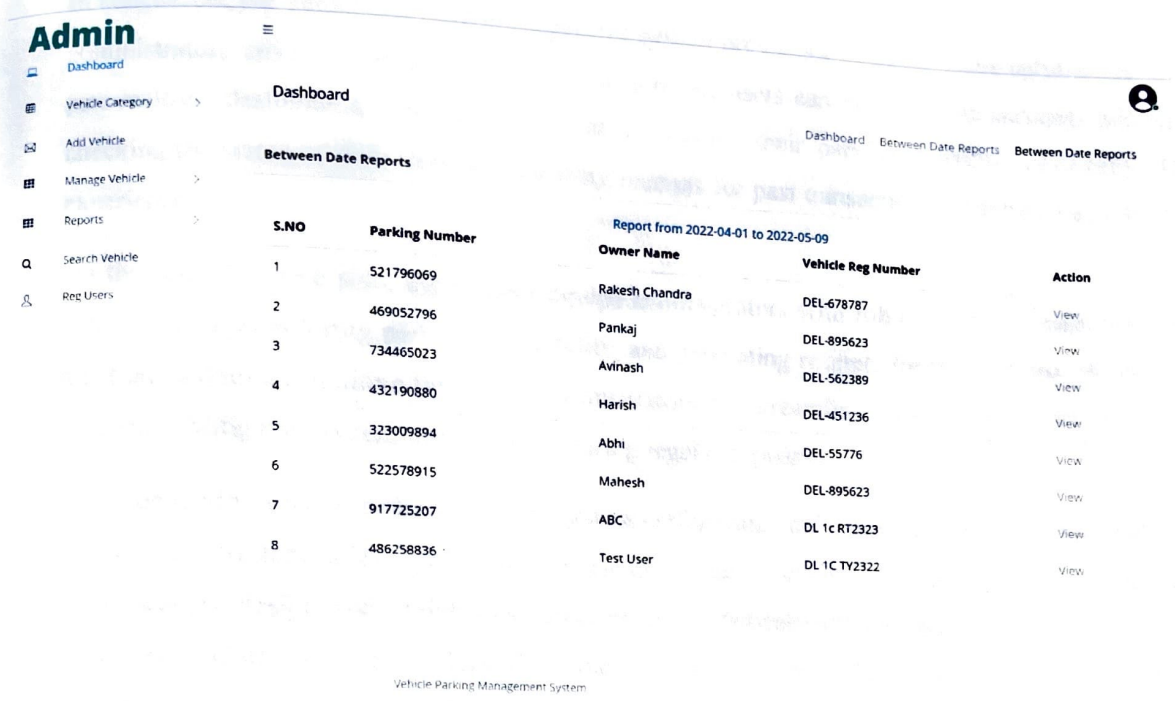
Parking Number	486258836	Vehicle Category	Two Wheeler Vehicle
Vehicle Company Name	Honda Activa	Registration Number	DL 1C TY2322
Owner Name	Test User	Owner Contact Number	1234567890
In Time	2019-07-07 17:02:02	Status	Outgoing Vehicle
Out time	2019-07-07 17:02:42	Rarking Charge	40
Remark	Vehicle Out		

j) Parking Receipt

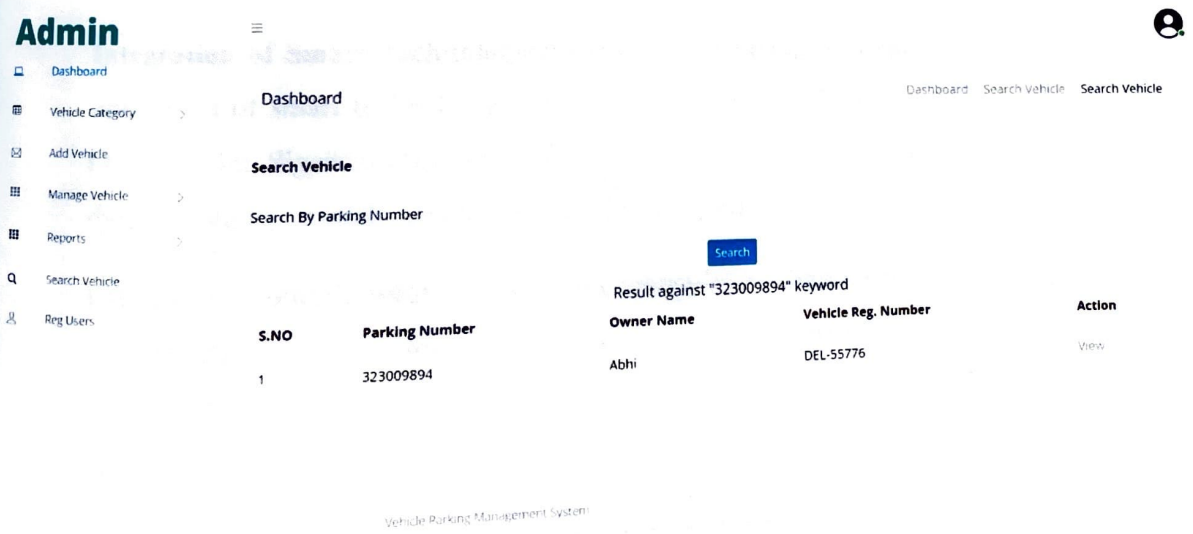
Vehicle Parking receipt

Parking Number	323009894	Vehicle Category	Two Wheeler Vehicle
Vehicle Company Name	Activa	Registration Number	DEL-55776
Owner Name	Abhi	Owner Contact Number	4654654654
In Time	2019-07-06 14:28:38	Status	Incoming Vehicle

k) View Report



l) Search Vehicle



CHAPTER 7- Conclusion & Future Scope

In conclusion, the vehicle parking management system provides a comprehensive solution for both users and administrators alike. Through the registration process, users can easily create accounts and gain access to personalized dashboards, empowering them to manage their parking activities efficiently. This includes checking the status of their vehicles, viewing receipts for past transactions, and ensuring a seamless parking experience.

On the administrative side, the system equips administrators with robust tools for managing incoming and outgoing cars, monitoring parking availability, and generating receipts for transactions. By centralizing these functions within an intuitive interface, administrators can streamline parking operations and enhance overall efficiency. Mitigating potential risk and ensuring legal compliance

After conducting various tests to evaluate system performance and software quality, it is evident that the Vehicle Management System holds significant promise as a valuable addition to parking management solutions. With its user-centric design, robust database structure, and a dedication to ongoing enhancement, we are positioned to deliver a platform that revolutionizes the way users manage their parking needs. By prioritizing user experience and embracing a culture of continuous improvement, the Vehicle Management System has the potential to streamline parking operations, optimize resource utilization, and foster growth opportunities for parking service providers.

Integration of Smart Technologies: Future advancements in vehicle parking management may involve the integration of smart technologies such as IoT (Internet of Things) sensors, real-time data analytics, and AI (Artificial Intelligence) algorithms. These technologies can enable predictive parking availability predictions, dynamic pricing models, and personalized parking recommendations for users.

Expansion of mobile solutions: With the increasing reliance on mobile devices, the future of vehicle parking management could see a greater emphasis on mobile solutions. This may include the development of mobile apps with features like remote parking spot reservation, digital payments, and navigation assistance to available parking spaces.

Sustainability Initiatives: As sustainability becomes a priority, future vehicle parking management systems may incorporate eco-friendly practices. This could involve the implementation of electric vehicle charging stations, incentives for carpooling or shared rides, and the integration of renewable energy sources to power parking facilities.

Autonomous Parking Solutions: With the advancement of autonomous vehicle technology, future parking management systems may adapt to accommodate self-driving cars. This could involve the development of dedicated parking areas equipped with infrastructure to support autonomous vehicle parking, charging, and maintenance

Enhanced Security Measures: To address concerns about vehicle theft and vandalism, future vehicle parking management systems may incorporate advanced security measures. This could include the integration of surveillance cameras, license plate recognition systems, and biometric access controls to enhance the safety and security of parked vehicles.

Integration with Smart city initiatives: As cities continue to pursue smart city initiatives, vehicle parking management systems may become integral components of urban infrastructure. Integration with other smart city systems, such as traffic management and public transportation, could enable more efficient use of parking resources and contribute to overall urban mobility solutions.

Integration of Seamless Online Payment solution: In the future, vehicle parking management systems may prioritize the integration of seamless online payment solutions. This could involve the implementation of secure payment gateways that allow users to pay for parking fees digitally through various methods such as credit/debit cards, mobile wallets, or even cryptocurrency. Additionally, the system could offer features like automatic payment processing upon exit, pre-paid parking packages, and digital receipts for enhanced convenience and efficiency for both users and administrators.

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Name of student	Satyam Sharma		Department	CSE (Program: MCA)	
Industry/Organization	SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT		Date/Duration	01/01/24–15/01/24	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation				✓	
Performance / Quality of work			✓		
Behaviors /Discipline/Team work				✓	
Sincerity/Hardwork			✓		
Comment on nature of work done/Area/Topic	learn HTML, CSS, and Javascript				
OVERALLGRADE (Anyone)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT** ✓				
Name of Industry Mentor	Ankit Parashar				
Signature of Industry Mentor	Ankit				

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Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation				✓	
Performance / Quality of work			✓		
Behaviors /Discipline/Team work				✓	
Sincerity/Hardwork				✓	
Comment on nature of work done/Area/Topic	learned about database (MongoDB) and connectivity				
OVERALLGRADE (Anyone)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT** ✓				
Name of Industry Mentor	Ankit Parihar				
Signature of Industry Mentor	Ankit SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT				

Receiving Date	5/2/24	Name of Faculty Mentor	PARUL SAXENA	Sign	5/2/24

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Industry/Organization	SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT		Date/Duration	01/02/2024 - 15/02/24	
Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation			✓		
Performance / Quality of work				✓	
Behaviors /Discipline/Team work				✓	
Sincerity/Hardwork				✓	
Comment on nature of work done/Area/Topic	Engaged in the comprehensive development of website using HTML CSS & Javascript				
OVERALLGRADE (Anyone)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT** ✓				
Name of Industry Mentor	Ankesh Ranjan				
Signature of Industry Mentor	SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT				

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Criterion	**Poor**	**Average**	**Good**	**VeryGood**	**Excellent**
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Learning capacity/Knowledge up gradation			✓		
Performance / Quality of work				✓	
Behaviors /Discipline/Team work				✓	
Sincerity/Hardwork				✓	
Comment on nature of work done/Area/Topic	Design and maintain database write queries, and ensure efficient data storage and retrieval.				
OVERALLGRADE (Anyone)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT** ✓				
Name of Industry Mentor	Ankit Pokhriyal				
Signature of Industry Mentor	Ankit				

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Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation				✓	✓
Performance/Quality of work			✓		
Behaviour/Discipline/Team work					✓
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	worked on admin portal and its functionalities and user dashboard				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT**				
Name of Industry Mentor	Ankit Parashar				
Signature of Industry Mentor	Ankit SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT				

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Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation					✓
Performance/Quality of work				✓	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work					✓
Comment on nature of work done/Area/Topic	worked on Backend PHP connectivity				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT** ✓				
Name of Industry Mentor	Ankit Parashar				
Signature of Industry Mentor	Ankit SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT				

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Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation				✓	✓
Performance/Quality of work				✓	
Behaviour/Discipline/Team work					✓
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Marked on finishing the Project and testing modules				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT**				
Name of Industry Mentor	Ankit Parashar				
Signature of Industry Mentor	SHRIRAM TECHNOLOGIES RESEARCH & DEVELOPMENT				

Receiving Date	22/4/24	Name of Faculty Mentor	Ms. Parul Saxena	Sign	