Vehicle Parking Management System (VPMS)

Team Alpha

Team Members:

1. Jaswanth Nalluri
2. Anurag Lakkavathula
3. Abhishek Darsha
4. Lakshmi Deepika Yadagiri
5. Sai Sri Naga Sashank Pasupuletic
6. Jishna Sathvik Vucha
7. Dhiresh Venkateshwarlu Katuri
8. Nikhil Chowdary Kollipati
9. Jaya Sai Reddy Santimalla

2. Project Description

The VPMS functions as a web-based application which automates parking space allocation together with reservation operations. An easy-to-use interface of the system enables vehicle owners to complete registration along with booking parking slots and secure real-time payments with the platform. The system features design scalability which enables it to serve transportation zones that experience heavy traffic at shopping malls.

The system serves various automation functions in parking management operations through slot tracking and subscription management and real-time update features which achieve improved user experiences and enhanced system administration efficiency. Vehicle owners, parking administrators, and system operators will be the key users of the system.

The development of the system will use a web application structure with an interactive front-end interface connected to robust back-end capabilities and database and a real-time system for slot availability and booking.

The following are the key features of the system:

1. User Registration & Authentication where users will be able to create accounts, register vehicles, make bookings, and track parking history.
2. **Management of Users** – where the Admins will be able to add, delete, or edit user profiles as well as assign roles to staff members.
3. Manage Parking Slots and Bookings across multiple locations.
4. Secure Payment Integration with third-party payment gateways for secure payments.

5. Vehicle Registration with License Plate Details for easier identification.
6. Online Booking & Reservation where users will be able to book parking slots ahead of time.
7. **Overstay Fines**
   Automated detection of overstay and calculation of fines based on predefined rules.
8. **Subscription Plans**
   Offer subscription packages for frequent users.
9. **Parking History & Reports**
   A dashboard that enables users to view their parking history.
10. **Management of Staff Roles & Permissions**
    Admin roles include different levels of permissions such as view, edit, and delete access to parking management.
11. **User Feedback & Ratings**
    After each parking session, users can rate their experience, which can be used for system improvement.
12. **Slot Availability Checking**
    A real-time check on available parking slots using an intuitive interface.
13. **Multi-Section Parking Support**
    Support for various types of parking arrangements, such as underground parking, multi-level parking, etc.
14. **Automated Ticketing System**
    Users can print a ticket for payment verification.
15. **Collision avoidance.**

    The system should ensure there is no collision for online booking and reservations

Development Environment:

1. Frontend:
   - HTML
   - Tailwind CSS
   - JavaScript
2. Backend:
   - Laravel (PHP Framework)
   - MySQL Database
3. Version Control:
   - GitHub Repository

3. Initial Planning & Timeline

The project timeline follows a phased approach with clear milestones for each phase of the development cycle. The timeline ensures that the project progresses in an organized manner, allowing enough time for development, testing, and deployment.

The Gantt Chart below will be maintained for tracking progress of the project

Milestone	Tasks	Planned Completion
Project Setup	Repository setup, team roles distribution	Week 1
Design Phase	Database schema, UI wireframes, system architecture	Week 2
Development Phase 1	User Authentication, User Management, Role Management	Week 3-4
Development Phase 2	Parking Slot Management, Booking System, Payment Integration	Week 5-6
Development Phase 3	Overstay Fines, Subscription Plans, Parking Reports	Week 7
Development Phase 4	User Feedback, Slot Availability, Multi-Section Parking	Week 8
Development Phase 5	Automated Ticketing, Collision Avoidance System	Week 9
Testing & Debugging	Unit testing, Integration testing, Bug fixes	Week 10-11
Deployment & Finalization	Hosting, System documentation, Final Presentation	Week 12

4. Risk Management Plan

Risk management is an essential part of the project to minimize potential setbacks and ensure the successful delivery of the VPMS. The team has identified the top three risks and mitigation strategies:

Top 3 Identified Risks & Mitigation Strategies

Risk	Monitoring Plan	Contingency Plan
Scope Creep	Weekly progress review meetings	Prioritize core functionalities
Technical Challenges	Code reviews and peer programming	Consult documentation, seek external help
Team Availability	Maintain clear schedules and communication	Redistribute tasks when needed

From the above it is clear that the project manager will hold weekly progress review meetings to monitor potential risks, especially scope creep, and adjust the project scope if necessary. Risk evaluation will occur during these meetings and any necessary contingency plans will be implemented. For technical

challenges, we will consult documentation, seek external help from communities. For team availability we shall Maintain clear schedules and communication and redistribute tasks when needed.

5. Roles & Responsibilities

Each team member will be assigned specific tasks, based on their expertise, to ensure efficient and effective project execution. Here's a breakdown of the roles and responsibilities for each member:

Member	Features Assigned
Jaswanth Nalluri	Automated Ticketing System
Anurag Lakkavathula	Online Booking & Reservation, Multi-Section Parking Support
Abhishek Darsha	User Registration & Authentication, Overstay Fines
Lakshmi Deepika Yadagiri	User Management, Vehicle Registration, Roles & Permissions Management
Sai Sri Naga Sashank Pasupuleti	User Feedback & Ratings
Jishna Sathvik Vucha	Parking Slot & Booking Management, Parking History & Reports
Dhiresh Venkateshwarlu Katuri	Subscription Plans, Collision Avoidance
Nikhil Chowdary Kollipati	Secure Payment Integration, Database Design
Jaya Sai Reddy Santimalla	Slot Availability Checking, Responsiveness

6. Member Contribution Table

Below is a detailed breakdown of each team member's contribution to the project, including their overall percentage contribution:

Member Name	Contribution Description	Overall Contribution (%)	Note (if applicable)
Jaswanth Nalluri	Project planning and timeline creation.	18%	Team Lead
Anurag Lakkavathula	Drafted project description and system features	15%	
Abhishek Darsha	Defined development technologies and environment	14%	
Lakshmi Deepika Yadagiri	Feature allocation.	13%	

Sai Sri Naga Sashank Pasupuleti	Drafted risk management plan and mitigation strategies	12%	
Jishna Sathvik Vucha	Wrote and structured README file for repository	10%	
Dhiresh Venkateshwarlu Katuri	Documented meeting minutes	10%	
Nikhil Chowdary Kollipati	Set up GitHub repository and managed version control	8%	

Prepared by: Team Alpha
Date: 02/02/2025