Software Requirement Specification

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Project Details:

Project Name	Vehicle Management (**ID - 13**)
Description	Vehicle Management software using the LAMP stack (Linux, Apache, MySQL, PHP) provides a robust solution for overseeing fleet operations. It enables efficient tracking and management of vehicle information, maintenance schedules, and usage statistics. The system offers a user-friendly web interface for real-time data access and reporting, ensuring optimal vehicle performance and cost control.
Domain	Special Labs
Stack	LAMP

1. Introduction :

1.1 Purpose :

Vehicle Management software using the LAMP stack is to streamline fleet operations through centralized data management and real-time monitoring. It aims to enhance vehicle utilization, reduce operational costs, and ensure timely maintenance. The software facilitates compliance with regulatory requirements and improves decision-making through detailed reporting and analytics.

1.2 Product Scope :

The Vehicle Management software using the LAMP stack includes tracking and managing vehicle inventory, maintenance schedules, and fuel consumption. It provides modules for real-time location monitoring, driver management, and route optimization. The software features comprehensive reporting and analytics tools for performance assessment and decision-making. Additionally, it supports integration with other enterprise systems, ensuring seamless data flow and operational synergy.

1.3 Product value :

The Vehicle Management software delivers significant value by enhancing fleet efficiency and reducing operational costs through optimized

vehicle utilization and maintenance. It ensures data security and scalability, accommodating growing fleet sizes and evolving business needs. The software improves decision-making with real-time insights and comprehensive analytics, leading to better resource management.

1.4 Intended use :

It is designed for tracking vehicle location, scheduling maintenance, and monitoring fuel usage to ensure optimal performance and cost efficiency. The software aids in managing driver assignments, route planning, and compliance with regulatory standards. Additionally, it provides real-time data analytics and reporting to support informed decision-making and operational improvements.

2. Breakdown of Requirement :

- The breakdown of requirements for Vehicle Management software using the LAMP stack includes a robust database schema for storing vehicle and maintenance data in MySQL.
- It requires a user-friendly web interface developed in PHP and HTML/CSS for managing and viewing vehicle information.

- Real-time tracking capabilities using APIs and GPS integration are essential for monitoring vehicle locations. Additionally, comprehensive reporting and analytics modules must be implemented to provide actionable insights and support decision-making processes.

3. Key Features :

3.1 Vehicle Information Management

- **Database Schema**: Comprehensive MySQL database for storing detailed vehicle data.
- **Inventory Management**: Track and manage vehicle details, including make, model, year, and VIN.

3.2 Maintenance Scheduling

- **Automated Alerts**: Set up reminders for routine maintenance and inspections.
- **Service History Tracking**: Maintain a complete history of all maintenance and repairs performed.

3.3 Real-Time Monitoring

- **GPS Integration**: Real-time vehicle location tracking using GPS.

- **Live Updates**: Monitor vehicle status, speed, and route in real-time.

3.4 Security and Compliance

- **Data Security**: Implement robust security measures to protect sensitive information.
- **Regulatory Compliance**: Ensure adherence to industry regulations and standards.

3.5 Reporting and Analytics

- **Custom Reports**: Generate detailed reports on vehicle performance, maintenance, and usage.
- **Data Visualization**: Visualize key metrics through charts and graphs for easier analysis.

4. Stack Architecture and Infrastructure:

Hosting	Cloud hosting (e.g. AWS) on Linux VMs or containers
Database	MySQL (RDMS) for structured data.
Front-end	HTML, CSS, JavaScript, technologies
Back-end	PHP, Frameworks (Laravel), RESTful APIs

5. Operational Specifications

5.1 Users Management:

- Driver
- RBAC
- Co-Ordinator

5.2 Mentoring:

- Users can give requests for booking . They can either reject or accept , in case of reject user should request

- Then the further can proceed.

5.3 Integration and Scalability

- **API Support**: Integrate with other enterprise systems and third-party applications.
- **Scalable Architecture**: Ensure the system can grow with the expanding fleet size and operational demands.

5.4 Maintenance Management:

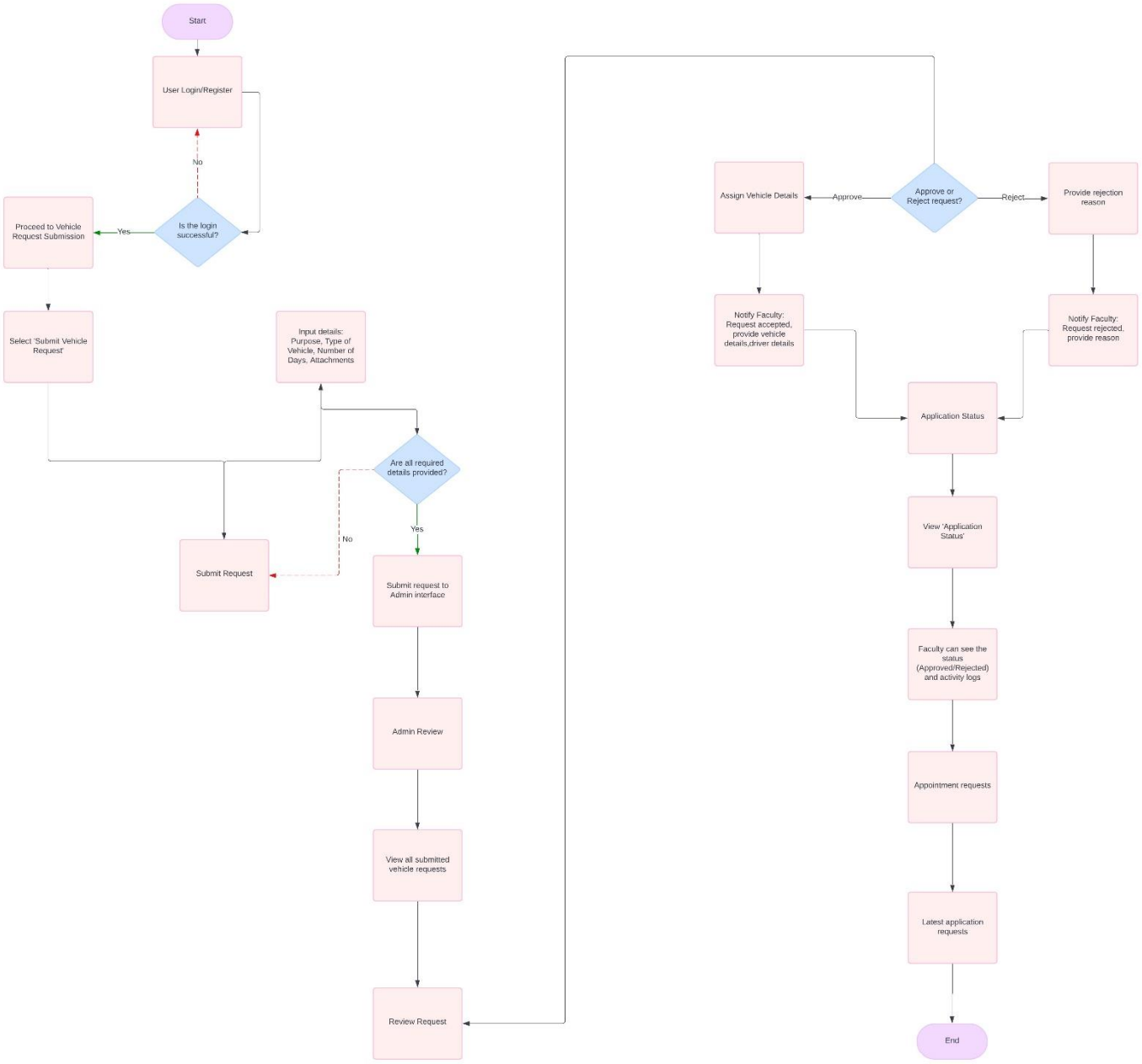
- Regular maintenance schedules ensure vehicles are in optimal condition, reducing downtime and repair costs.

- Implementing preventive maintenance measures like oil changes, tire rotations, and inspections improves vehicle longevity and reliability.
- Analysing maintenance data can identify patterns and trends, helping to predict potential issues and optimize maintenance schedules further

6.Fuel Management:

- Monitoring fuel consumption enables efficient usage and cost savings by identifying fuel-wasting behaviours like idling or speeding.
- Implementing fuel-efficient driving techniques and training programs for drivers can help reduce fuel costs and environmental impact.
- Utilizing fuel management software allows for tracking fuel uslage, identifying trends, and generating reports to optimize fuel efficiency strategies.
- Exploring alternative fuel options such as electric or hybrid vehicles can further reduce fuel costs and carbon emissions.

Flow chart:


Start
User Login/Register
No
Is the login successful?
Yes
Proceed to Vehicle Request Submission
Select 'Submit Vehicle Request'
Input details: Purpose, Type of Vehicle, Number of Days, Attachments
Are all required details provided?
No
Yes
Submit Request
Submit request to Admin interface
Admin Review
View all submitted vehicle requests
Review Request
Approve or Reject request?
Approve
Reject
Assign Vehicle Details
Provide rejection reason
Notify Faculty: Request accepted, provide vehicle details,driver details
Notify Faculty: Request rejected, provide reason
Application Status
View 'Application Status'
Faculty can see the status (Approved/Rejected) and activity logs
Appointment requests
Latest application requests
End