

Project Proposal

1. Project Title

SmartReg.lk – Web-based Vehicle & Driver License Information Management System

2. Student Details

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Batch:72

3. Project Objective

To develop a comprehensive web-based system that allows users to search and manage vehicle registration and driver license information using number plates or license numbers. The system aims to digitize vehicle and license verification processes, providing a centralized platform for efficient record management and document tracking with automated expiry notifications.

4. Features (List in Point Form)

✓ Core Features:

- 🔍 **Vehicle Search System** - Search vehicle registration information using Number Plate (e.g., "CAX-1234")
- 🛂 **Driver License Search** - Retrieve driver details using the License Number (e.g., "ABC1234567")
- 🛑 **Admin Authentication** - Role-based secure login for authorized admin users (JWT authentication)
- 📁 **Document Upload System** - Upload and attach documents like vehicle insurance, license scans (PDF, JPEG, PNG)
- 📅 **Expiry Tracking** - Track expiration dates of insurance/licensing and send alerts via email/SMS
- 📊 **Administrative Dashboard** - Central dashboard with tools for data entry, updates, and deletion

- 📁 **File Management** - Encrypted, secure document storage and easy retrieval/download support

🚀 Enhanced Features:

- 🧠 **Advanced Search & Filter** - Use multiple fields (plate number, owner name, vehicle type, area) for refined results
- 📊 **Visual Analytics** - Graphical charts (bar, pie, trend lines) to display system usage statistics
- 🔔 **Notification System** - Real-time and scheduled alerts for:
 - Document expiry reminders
 - System maintenance notifications
 - Admin policy updates
- 📄 **Report Generation** - Generate comprehensive reports on:
 - Vehicle registration statistics
 - License renewal trends
 - Document expiry summaries
- 🔒 **Data Security** - Advanced encryption for sensitive information and secure data handling
- 📱 **Responsive Design** - Mobile-friendly interface for access on all devices
- 🔄 **Data Backup & Recovery** - Automated backup system with recovery mechanisms
- 🎯 **Quick Actions** - Shortcuts for frequently used operations in admin panel
- 📋 **Audit Trail** - Complete logging of all system activities and data changes

5. Technologies Used

Frontend:

- **HTML5/CSS3** - Structure and styling
- **Bootstrap** - Responsive design framework
- **JavaScript** - Client-side functionality
- **jQuery** - DOM manipulation and AJAX calls

Backend:

- **Java** - Core programming language
- **Spring Boot** - Application framework
- **Spring Security** - Authentication and authorization
- **RESTful APIs** - Service communication
- **Maven** - Dependency management

Database:

- **MySQL** - Primary database for data storage

Other Tools:

- **JasperReports** - PDF report generation
- **Postman** - API testing
- **IntelliJ IDEA** - Development environment
- **Git** - Version control
- **Email Service** - Notification system

6. Expected Outcome

The final product will be a fully functional web application that serves as a centralized platform for vehicle and driver license information management. Users will be able to:

For Vehicle Management:

- Search and verify vehicle information instantly using number plates
- Access complete vehicle history including ownership transfers
- View and manage vehicle-related documents
- Receive automated notifications for expiring documents
- Generate detailed reports on vehicle statistics

For License Management:

- Search and verify driver license information using license numbers
- Track license renewal dates and expiry notifications
- Manage license-related documents and certifications
- Access driver history and violation records

For Administration:

- Manage all vehicle and license records through a comprehensive dashboard
- Monitor system usage and generate analytical reports
- Track document expiry and send automated reminders
- Maintain data integrity with advanced security measures
- Perform bulk operations for efficient data management

Technical Deliverables:

- Responsive web application accessible on desktop and mobile devices
- Secure authentication system with role-based access control
- Real-time search functionality with optimized performance
- Automated notification system for document expiry
- Interactive analytics dashboard with visual representations
- Comprehensive admin panel for system management
- Advanced reporting system with PDF generation capabilities

The system will demonstrate advanced web development skills including full-stack development, database design, security implementation, and user experience design while addressing real-world needs in Sri Lanka's digital infrastructure development. This project will serve as a foundation for potential integration with government systems and can be scaled for national-level implementation.