DV200
Open Brief Proposal

Logistics Management Web Application

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Problem Statement

In the agricultural industry, farmers often face difficulties securing trucks for the timely and cost-effective transportation of various products such as sunflowers, cows, corn, and lime. The logistics for agricultural transport are often unreliable, leading to delays that can impact production and market pricing. This application will solve the issue by connecting farmers with available transporters, allowing them to select truck types, units, and weight capacities tailored to their specific needs.

Target

The primary users of this application will be farmers, agricultural cooperatives, and small to medium-sized agricultural businesses that require reliable transportation for products such as sunflowers, cows, corn, lime, and other produce. These users often face challenges securing transport on time and at competitive prices. The application will provide them with a streamlined, easy-to-use platform to book transport services, ensuring timely deliveries and pickups, which are critical for maintaining production schedules and market demands.

Technology Stack

MERN Stack (MongoDB, Express, React, Node.js)

- **MongoDB:** Storing data related to trucks, bookings, and users.
- **Express:** Backend logic and API for managing CRUD operations.
- **React:** Frontend for users to interact with booking options.
- **Node.js:** Server-side code handling data processing and user requests.

The MERN stack is chosen for its scalability, modern development features, and ease of managing real-time data updates, which are essential for logistics applications.

Application Features

1. **User Registration/Login:** Users can create accounts, authenticate, and log in securely.
2. **Truck Selection:** Users can browse and select from various truck types based on their needs.
3. **Booking System:** Users can create, read, update, and delete bookings with specific trucks, weights, and delivery locations.
4. **Tracking System:** Users can track deliveries in real-time.

CRUD Operations:

- **Create:** Add new bookings and truck information.
- **Read:** View available trucks, pricing, and active bookings.

- **Update:** Modify booking details or truck types.
- **Delete:** Cancel bookings.

User Interface and Experience

The UI will be simple and responsive, with a dashboard displaying truck availability, pricing, and booking status. UX will focus on a smooth, fast booking process, real-time updates, and an intuitive flow for small business owners with limited technical experience.

Security Considerations

Input Validation: To prevent SQL injection and invalid data submission.
Authentication: Using JWT tokens for user sessions.
Authorization: Different user roles, ensuring only authorised users can make bookings.

Project Timeline

1. **Planning:** Week 1 – Define problem and requirements.
2. **Design:** Week 2 – UI/UX mockups and database design.
3. **Development:** Weeks 3-6 – Implement core functionality (CRUD, booking system, UI).
4. **Testing:** Week 7 – Testing for bugs, security, and user flow.
5. **Deployment:** Week 8 – Deploy the app to a server.

Challenges and Risks

Real-time tracking: Implementing live tracking could be complex.

Security: Protecting user data and preventing unauthorized access is crucial.

Mitigation: Use proven technologies and frameworks for real-time updates (e.g., WebSocket) and implement robust authentication protocols.

Conclusion

This logistics management app will provide an essential service to businesses by simplifying their goods transportation needs. By using a modern, scalable tech stack (MERN), the app will address the logistical challenges faced by companies, making it easier and more cost-effective to manage transportation.