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Project ID:	19
Domain:	Infra(Transport)
Stack:	MERN Stack
Problem Statement:	Bus Booking App

Idea:

The Bus Seating Management App aims to address the challenges faced by day scholar students in managing their transportation to and from college. By providing a centralized platform for bus registration, seat booking, and real-time communication, the app enhances the efficiency and reliability of the college's transportation system. The use of the MERN stack ensures a robust, scalable, and interactive application.

Project Workflow:

1. Requirement Gathering

- **Stakeholder Meetings:** Conduct meetings with admins, staff, and students to gather detailed requirements.
- **Requirement Documentation:** Document the requirements and get approval from all stakeholders.

2. Planning and Design

- **System Architecture:** Design the overall system architecture using the MERN stack.
- **UI/UX Design:** Create wireframes and mockups for the app interface.
- **Database Design:** Design the MongoDB database schema to handle users, bus routes, seat bookings, and attendance records.

3. Development

- **Frontend Development (React.js):**
 - Create components for user registration, login, seat booking, and communication.
 - Implement responsive design to ensure usability across devices.
- **Backend Development (Node.js and Express.js):**
 - Develop RESTful APIs for user management, seat booking, attendance, and notifications.
 - Implement authentication and authorization mechanisms.
- **Database Setup (MongoDB):**
 - Set up the database and integrate it with the backend.
 - Ensure data integrity and security measures are in place.

4. Integration and Testing

- **Integration:** Integrate the frontend with the backend APIs.
- **Unit Testing:** Write unit tests for individual components and functions.
- **Integration Testing:** Test the interaction between different modules.
- **User Acceptance Testing (UAT):** Conduct UAT with a small group of end users to gather feedback and make necessary adjustments.

5. Deployment

- **Server Setup:** Set up the server for hosting the application.
- **Continuous Integration/Continuous Deployment (CI/CD):** Implement CI/CD pipelines for automated testing and deployment.
- **Launch:** Deploy the app to a production environment and ensure it is accessible to all users.

6. Maintenance and Updates

- **Monitoring:** Monitor the application for performance and issues.
- **Feedback Collection:** Collect feedback from users to identify areas of improvement.
- **Updates and Enhancements:** Regularly update the app with new features, security patches, and performance enhancements.

