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I'm a student of IIT Madras BS in Data Science. I'm interested in full-stack development.

Description
This project is about building a web-based vehicle parking management system. It includes user and admin roles, booking/reservation system, and cost calculation based on duration.

AI/LLM Used: Approximately **30% overall**

This includes:
Backend (Flask + SQLAlchemy):
Used for routing, models, database integration, and logic.
Frontend (HTML + Jinja2 + Bootstrap): Handled manually.
All the code was written and tested by me. LLM assistance was used only for debugging and clarifying errors , not for complete code generation.

Technologies Used
- Flask (for backend logic and routing)
- SQLite (for database management)
- SQLAlchemy (for ORM)
- HTML/CSS, Bootstrap (for frontend)
- Flask extensions: flask_sqlalchemy, flask_bcrypt, flask_session
Flask was chosen for simplicity and rapid prototyping. Bootstrap was used for responsive design.

DB Schema Design
User:
id, name, email, password, role, is_admin
ParkingLot:
id, location, address, pincode, price, max_spots, spots
ParkingSpot:

Id, spot_number, is_occupied, lot_id (FK), status

Booking:

id, user_id (FK), lot_id (FK), spot_id (FK), start_time, end_time, cost, is_active

Relationships:

User ↔Booking: One-to-Many

ParkingLot ↔ ParkingSpot: One-to-Many

ParkingSpot ↔Booking: One-to-Many (each spot can be reused after release)

Implemented Features:-

Role-based login and redirection (admin/user) - Admin dashboard to manage lots, view users, and monitor spots - User dashboard to book, release and view booking history - Cost calculation based on parking duration - Flash messages and form validations

Video :

[video link]