Smart Ride Analytics System

PROJECT OVERVIEW:

- **Smart Ride Analytics System is a database-driven solution for analyzing ride-booking operations.**
- **It manages users, drivers, rides, payments, vehicle_details and feedback efficiently.**
- **The system provides insights into ride statistics, driver earnings, and payment trends.**
- **It ensures data integrity with constraints, optimizing user and driver experiences.**
- **Key features include ride tracking, revenue analysis, and feedback management.**
- **The project supports real-time queries for business insights and operational improvements.**

FUNCTIONAL REQUIREMENTS:

Users Table:

- **Store user details including name, email, and phone_number for ride bookings.**
- **Track registration_date to monitor user activity and retention.**

Drivers Table:

- **Maintain driver details with name, phone_number, and license_number for verification.**
- **Associate each driver with a vehicle using vehicle_id for operational tracking.**

Rides Table:

- **Record ride transactions with user_id, driver_id, and vehicle_id for tracking.**
- **Store ride_status, fare, and ride_date to monitor trip progress and revenue.**

Payments Table:

- **Maintain payment records linked to rides with ride_id and amount.**
- **Track payment_method and payment_status for financial reporting.**

Vehicle_Details table:

- **Store vehicle_type, vehicle_model, and vehicle_number for identification.**
- **Ensure vehicle_type is restricted to 'Car', 'Auto', 'Bike' or 'Scooty' for consistency.**

Feedback table:

- **Store ride-related feedback using ride_id and rating for service quality analysis.**
- **Capture comments and feedback_date for improvement insights.**

Reporting and Analytics:

- **Analyze total rides completed, revenue generation, and popular ride routes.**
- **Track driver performance through earnings and feedback ratings.**
- **Identify peak ride booking hours and demand trends.**
- **Evaluate user retention based on ride frequency and registration history.**
- **Monitor payment trends to assess cashless transaction adoption.**
- **Generate reports on ride cancellations and customer satisfaction levels.**

Database Design:

Tables

1. Users:

User id (PK), Name, Email, Phone No, Registration Date and Location

2. Drivers:

Driver id (PK), Name, Vehicle type (Car, Auto, Bike & Scooty), License No, Rating (0 to 5), Status (Active/Inactive)

3. Rides:

Ride id (PK), User id (FK -> Users),
Driver id (FK -> Drivers), Pickup location,
Dropoff location, Ride Status (Completed, Cancelled, Ongoing), Ride date, Fare

4. Payments:

Payment id (PK), Ride id (FK -> Rides), Payment method (Cash, Card, Wallet), Amount, Payment date

5. Vehicle_Details:

Vehicle id (PK), Driver id (FK -> Drivers),
Vehicle type (Car, Auto, Bike, Scooty), Vehicle No, Model, Year

6. Feedback:

Feedback id (PK), Ride id (FK -> Rides),
User id (FK -> Users), Rating (1 to 5),
Comments, Feedback Date

Relationship:

- **Each user can book multiple rides.**
- **Each driver can complete multiple rides.**
- **Each vehicle is assigned to one driver but used for multiple rides.**
- **Each ride can have only one payment record.**
- **Each ride can have one feedback entry.**