# OLA RIDE INSIGHTS

## 1. Project Overview:

To analyze Ola ride data using SQL and Python, uncover actionable insights on ride volume, revenue trends, cancellations, customer preferences, and ratings - presented through Power BI and a Streamlit dashboard.

**Key Goals:**

- Improve ride experience
- Increase operational efficiency
- Optimize resource allocation
- Present business-ready visual insights

**Tools Used:**

- SQL (MySQL)
- Python (Pandas, Matplotlib)
- Power BI
- Streamlit

## 2. Data Preparation:

**Dataset**: ola_rides (loaded from .csv → MySQL → Pandas)

**Key Columns:**

- Booking_ID, Date, Time, Pickup_Location, Drop_Location
- Vehicle_Type, Booking_Status, Ride_Distance, Booking_Value
- Driver_Ratings, Customer_Rating, Payment_Method
- Canceled_Rides_by_Customer, Canceled_Rides_by_Driver
- Incomplete_Rides, Incomplete_Rides_Reason

**Data Cleaning & Transformation Steps:**

1. **Handled Missing Values**:
    - Replaced 'Not Applicable' for cancellation and incomplete ride reasons

    - Filled nulls in numeric fields with 0 (e.g., ratings, distance) as these values are missing in cancelled rides.
2. **Standardized Text Columns**:
    - Converted all strings to uppercase using .str.upper().str.strip()
3. **Date & Time Conversion**:
    - Parsed Date column to datetime.date
    - Used Time as duration if needed (e.g., for peak hour analysis)
4. **Filtered Dataset for SQL Queries**:
    - Focused on Booking_Status = 'SUCCESS'
    - Filtered Incomplete_Rides = 'Yes' for failure analysis

**Loading to SQL:**

Used SQLAlchemy to load the cleaned pandas DataFrame to a MySQL table named: ola_rides

# 3. Streamlit Dashboard Structure:

The Streamlit dashboard for OLA Ride Insights is organized into two main sections for a clean and interactive user experience. The first section acts as a landing page and features only a centrally aligned title and a “Click to View Analysis” button. This minimal view serves as an entry point into the dashboard. Once the button is clicked, the second section is revealed, presenting a dropdown select box that lists 10 different business analyses (e.g., ride trends, cancellations, revenue metrics). Users can interactively choose an analysis from the select box, and the dashboard dynamically updates to display the corresponding results and visualizations. This structure helps maintain clarity, user flow, and focus throughout the exploration process.

# 4. Power BI Dashboard:

The Power BI dashboard is structured into five distinct and logically segmented views to offer comprehensive insights into the ride-sharing operations:

1. **Overall View**: This section provides a high-level snapshot of booking patterns through visualizations like Ride Volume Over Time and Booking Status Breakdown. It helps identify daily activity trends and overall operational status.
2. **Vehicle Type Analysis**: Focuses on vehicle performance, especially through the Top 5 Vehicle Types by Ride Distance visual. This view helps understand

which vehicle categories are contributing most to the platform's mobility footprint.

3. **Revenue Insights**: This segment contains metrics like Revenue by Payment Method, Top 5 Customers by Total Booking Value, and Ride Distance Distribution Per Day. It helps identify revenue-driving customer segments and payment behaviors.
4. **Cancellation Overview**: Divides cancellation analysis into customer and driver-initiated cases using Cancelled Rides Reasons (Customer) and Cancelled Rides Reasons (Drivers) visuals. This helps in root cause analysis of ride failures.
5. **Ratings & Feedback**: Offers insights into rider and driver satisfaction using Driver Ratings and Customer Ratings charts. These visuals help in monitoring service quality and identifying areas for improvement.

Each section is equipped with filters and slicers to support dynamic exploration, allowing users to interact with the data and drill down into specific time frames, vehicle types, or locations.

# 5. Insights and Actionable Recommendations:

- **Improve Vehicle Mix Based on Distance Patterns**

  - **Insight:** Certain vehicle types (e.g., Prime Sedan, SUV) consistently cover longer ride distances.
  - **Action:**
    - Promote these vehicles in longer-distance routes and optimize the supply of short-distance rides with bikes and autos.
    - Bundle services (e.g., Airport rides, business rides) with such vehicles.

- **Reduce Cancellation Rates through User Education**

  - **Insight**: Frequent cancellations occur due to driver delays and miscommunication.
  - **Action**:
    - Enable live chat between rider and driver for better coordination.
    - Implement gentle reminders about cancellation penalties or educate users about responsible booking behavior through in-app tips.
    - Penalize excessive cancels from both parties or offer rebooking priority.

- **Identify and Support Underperforming Drivers**

  - **Insight:** Driver ratings vary significantly across vehicles and time periods.
  - **Action:** Flag drivers with low ratings for training, feedback collection, or performance coaching.

- **Encourage UPI Payments for Efficiency**

  - **Insight:** UPI is increasingly popular for ride payments.
  - **Action:** Offer discounts or loyalty points for UPI users to reduce cash handling time and improve transaction success rates.

- **Focus on Service Improvement in Vehicles with Low Customer Ratings**

  - **Insight:** Some vehicle types have lower customer ratings near 3.
  - **Action:**
    - Show predefined issues like Driver behavior, Vehicle condition, Unsafe driving practice, Lack of amenities - automatically when customer ratings are below 4 to highlight service concerns.
    - Inspect vehicle conditions regularly and coach drivers in low-performing categories on soft skills.

- **Handle Incomplete Rides More Proactively**

  - **Insight:** Incomplete rides cluster around specific reasons and vehicle types.
  - **Action:**
    - Introduce in-app confirmation and live driver tracking reminders.
    - Track drivers with high cancellation/incompletion rates and retrain or penalize them.

- **Segment Customers for Retention Programs**

  - **Insight:** A small group of customers contributes significantly to total booking value.
  - **Action:**
    - Launch loyalty programs or exclusive benefits for top-tier riders to boost retention and lifetime value.
    - Target these customers with premium vehicle upgrades.