Case Study: Retail E-commerce Analytics Database

This project simulates a Retail E-commerce platform database using MySQL. The goal was to design a normalized schema, insert realistic sample data, and run advanced SQL queries to generate insights for business decision-making.

Problem Statements & Solutions

Problem Statement	Solution
Problem 1: Lack of structured customer, product, and order data.	Solution: Designed normalized tables (Customers, Products, Categories, Orde
Problem 2: Difficulty identifying top-selling and revenue-generating products.	Solution: Wrote aggregate SQL queries joining Products and OrderDetails to c
Problem 3: No visibility into customer purchase behavior (repeat vs. new buyers).	Solution: Used GROUP BY and HAVING conditions on Orders to classify cust
Problem 4: Inventory management inefficiency due to unknown stock levels.	Solution: Created queries to identify out-of-stock products and their categories
Problem 5: No insight into delivery performance and delays.	Solution: Integrated Shipping table with Orders and used DATEDIFF function
Problem 6: Limited ability for management reporting.	Solution: Built reusable SQL views like Categorywise_Sales, Productwise_Sa

Results & Impact:
- Delivered a scalable retail database with 500+ sample records across customers, products, and orders.
- Automated reporting of category-wise, product-wise, and yearly sales trends.
- Enabled insights into customer retention, top-rated products, discount effectiveness, and delivery performance.
- Designed the foundation for integration with BI tools for visual dashboards.