ShopFast SQL Analysis - Scenario-Based Problem Set

Business Scenario

Company: ShopFast - an online e-commerce platform
Goal: Management wants a report analyzing customer orders, revenue, product performance, and delivery timelines. You are provided with a simplified schema with four tables: CUSTOMERS, ORDERS, ORDER_ITEMS, and PRODUCTS.

Table Schema

CUSTOMERS(customer_id, name, email, city, signup_date)
ORDERS(order_id, customer_id, order_date, delivery_date, status, total_amount)
ORDER_ITEMS(order_item_id, order_id, product_id, quantity, price_per_unit)
PRODUCTS(product_id, product_name, category, launch_date, stock_quantity)

Problem Set

1. Customer Sign-up Trend: New customers per month (last 12 months)
2. Top 5 Customers by Revenue: Total orders, revenue, and avg order value
3. Order Status Distribution: Count of each status
4. Revenue by Category: Total revenue by category
5. Best-Selling Products: Top 5 by quantity sold
6. Low-Stock Products: Products with <10% stock using CASE
7. Avg Delivery Time per Month
8. Orders with Delivery >7 days
9. Repeat Customers: More than 1 order
10. Monthly Revenue Growth with LAG()
11. Cohort Analysis using CTE (signup year)
12. Cancelled/Returned Product Revenue Loss
13. Customer City Heatmap
14. First & Last Order per Customer with ROW_NUMBER()
15. NULL Handling: Orders with missing delivery/amount