**🏬 Day 69 – SQL Challenge: Retail Supply Chain & Inventory Analysis**

**Dataset Overview**  
Products, Suppliers, Inventory, and Sales.

**1️⃣ Products**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ProductID** | **ProductName** | **Category** | **UnitPrice** | **ReorderLevel** |
| 1 | Laptop | Electronics | 55000 | 10 |
| 2 | Mobile Phone | Electronics | 25000 | 15 |
| 3 | Office Chair | Furniture | 5000 | 20 |
| 4 | Study Table | Furniture | 8000 | 12 |
| 5 | Water Bottle | Stationery | 300 | 50 |
| 6 | Pen Set | Stationery | 200 | 100 |

2️⃣ **Suppliers**

|  |  |  |  |
| --- | --- | --- | --- |
| **SupplierID** | **SupplierName** | **Country** | **Rating** |
| 101 | TechWorld | India | 4.7 |
| 102 | FurniCraft | Germany | 4.5 |
| 103 | OfficeMate | USA | 4.2 |
| 104 | HandyDeals | India | 4.0 |
| 105 | StationPlus | China | 3.9 |

3️⃣ **Inventory**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **InventoryID** | **ProductID** | **SupplierID** | **StockQuantity** | **LastRestockDate** |
| 201 | 1 | 101 | 25 | 2022-08-10 |
| 202 | 2 | 101 | 18 | 2022-08-12 |
| 203 | 3 | 102 | 40 | 2022-08-15 |
| 204 | 4 | 102 | 10 | 2022-08-20 |
| 205 | 5 | 105 | 55 | 2022-08-22 |
| 206 | 6 | 105 | 90 | 2022-08-25 |

4️⃣ **Sales**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SaleID** | **ProductID** | **SaleDate** | **QuantitySold** | **Region** |
| 301 | 1 | 2022-09-01 | 5 | South |
| 302 | 1 | 2022-09-10 | 3 | North |
| 303 | 2 | 2022-09-12 | 6 | West |
| 304 | 3 | 2022-09-13 | 10 | North |
| 305 | 4 | 2022-09-15 | 5 | East |
| 306 | 5 | 2022-09-18 | 25 | South |
| 307 | 6 | 2022-09-20 | 40 | East |
| 308 | 2 | 2022-09-25 | 8 | West |
| 309 | 3 | 2022-09-26 | 5 | South |
| 310 | 5 | 2022-09-30 | 30 | North |

**💡 Day 69 – Advanced SQL Questions (Real-World Supply Chain Analytics)**

1. **Join Practice**  
   Display product name, supplier name, and stock quantity.
2. **Aggregation**  
   Calculate total sales revenue per category.
3. **CASE + Conditional Logic**  
   Identify products that are:
   * “Overstocked” (StockQuantity > 2 × ReorderLevel)
   * “Normal Stock” (ReorderLevel ≤ StockQuantity ≤ 2 × ReorderLevel)
   * “Low Stock” (StockQuantity < ReorderLevel)
4. **Subquery**  
   List suppliers who provide products with an average selling price above ₹10,000.
5. **CTE + Ranking**  
   Rank products by total sales quantity across all regions.
6. **Window Function (LAG)**  
   For each product, find the number of days since its previous sale.
7. **Analytical Query (NTILE)**  
   Divide suppliers into 3 performance tiers based on their average product rating and stock supplied.
8. **Nested CTE + Joins**  
   Find the top-selling category in each region based on total revenue.
9. **Correlated Subquery**  
   Find products whose total sales quantity is greater than their average sales across all products.
10. **Real-World Analytical KPI Query (Advanced)**  
    Identify the **most profitable product** by total revenue, and show what % it contributes to the total company revenue (rounded to 2 decimals).
11. **🚀 Bonus Challenge (Complex Analytical Logic)**  
    Write a query to identify **potential stockout products** —  
    i.e., products where (StockQuantity – average daily sales for last 30 days) < ReorderLevel.  
    *(Assume 30-day sales window from 2022-09-01 to 2022-09-30.)*