

Day 29 – SQL Practice Reflection

Overall Experience:

Today's challenge followed a **case study format** combining multiple tables (Categories, Products, Customers, Orders, OrderDetails) to simulate a real retail business database. The difficulty level was higher than standard practice sets, which provided a good mix of logical and technical skill application.

Key Learnings & Observations:

1. **4th Question** – *Month-wise Total Sales for 2023*
 - This was tough because of the **date manipulation** requirements.
 - Reinforced skills in using MONTH(), DATENAME(), and grouping by multiple expressions.
 - Realised I need more consistent practice with date-related queries.
2. **5th Question** – *Customers Joined Before 2022 & Never Ordered Electronics*
 - Challenging because it combined **date filtering**, **subqueries**, and **NOT IN logic**.
 - Helped strengthen understanding of anti-joins and exclusion conditions.
3. **8th Question** – *Running Total of Sales for Each Customer*
 - Required solid grasp of **window functions** with SUM() and PARTITION BY.
 - Reinforced row ordering and cumulative calculations.
4. **Bonus Challenge** – *Category Contribution to Total Sales*
 - Very tough because it required **multi-step aggregation** using CTEs and percentage calculations.
 - Learnt to combine multiple CTEs (CategorySales and GrandTotal) and apply cross joins for final output.

Other Improvements & Insights:

- Made use of **indexes** for CategoryID, CustomerID, OrderID, and ProductID for better query efficiency.
- Applied COALESCE to handle nulls and ensure cleaner results.
- Practiced **JOIN strategies** — choosing between INNER JOIN and LEFT JOIN depending on whether to include unmatched records.
- This set felt much closer to **real-world analytics tasks**, especially in e-commerce and retail domains.

Takeaway Quote:

“Complex case studies push your boundaries and reveal the gaps you need to fill — every tough query is an investment in future readiness.”