

Day 35 – Advanced SQL Queries & Complex Scenarios

Key Learnings & Experience

1. Complexity of Queries

- Today's set of queries was among the toughest so far. The queries were lengthy, required multiple joins, CTEs, window functions, and pivoting logic.
- Realized I need to **practice more advanced real-world problems** to get fully comfortable with such big query scenarios.

2. Highlights from Today's Practice

- **Constraint Handling:** Successfully defined and implemented multiple table-level and column-level constraints, ensuring strong data validation.
- **Revenue & Ranking Analysis:** Learnt how to apply **RANK()** and **DENSE_RANK()** for ranking products and employees based on business rules.
- **Recursive CTEs:** Implemented employee hierarchy queries to simulate **organizational reporting chains** – something very practical for real projects.
- **Date Functions:** Practiced using **LAG()** and **DATEDIFF()** to analyze customer ordering patterns and track gaps between purchases.
- **Pivot Queries:** Gained more hands-on practice on transforming rows into columns for order status counts, which is a frequently asked **interview-style problem**.
- **Revenue Above Average Analysis:** Wrote queries combining CTEs and CROSS JOIN to identify high-value customers, reflecting real **business intelligence insights**.

3. Challenges Faced

- Several queries took **a lot of time to implement** due to their logical and structural complexity.
- Writing the **Bonus Challenge** (finding top 3 employees by subordinates using recursive CTE + DENSE_RANK) was particularly confusing and required multiple attempts.
- Overall, today was a reminder that while I've grown in SQL, I must continue practicing **large, multi-step queries** for real readiness.

Reflection Summary

- **Day 35 was a milestone:** the questions were complex, query lengths were larger, and I had to integrate multiple concepts in a single solution.
- While it felt tough, I'm happy that I could still solve them, even if it took more time.
- This shows clear growth from when I started at Day 1. Queries that once felt impossible are now achievable.
- The journey from simple SELECT queries to handling **recursive CTEs, pivoting, ranking, and advanced date analysis** has been a major confidence booster.