SQL 100 Days Challenge – Day 62 Reflection

Dataset Context:

The dataset simulated an **Airline Reservation System** with multiple entities:

- **Passengers** – Traveler details

- **Flights** – Airline schedules and capacities

- **Bookings** – Ticket purchases with class, price, and status

- **CheckIns** – Baggage and boarding details

- **FlightPerformance** – On-time rates, delays, and cancellations

This setup allowed practice on **airline analytics, churn risk, flight performance, and passenger loyalty queries**.

Learnings & Problem-Solving Experience

1. **Top Spenders** – Used SUM and COUNT with GROUP BY. Straightforward and solved on my own.

2. **Seat Occupancy Rate** – Implemented confirmed bookings ÷ capacity. Easy and logical.

3. **Average Ticket Price by Seat Class** – Simple aggregation with grouping. Solved smoothly.

4. **Repeated Flight Bookings** – Used HAVING COUNT > 1. Quick to implement.

5. **Total Baggage Count** – Joined **Passengers → Bookings → CheckIns** and applied SUM. Easy to solve.

6. **On-Time Airline Ranking** – Window functions (RANK()) with aggregated averages. Smoothly implemented.

7. **Flights with High Cancellation Rate (>3%)** – Initially confusing, but learned to calculate rates using conditional aggregation.

8. **Running Spend per Passenger** – Applied SUM() OVER (ORDER BY BookingDate). Comfortable with window functions now.

9. **Loyal Passengers** – Used COUNT(DISTINCT FlightID) + HAVING. Easy.

10. **Most Profitable Flight** – Simple SUM of confirmed booking prices. Straightforward.

11. **Bonus (Detect At-Risk Passengers Likely to Churn)** –

- Combined multiple conditions: cancellations, delays, seat-class restrictions.

- Used multiple subqueries, EXISTS, and CTEs to capture churn indicators.

- **This was the toughest query so far**, but helped me understand how **multi-condition business logic** can be transformed into SQL.

Key Takeaways

- Window functions (RANK, SUM OVER) are becoming natural to use.

- Learnt how to translate **business rules (loyalty, churn, delays)** into SQL conditions.

- Realized the power of combining **CTEs + conditional logic** for complex analytics.

- Bonus question was the **most challenging**, but a great milestone in applying SQL to real-world airline analytics.

✅ **Progress:** Feeling more confident in tackling intermediate queries independently.

⚡ **Challenge:** Complex business rules (like churn detection) push me to think beyond syntax and focus on **real-world problem translation into SQL**.