SQL 100 Days Challenge – Day 49 Reflection

Topic: Healthcare Analytics – Doctors, Patients & Appointments

Dataset: Doctors, Patients, Appointments

Practice Experience:

- Today's set of questions felt **comparatively easy**. I was able to solve the first 10 questions smoothly, applying concepts like revenue aggregation, ranking, and cancellation rates.
- I'm now confident with **date-related functions** (DATEDIFF, FORMAT, YEAR, MONTH) and could implement them without hesitation.
- Percentage-based calculations, which earlier felt tricky, came naturally today.
- The **Bonus Challenge (Doctor Utilization Rate)** was slightly more challenging, requiring CTEs, monthly grouping, and conditional classifications, but manageable with patience.

Key Learnings:

1. **Doctor Revenue:** Summing completed appointment fees per doctor.
2. **Frequent Patients:** Using HAVING to filter patients with >2 visits.
3. **Specialty Popularity:** Ranking doctors' specialties by appointment count.
4. **Cancellations/No-Shows:** Calculating percentage rates per doctor.
5. **High Revenue Patients:** Filtering patients with spend > 500.
6. **Revenue Trends:** Using LAG() to compare month-wise revenue changes.
7. **Average Fees by Specialty:** Straightforward aggregation.
8. **Cross-Country Patients:** Identifying doctors serving international patients.
9. **Longest Serving Doctor:** Leveraging DATEDIFF for tenure.
10. **Patient Spend Ranking:** Ranking patients within each country using RANK().
11. **Bonus – Doctor Utilization:** Measuring efficiency against a fixed monthly capacity.

Insights:

- Cardiology and General Surgery generated high revenue, showing demand.
- A few patients contributed significantly to hospital revenue (>500 spend).
- Doctors like Dr. Smith and Dr. Patel worked with patients from multiple countries, highlighting cross-border care.
- Monthly revenue trends showed fluctuations but clear growth compared to initial months.
- Doctor utilization analysis helped reveal who was underutilized vs overbooked.

Skills Reinforced:

- Confidence with **date/time functions** for tenure and monthly analysis.
- Percentage calculations with NULLIF to avoid division errors.
- Window functions (RANK, LAG) for ranking and comparisons.
- Using CASE WHEN for categorization (utilization status).

Personal Note:
Today's questions were not as challenging as Day 48, but it gave me an opportunity to **solidify fundamentals** and gain confidence in areas that once felt tough. The bonus utilization task reminded me how SQL can directly support **operational decision-making** in healthcare.

Next Steps:

- Explore more advanced healthcare KPIs (patient retention, repeat visits).
- Build multi-metric dashboards for doctors and patients.
- Extend utilization analysis to include **seasonal capacity trends**.