📘 Day 60 SQL Practice Reflection

Today marks an intense practice session where I explored advanced SQL concepts with a variety of queries ranging from simple aggregations to optimization techniques.

✅ Progress & Learnings

1. **Questions 1–4:**
    - Solved smoothly and confidently without confusion.
    - Focused on total spending, revenue by country, top-selling category, and customer-seller relationships.
2. **Question 5:**
    - Initially confused whether to use ratings from **Sellers** or **Reviews**.
    - Mistakenly used COUNT(DISTINCT od.ProductID) for total products sold, then corrected the logic.
3. **Question 6:**
    - Handled monthly revenue trends easily and gained clarity on grouping by date functions.
4. **Question 7:**
    - First used **INNER JOIN** but later realized **LEFT JOIN** was the right approach for products without reviews. Corrected successfully.
5. **Question 8:**
    - Understood that customer-seller relationships needed **window functions** to correctly identify the most loyal customers.
6. **Question 9:**
    - Solved confidently to check payment mismatches with product * quantity.
7. **Questions 10–11:**
    - Found very tough. Couldn’t solve independently.
    - Year-over-year growth and highest-rated product per category stretched my understanding of **window functions** and ranking.
8. **Question 12:**
    - Initially partitioned incorrectly, then realized the mistake and used RANK() properly to rank sellers by revenue.

9. **Questions 13–14:**
    - Challenging:
        - Consecutive purchases (needed careful use of LAG() and date differences).
        - Delivery time was tricky since no delivery table existed.
10. **Questions 15–17:**
    - Could solve partly but faced issues in handling cancellations, running totals, and identifying above-average spenders.
    - Learned the importance of precise grouping and partitioning.
11. **Question 19:**
    - Median calculation was tough. Couldn't solve independently but gained insight into PERCENTILE_CONT().
12. **Question 20:**
    - Managed half of the query structure. Learned the importance of excluding reviewed customers while analyzing completed orders.
13. **Question 21 (Bonus):**
    - Explored **optimization techniques**:
        - Indexing strategies.
        - Materialized views.
        - Window function optimizations.
        - Fraud detection through mismatched payments.
        - Pre-aggregated tables and partitioning strategies.
    - This gave me exposure to real-world query tuning and system design considerations.

🔑 **Key Takeaways**

- Reinforced understanding of **window functions** (LAG, RANK, ROW_NUMBER, PERCENTILE_CONT).
- Realized that **optimization** is as important as writing queries.
- Learned the **power of correct joins** (choosing between INNER and LEFT JOIN).
- Practicing complex queries consistently is building my **problem-solving resilience**.

📊 Self-Reflection

Today was **challenging but rewarding**.

- I feel slightly unhappy with my progress because some advanced queries (esp. 10, 11, 13, 14, 19, 20) were beyond my independent solving ability.
- However, being exposed to them taught me valuable lessons in query writing and debugging.
- The **biggest learning**: SQL is not just about solving queries, but about optimizing them for real-world performance.

✨ Moving forward, I will **revisit the tough questions** and refine my approach. I now see the importance of consistency and patience in mastering SQL at this depth.