Scenario 1: Identify Consistent High Performers

Question: Find employees who have consistently received a salary increase for the past 3 years.

Logic Explanation:

- Perform a self-join on the salary table using employee_id.
- Compare salary data for consecutive years using the year column.
- Ensure each employee's salary has increased every year.

Scenario 2: Customer Retention Analysis

Question: Find customers who made purchases in the last 6 months but not in the previous 6 months.

Logic Explanation:

- Perform two subqueries to find customers who purchased within specific timeframes using the orders table.
- Exclude customers who purchased earlier using NOT IN.

Scenario 3: Identify Products with Declining Sales

Question: Find products whose sales decreased by more than 30% compared to the previous month.

Logic Explanation:

- Perform a self-join on the sales table using product_id.
- Compare sales data of the current month and the previous month.
- Calculate the percentage decrease and filter products with a decline greater than 30%.

Scenario 4: Calculate Moving Average of Sales

Question: Calculate a 3-month moving average for product sales.

Logic Explanation:

- Use a WINDOW FUNCTION to calculate the moving average using the AVG() function.
- Partition the data by product_id.
- Order the data by sales_date.

Scenario 5: Detect Duplicate Records

Question: Find all duplicate records from a customer table based on email and phone number.

Logic Explanation:

- Group records using the GROUP BY clause.
- Use HAVING to filter groups with more than one occurrence.

Scenario 6: Identify Products with No Sales for 3 Consecutive Months

Question: List products that have not had any sales for 3 consecutive months.

Logic Explanation:

- Perform a subquery using LEFT JOIN to find missing sales data.
- Use date functions to check for gaps in sales data.
- Identify products with no sales for the required period.