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Assignment I:

PL/SQL Window Functions Mastery Project

STEP 1: Problem Definition

Define a specific and realistic **business scenario** where you can apply **PL/SQL window functions** to gain insights from data.

You must include:

1. **Business Context** – What kind of company or department is it?
2. **Data Challenge** – What problem exists with the current data?
3. **Expected Outcome** – What decisions or insights will the analysis provide?

Example (Complete Answer):

Business Context:
KigaliMart is a retail company operating in Rwanda that sells food, beverages, and household products in multiple regions. The Sales Department aims to use data analysis to understand sales trends and customer behavior to make better business decisions.

Data Challenge:
Although KigaliMart has accumulated large volumes of customer and sales data, it currently lacks the ability to analyze this data effectively. The company cannot easily identify top-performing products, track sales growth across months, or classify customers based on spending patterns.

Expected Outcome:
By applying SQL window functions, KigaliMart expects to:

- Identify the **top 5 products** sold per region and quarter.
- Calculate **monthly running totals** of sales revenue.
- Measure **month-over-month growth** to understand sales trends.
- Segment customers into **quartiles (NTILE)** based on total spending.
- Compute **3-month moving averages** to observe long-term sales performance.

STEP 2: Success Criteria

Define **five measurable goals** that will be achieved using PL/SQL window functions.
Each goal must be linked to a specific function and business purpose.

Example Table:

	Measurable Goal	SQL Function (s) Used	Purpose / Expected Insight
1	Identify the top 5 products per region and quarter	`RANK()`	Shows which products perform best in each region and quarter.
2	Calculate cumulative monthly sales totals	`SUM()` `OVER()`	Displays a running total of revenue month by month.
3	Measure month-over-month sales growth	`LAG()` / `LEAD()`	Compares current month sales to the previous month to track growth or decline.

4	Segment customers into 4 quartiles based on spending	`NTILE(4)`	Groups customers by spending levels to target promotions or loyalty programs.
5	Compute 3-month moving average of sales	`AVG() OVER()`	Smooths short-term fluctuations and shows long-term sales trends.