**PLSQL Assignment**

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**Step1: Problem Statement**

**Business Context**

Green Land apartment company in Rwanda that rent apartment for short and long term rent with multiple apartment in Kigali and Musanze for family and single person.

**Data Challenge**

The company management wants to understand which apartment generate the most revenue, how customer growing month by month, and how segment customers for targeted promotions.

**Expected Outcome**

Provide insights on top-performing service per region, customer segmentation, and monthly sales trends to improve marketing and management planning for the company. and customer in general.

**Step2: success Criteria**

1.Top 5 Products per Region and Quarter

* Use RANK() to identify the best-selling products in each region for every quarter.
* Measurement: Output must list the top 5 ranked products per region per quarter.

2.Running Monthly Sales Totals

* Use SUM() OVER(ORDER BY sale\_date) to calculate cumulative sales.
* Measurement: Each month’s row should display a running total of all previous months up to that point.

3.Month-over-Month Sales Growth

* Use LAG() or LEAD() to compare current month sales with the previous month.
* Measurement: Output must include a growth percentage column showing increase/decrease.

4.Customer Quartiles (Spending Segmentation)

* Use NTILE(4) to divide customers into quartiles based on their total spending.
* Measurement: Each customer must be assigned to a quartile group (Q1 = top spenders, Q4 = lowest).

5.Three-Month Moving Average of Sales

* Use AVG() OVER(ROWS BETWEEN 2 PRECEDING AND CURRENT ROW) to calculate a moving average.
* Measurement: Each month’s row must show a 3-month smoothed average of sales.

**Step3: Database Schema**

* **Table of Manager** (Store information about property managers.)

| **Column Name** | **Data Type** | **Constraints** | **Description** |
| --- | --- | --- | --- |
| Apartment\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique ID for each apartment |
| Unit\_number | VARCHAR(10) | NOT NULL | e.g., "A101", "B202" |
| Floor | INT |  | Floor number |
| Bedrooms | INT |  | Number of bedrooms |
| Rent\_amount | DECIMAL(10,2) |  | Monthly rent |
| Status | ENUM | DEFAULT 'Vacant' | 'Vacant', 'Occupied', 'Under Maintenance' |
| Manager\_id | INT | FOREIGN KEY REFERENCES Manager(manager\_id) | Assigned manager |

* **Table of Apartment** (Stores apartment unit details.)

| **Column Name** | **Data Type** | **Constraints** | **Description** |
| --- | --- | --- | --- |
| Apartment\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique ID for each apartment |
| Unit\_number | VARCHAR(10) | NOT NULL | e.g., "A101", "B202" |
| Floor | INT |  | Floor number |
| Bedrooms | INT |  | Number of bedrooms |
| Rent\_amount | DECIMAL(10,2) |  | Monthly rent |
| Status | ENUM | DEFAULT 'Vacant' | 'Vacant', 'Occupied', 'Under Maintenance' |
| Manager\_id | INT | FOREIGN KEY REFERENCES Manager(manager\_id) | Assigned manager |

* **Table of Customer** (Stores tenant information.)

| **Column Name** | **Data Type** | **Constraints** | **Description** |
| --- | --- | --- | --- |
| Customer\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique ID for each tenant |
| Name | VARCHAR(100) | NOT NULL | Tenant's full name |
| Email | VARCHAR(100) | UNIQUE | Contact email |
| Phone | VARCHAR(15) |  | Contact number |
| Move\_in\_date | DATE |  | Lease start date |
| Apartment\_id | INT | FOREIGN KEY REFERENCES Apartment(apartment\_id) | Rented apartment |