USING MYSQL QUERY :ON THE CAPSTONE PROJECT

THE(30) three RELATIONAL TABLEl ARE BELOW QUESTIONS AND SOLUTIONS

1 Orders Table

OrderID	CustomerID	ProductID	OrderDate	Region	Quantity	Price	TotalAmount
1001	C001	P101	2023-01-12	North	2	150	300
1002	C002	P102	2023-01-15	South	1	450	450
1003	C003	P101	2023-02-01	North	3	150	450
1004	C004	P103	2023-02-20	East	1	1200	1200
1005	C001	P104	2023-03-11	West	5	80	400

2 Customers Table

CustomerID	CustomerName	Gender	Age	Location	DateJoined
C001	Jane Doe	Female	29	Kaduna	2022-08-10
C002	John Smith	Male	34	Port Harcourt	2021-12-03

C003	Ada Uche	Female	41	Abuja	2022-11-22
C004	Ibrahim Musa	Male	30	Kano	2023-01-05
C005	Grace Obi	Female	25	Lagos	2023-03-19

3 Products Table

ProductID	ProductName	Category	UnitPrice	StockLevel
P101	Bluetooth Speaker	Electronics	150	30
P102	Blender Pro Max	Appliances	450	20
P103	LED TV 42 inch	Electronics	1200	10
P104	T-Shirt (Unisex)	Clothing	80	100
P105	Power Bank 10000mAh	Electronics	200	50

RELATIONSHIPS BETWEEN ORDERS

Orders.CustomerID → references Customers.CustomerID

Orders.ProductID → references Products.ProductID

That means each order belongs to a customer and involves a product.

QUESTIONS AND SOLUTIONS

a. List the top 5 products by total sales amount

SQL Query

```
SELECT
   p.ProductID,
   p.ProductName,
   SUM(o.TotalAmount) AS TotalSales
FROM Orders o
JOIN Products p ON o.ProductID = p.ProductID
GROUP BY p.ProductID, p.ProductName
ORDER BY TotalSales DESC
LIMIT 5;
```

Calculation

ProductID	ProductName	TotalSales
P103	LED TV 42 inch	1200
P101	Bluetooth Speaker	300 + 450 = 750
P104	T-Shirt (Unisex)	400
P102	Blender Pro Max	450

P105 Power Bank 10000mAh 0 (no sales yet)

Rank	Product	Total Sales
1	LED TV 42 inch	1200
2	Bluetooth Speaker	750
3	Blender Pro Max	450
4	T-Shirt (Unisex)	400
5	Power Bank 10000mAh	0

b. Find the average purchase per customer by region

SQL Query

```
SELECT
  Region,
  AVG(TotalAmount) AS AvgPurchasePerCustomer
FROM Orders
GROUP BY Region;
```

SOLUTION

Region	TotalAmount	Orders	Average
North	300 + 450 = 750	2	750 / 2 = 375
South	450	1	450
East	1200	1	1200
West	400	1	400

Region	Avg Purchase per Customer
North	375
South	450
East	1200
West	400

c. Show customers who have never made a purchase

SQL Query

```
SELECT
   c.CustomerID,
   c.CustomerName
FROM Customers c
LEFT JOIN Orders o ON c.CustomerID = o.CustomerID
WHERE o.CustomerID IS NULL;
```

Customers who appear in Orders: C001, C002, C003, C004

Customer not in Orders: C005 (Grace Obi)

CustomerID CustomerName

C005 Grace Obi

d. Calculate monthly revenue from January 2023 to December 2023

SQL Query

```
SELECT
  DATE_FORMAT(OrderDate, '%Y-%m') AS Month,
  SUM(TotalAmount) AS MonthlyRevenue
FROM Orders
WHERE YEAR(OrderDate) = 2023
GROUP BY DATE_FORMAT(OrderDate, '%Y-%m')
ORDER BY Month;
```

Month OrdersTotal Revenue

2023-01 1001 (300) + 1002 (450) = 750

2023-02 1003 (450) + 1004 (1200) = 1650

2023-03 1005 (400) = 400

Month Monthly Revenue

2023-01 750

2023-02 1650

2023-03 400

e. Identify the 3 most profitable categories

SQL Query

```
SELECT
   p.Category,
   SUM(o.TotalAmount) AS TotalRevenue
FROM Orders o
JOIN Products p ON o.ProductID = p.ProductID
GROUP BY p.Category
```

ORDER BY TotalRevenue DESC

LIMIT 3;

Category Total Sales

Electronics (P101 → 750) + (P103 → 1200) = 1950

Appliances (P102 → 450)

Clothing (P104 → 400)

Rank	Category	Total Revenue
1	Electronics	1950
2	Appliances	450
3	Clothing	400

THE SUMMARY TABLE

Question	Description	Key SQL Concept	Example Output
(a)	Top 5 Products by Sales	GROUP BY, SUM, ORDER BY	LED TV (₦1200), Bluetooth Speaker (₦750), etc.
(b)	Avg Purchase per Region	AVG, GROUP BY	East = ₦1200, North = ₦375

(c) Customers with No Orders LEFT JOIN, WHERE IS NULL Grace Obi

(d) Monthly Revenue DATE_FORMAT, SUM, GROUP BY Jan ₦750, Feb ₦1650, Mar ₦400

(e) Top 3 Categories JOIN, GROUP BY, SUM, ORDER BY Electronics, Appliances, Clothing