**📄 Day 54 – SQL Challenge**

**Dataset Theme:** Retail Sales (Orders, Customers, Products, Payments)

**Tables & Sample Data**

**Customers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CustomerID | Name | Email | Country | JoinDate |
| 1 | Alice | alice@example.com | USA | 2021-01-15 |
| 2 | Bob | bob@example.com | India | 2021-03-20 |
| 3 | Charlie | charlie@example.com | UK | 2021-05-12 |
| 4 | David | david@example.com | USA | 2021-08-02 |
| 5 | Eva | eva@example.com | Germany | 2021-09-25 |

**Products**

|  |  |  |  |
| --- | --- | --- | --- |
| ProductID | ProductName | Category | Price |
| 101 | Laptop | Electronics | 1200 |
| 102 | Smartphone | Electronics | 800 |
| 103 | Headphones | Accessories | 150 |
| 104 | Desk Chair | Furniture | 250 |
| 105 | Notebook | Stationery | 5 |

**Orders**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| OrderID | CustomerID | OrderDate | TotalAmount | Status |
| 1001 | 1 | 2021-02-01 | 2000 | Completed |
| 1002 | 2 | 2021-03-25 | 800 | Completed |
| 1003 | 3 | 2021-06-15 | 155 | Cancelled |
| 1004 | 1 | 2021-09-10 | 1205 | Completed |
| 1005 | 4 | 2021-11-20 | 250 | Completed |

**OrderDetails**

|  |  |  |  |
| --- | --- | --- | --- |
| OrderDetailID | OrderID | ProductID | Quantity |
| 1 | 1001 | 101 | 1 |
| 2 | 1001 | 103 | 2 |
| 3 | 1002 | 102 | 1 |
| 4 | 1003 | 105 | 10 |
| 5 | 1004 | 101 | 1 |
| 6 | 1004 | 104 | 1 |
| 7 | 1005 | 104 | 1 |

**Payments**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PaymentID | OrderID | PaymentDate | Amount | PaymentMethod |
| 1 | 1001 | 2021-02-02 | 2000 | Credit Card |
| 2 | 1002 | 2021-03-26 | 800 | UPI |
| 3 | 1004 | 2021-09-12 | 1205 | PayPal |
| 4 | 1005 | 2021-11-22 | 250 | Credit Card |

**Questions**

1. Retrieve top 3 customers by total spending (use **SUM + ORDER BY + LIMIT/TOP**).
2. Find customers who have **never placed an order** (use **LEFT JOIN / NOT EXISTS**).
3. Calculate the **average order value per customer** (use **AVG + GROUP BY**).
4. Show the **most popular product category** (highest sales by revenue).
5. Compare **Completed vs Cancelled orders count** using a **CASE WHEN**.
6. For each month, calculate **total revenue** (use **DATEPART / EXTRACT + GROUP BY**).
7. Find customers who placed **orders in more than one country** (use **JOIN + GROUP BY HAVING**).
8. Use a **Window Function (RANK)** to list top products by revenue.
9. Write a query to find **repeat customers** (customers with more than 1 completed order).
10. Find the **payment method contributing the highest revenue**.

**Bonus (Advanced):**  
Compare performance of these two approaches for finding customers with no orders:

* NOT EXISTS
* LEFT JOIN ... IS NULL

👉 Discuss **which is better in terms of performance** and why (interview-level optimization).