Question:

Given data about customer orders, order items, products, and categories. Your task is to identify the **top 3 customers** who spent the most money in the year 2023. Afterward, you need to list the **top 3 categories** for each of these top customers, ranked by their total revenue (the sum of the amount spent on each category). If two or more categories have the same revenue, the category with the higher number of orders should be ranked higher.

Tables:

CUSTOMERS

customer_id	customer_name	city
1	Alice	New York
2	Bob	Chicago
3	Charlie	Houston
4	David	Seattle
5	Emma	Boston

ORDERS

order_id	customer_id	order_date
101	1	2023-03-10
102	2	2023-07-15
103	3	2023-05-20
104	1	2023-08-25
105	2	2023-09-05
106	4	2023-11-11
107	5	2023-12-01

ORDER_ITEMS

order_id	product_id	quantity	price_per_unit
101	201	2	50
101	202	1	200
102	203	3	150
103	201	1	50
104	204	4	80
105	205	2	300
106	206	1	500

| 107 | 202 | 3 | 200 |

PRODUCTS

product_id	category_id	product_name
201	10	Laptop
202	11	Phone
203	12	Tablet
204	10	Mouse
205	11	Keyboard
206	12	Monitor

CATEGORIES

category_id	category_name
10	Electronics
11	Accessories
12	Gadgets

Expected Output:

CUSTOMER_NAME	CATEGORY_NAME	TOTAL_REVENUE	TOTAL_ORDERS
Bob	Electronics	1200.00	15
Bob	Clothing	900.00	10
Bob	Accessories	450.00	8
Alice	Furniture	1500.00	12
Alice	Electronics	1000.00	6
Alice	Homeware	700.00	9
Charlie	Clothing	1300.00	14

** QUERY:

// Creating a base CTE with all the required fields

WITH BASE AS(

```sql
SELECT  O.*, C.CUSTOMER_NAME, C.CITY,
        OI.PRODUCT_ID, OI.QUANTITY, OI.PRICE_PER_UNIT,
        P.PRODUCT_NAME, P.CATEGORY_ID,
        CG.CATEGORY_NAME
FROM ORDERS AS O
LEFT JOIN CUSTOMER AS C
ON O.CUSTOMER_ID = C.CUSTOMER_ID
LEFT JOIN ORDER_ITEMS AS OI
ON O.ORDER_ID = OI.ORDER_ID
LEFT JOIN PRODUCTS AS P
ON OI.PRODUCT_ID = P.PRODUCT_ID
LEFT JOIN CATEGORIES AS CG
ON P.CATEGORY_ID = CG.CATEGORY_ID
)


// Creating a CTE for Top-3 customers

,TOP3_CUST AS(
SELECT CUSTOMER_NAME, SUM(PRICE_PER_UNIT) AS TOTAL_SPENT_CUST,
ROW_NUMBER() OVER(ORDER BY SUM(PRICE_PER_UNIT) DESC) AS RN_TOP3
FROM BASE
WHERE YEAR(ORDER_DATE) = 2023
GROUP BY CUSTOMER_NAME
HAVING RN_TOP3 < 4
)


// Calculating required fields for each of the Top-3 Customers according to their spends

,CALCULATED_FIELDS AS(
SELECT CUSTOMER_NAME, CATEGORY_NAME, SUM(PRICE_PER_UNIT * QUANTITY) AS TOTAL_REVENUE,
SUM(QUANTITY) AS TOTAL_ORDERS,
RANK() OVER (PARTITION BY CUSTOMER_NAME ORDER BY TOTAL_REVENUE DESC, TOTAL_ORDERS DESC) AS
RK
FROM BASE
WHERE CUSTOMER_NAME IN (SELECT CUSTOMER_NAME FROM TOP3_CUST)
```

```sql
GROUP BY CUSTOMER_NAME, CATEGORY_NAME
)
SELECT CUSTOMER_NAME, CATEGORY_NAME, TOTAL_REVENUE, TOTAL_ORDERS
FROM CALCULATED_FIELDS
WHERE RK < 4
;
```