## **Exercise 3.8 Performing Subqueries**

## Step 1: Find the average amount paid by the top 5 customers.

```
SELECT AVG(total_amount_paid)AS average
FROM

(SELECT A.customer_id, A.first_name , A.last_name , D.country, C.city,
SUM (E.amount) AS Total_Amount_Paid
FROM customer A

INNER JOIN address B ON A.address_id = B.address_id
INNER JOIN city C ON B.city_id = C.city_id
INNER JOIN country D ON C.country_id = D.country_id
INNER JOIN payment E ON A.customer_id = E.customer_id
WHERE city IN ('Aurora', 'Acua', 'Citrus Heights', 'Iwaki', 'Ambattur', 'Shanwei', 'Teboksary', 'Tianji', 'Cianjur', 'So Leopoldo')
GROUP BY country, city, first_name, last_name, A.customer_id
ORDER BY Total_Amount_Paid Desc
LIMIT 5)AS total_amount_paid
```

```
Query Query History
  1 SELECT AVG(total_amount_paid)AS average
  2 FROM
 3 (SELECT A.customer_id, A.first_name , A.last_name , D.country, C.city,
  4 SUM (E.amount) AS Total_Amount_Paid
  5 FROM customer A
  6 INNER JOIN address B ON A.address_id = B.address_id
         INNER JOIN city C ON B.city_id = C.city_id
 8 INNER JOIN country D ON C.country_id = D.country_id
 9 INNER JOIN payment E ON A.customer_id = E.customer_id
10 WHERE city IN ('Aurora', 'Acua', 'Citrus Heights', 'Iwaki', 'Ambattur', 'Shanwei', 'Teboksary', 'Tianji',
11 'Cianjur', 'So Leopoldo')
12 GROUP BY country, city, first_name, last_name, A.customer_id
13 ORDER BY Total_Amount_Paid Desc
14 LIMIT 5)AS total_amount_paid
Data Output Messages Notifications

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            105.55400000000000000
```

## Step 2: Find out how many of the top 5 customers are based within each country.

SELECT D.country,COUNT(A.customer\_id) As all\_customer\_count,COUNT(top\_5\_customers)As top\_customer\_count

FROM customer A

INNER JOIN address B ON A.address\_id = B.address\_id

INNER JOIN city C ON B.city\_id = C.city\_id

INNER JOIN country D ON C.country\_id = D.country\_id

LEFT JOIN

(SELECT A.customer\_id, A.first\_name, A.last\_name, D.country, C.city,

SUM (E.amount) AS Total\_Amount\_Paid

FROM customer A

INNER JOIN address B ON A.address id = B.address id

INNER JOIN city C ON B.city\_id = C.city\_id

INNER JOIN country D ON C.country\_id = D.country\_id

INNER JOIN payment E ON A.customer id = E.customer id

WHERE city IN ('Aurora', 'Acua', 'Citrus Heights', 'Iwaki', 'Ambattur', 'Shanwei', 'Teboksary',

'Tianji','Cianjur', 'So Leopoldo')

GROUP BY country, city, first\_name, last\_name, A.customer\_id

ORDER BY Total\_Amount\_Paid Desc

LIMIT 5)AS top\_5\_customers

ON A.customer\_id = top\_5\_customers.customer\_id

**GROUP BY D.country** 

HAVING COUNT (top\_5\_customers) > 0

ORDER BY COUNT (top 5 customers), COUNT (A.customer id ) DESC

```
1 SELECT D.country,COUNT(A.customer_id) As all_customer_count,COUNT(top_5_customers)As top_customer_count
 2 FROM customer A
    INNER JOIN address B ON A.address_id = B.address_id
 4 INNER JOIN city C ON B.city_id = C.city_id
 5 INNER JOIN country D ON C.country_id = D.country_id
 6 LEFT JOIN
    (SELECT A.customer_id, A.first_name , A.last_name , D.country, C.city,
    SUM (E.amount) AS Total_Amount_Paid
    FROM customer A
10  INNER JOIN address B ON A.address_id = B.address_id
11 INNER JOIN city C ON B.city_id = C.city_id
12 INNER JOIN country D ON C.country_id = D.country_id
13  INNER JOIN payment E ON A.customer_id = E.customer_id
WHERE city IN ('Aurora', 'Acua', 'Citrus Heights', 'Iwaki', 'Ambattur', 'Shanwei', 'Teboksary', 'Tianji','Cianjur', 'So Leopoldo')
GROUP BY country, city, first_name, last_name, A.customer_id
ORDER BY Total_Amount_Paid Desc
17 LIMIT 5)AS top_5_customers
18 ON A.customer_id = top_5_customers.customer_id
19 GROUP BY D.country
20 HAVING COUNT (top_5_customers ) > 0
21 ORDER BY COUNT (top_5_customers), COUNT(A.customer_id ) DESC
Data Output Messages Notifications
=+ 6 ~ 1 6 5 4
     country
character varying (50) 
all_customer_count bigint top_customer_count bigint
     China
                                      53
                                      36
     United States
     Japan
                                      31
5 Mexico
```

## Step 3:

- 1. Write 1 to 2 short paragraphs on the following:
  - o Do you think steps 1 and 2 could be done without using subqueries?

Yes ,we can achieve the same results without a subquery, may be we can join the payment table to get an average.

When do you think subqueries are useful?

Depending on what you want to achieve, subqueries can be used within the SELECT, FROM, or WHERE clauses. They can also be used as part of a JOIN statement. May use in big dataset. But before making that decision, however, it's always worth making a query plan to test the relative cost of two queries.