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

- **Copy the query you wrote in step 3 of the task from Exercise 3.7: Joining Tables of Data into the Query Tool. This will be your subquery, so give it an alias, "total_amount_paid," and add parentheses around it.**

```
(SELECT
    B.customer_id AS Customer_ID,
    B.first_name AS Customer_First_Name,
    B.last_name AS Customer_Last_Name,
    D.city AS City,
    E.country AS Country,
    SUM(A.amount) AS Total_Amount_Paid
FROM payment A
INNER JOIN customer B on A.customer_id=B.customer_id
INNER JOIN address C on B.address_id=C.address_id
INNER JOIN city D on C.city_id=C.city_id
INNER JOIN country E on D.country_id=E.country_id

WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule(Dhulia)', 'Kurashiki', 'Pingxinag', 'Sivas', 'Celaya', 'So Leopoldo')
GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY Total_Amount_Paid DESC
LIMIT 5 ) AS total_amount_paid
```

(SELECT
B.customer_id AS Customer_ID,
B.first_name AS Customer_First_Name,
B.last_name AS Customer_Last_Name,
D.city AS City,
E.country AS Country,
SUM(A.amount) AS Total_Amount_Paid
FROM payment A
INNER JOIN customer B on A.customer_id=B.customer_id
INNER JOIN address C on B.address_id=C.address_id
INNER JOIN city D on C.city_id=C.city_id
INNER JOIN country E on D.country_id=E.country_id

WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule(Dhulia)', 'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY Total_Amount_Paid DESC
LIMIT 5) AS total_amount_paid

- **Write an outer statement to calculate the average amount paid.**

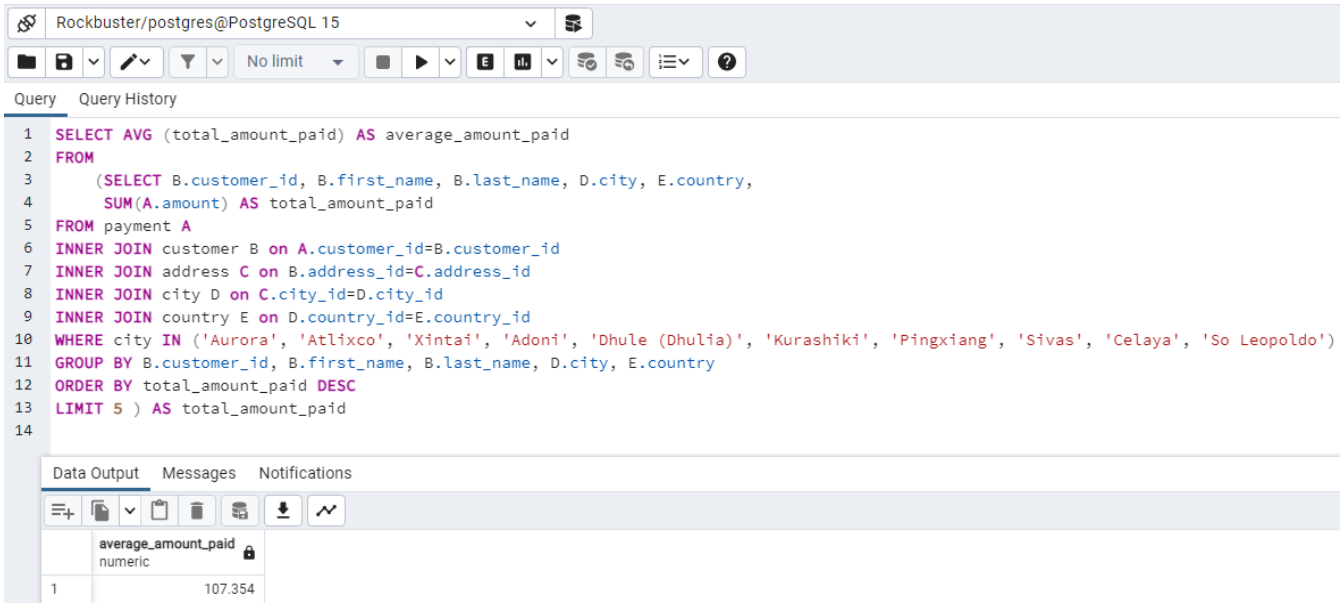
SELECT AVG (amount)

FROM payment A

- **Add your subquery to the outer statement. It will go in either the SELECT, WHERE, or FROM clause. (Hint: When referring to the subquery in your outer statement, make sure to use the subquery's alias, "total_amount_paid".)**

- **If you've done everything correctly, pgAdmin 4 will require you to add an alias after the subquery. Go ahead and call it "average".**

- **Copy-paste your queries and the final data output from pgAdmin 4 into your answers document.**




```
SELECT AVG (total_amount_paid) AS average_amount_paid
FROM
        (SELECT B.customer_id, B.first_name, B.last_name, D.city, E.country,
         SUM(A.amount) AS total_amount_paid
FROM payment A
INNER JOIN customer B on A.customer_id=B.customer_id
INNER JOIN address C on B.address_id=C.address_id
INNER JOIN city D on C.city_id=D.city_id
INNER JOIN country E on D.country_id=E.country_id
WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)', 'Kurashiki', 'Pingxiang', 'Sivas',
'Celaya', 'So Leopoldo')
GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY total_amount_paid DESC
LIMIT 5 ) AS total_amount_paid
```

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

- **Your final output should include 3 columns:**
    - **“Country”**
    - **“all_customer_count” with the total number of customers in each country**
    - **“top_customer_count” showing how many of the top 5 customers live in each country**

You’ll notice that this step is quite difficult. We’ve broken down each part and provided you with some helpful hints below:

- **Copy the query from step 3 of task 3.7 into the Query Tool and add parentheses around it. This will be your inner query.**

- **Write an outer statement that counts the number of customers living in each country. You’ll need to refer to your entity relationship diagram or data dictionary in order to do this. The information you need is in different tables, so you’ll have to use a JOIN. To get the count for each country, use COUNT(DISTINCT) and GROUP BY. Give your second column the alias “all_customer_count” for readability.**

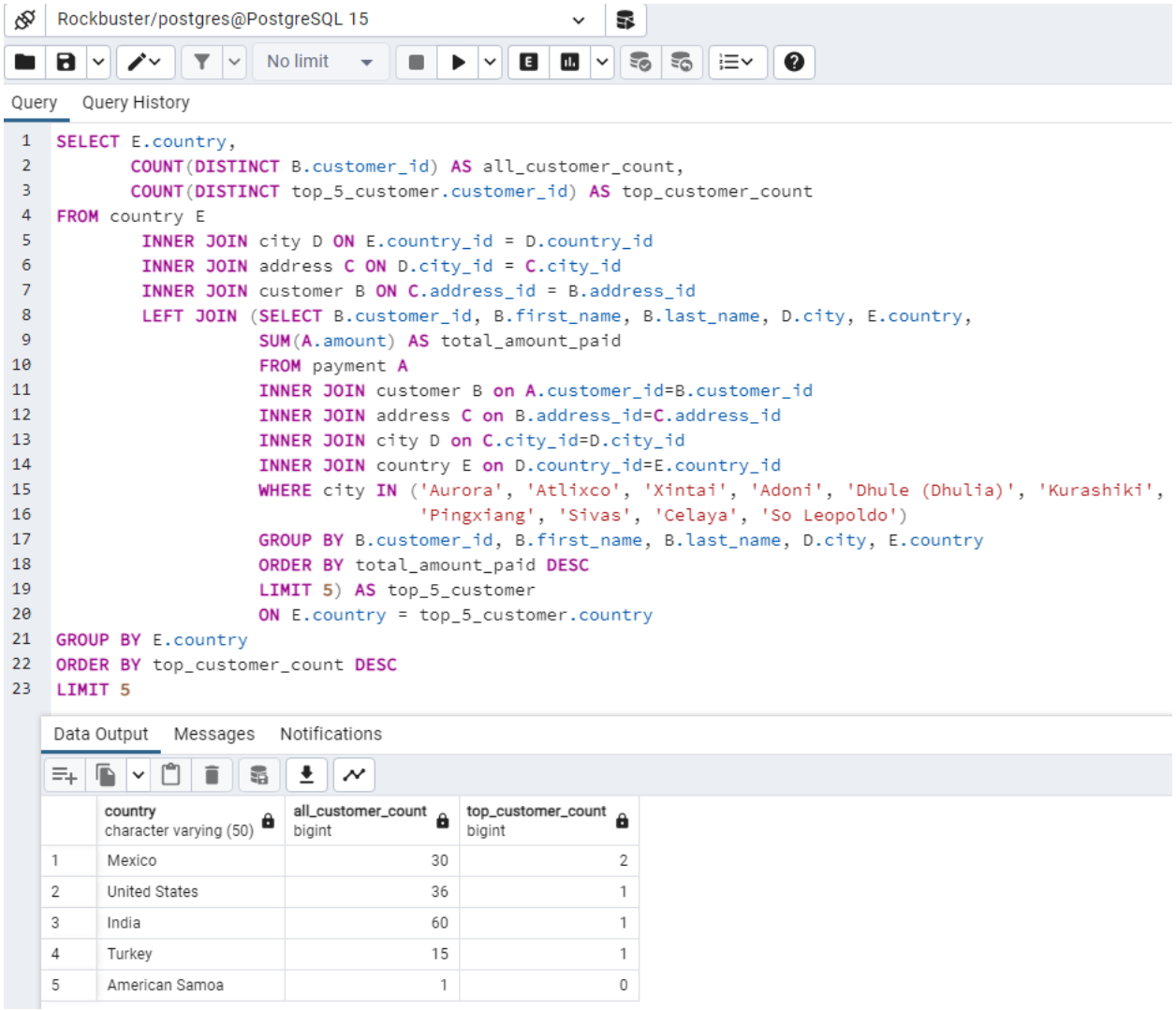
- **Place your inner query in the outer query. Since you want to merge the entire output of the outer query with the information from your inner query, use a left join to connect the two queries on the “country” column. You’ll need to add a LEFT JOIN after your outer query, followed by the subquery in parentheses.**

- **Give your subquery an alias so you can refer to it in your outer query, for example, “top_5_customers”.**

- **Remember to specify which columns to join the two tables on using ON. Both ON and the column names should follow the alias.**

- **Count the top 5 customers for the third column using GROUP BY and COUNT (DISTINCT). Give this column the alias “top_customer_count”.**

- **Copy-paste your query and the data output into your “Answers 3.8” document.**




```
SELECT E.country,
       COUNT(DISTINCT B.customer_id) AS all_customer_count,
       COUNT(DISTINCT top_5_customer.customer_id) AS top_customer_count
FROM country E
        INNER JOIN city D ON E.country_id = D.country_id
        INNER JOIN address C ON D.city_id = C.city_id
        INNER JOIN customer B ON C.address_id = B.address_id
        LEFT JOIN (SELECT B.customer_id, B.first_name, B.last_name, D.city, E.country,

                        SUM(A.amount) AS total_amount_paid
                        FROM payment A
                        INNER JOIN customer B on A.customer_id=B.customer_id
                        INNER JOIN address C on B.address_id=C.address_id
                        INNER JOIN city D on C.city_id=D.city_id
                        INNER JOIN country E on D.country_id=E.country_id
```

```
                    WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)',
                                   'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So
                                   Leopoldo')
                    GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
                        ORDER BY total_amount_paid DESC
                        LIMIT 5) AS top_5_customer
                        ON E.country = top_5_customer.country
GROUP BY E.country
ORDER BY top_customer_count DESC
LIMIT 5
```

Step 3:

- **Write 1 to 2 short paragraphs on the following:**
    - **Do you think steps 1 and 2 could be done without using subqueries?**
      They certainly could be done without the use of subqueries but this would be more convoluted.

    - **When do you think subqueries are useful?**
      Subqueries are useful when the data is dynamically-changing as well as when performing an analysis on many disparate tables with a set of prescribed conditions with which we want to filter the data.