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Task 3.8
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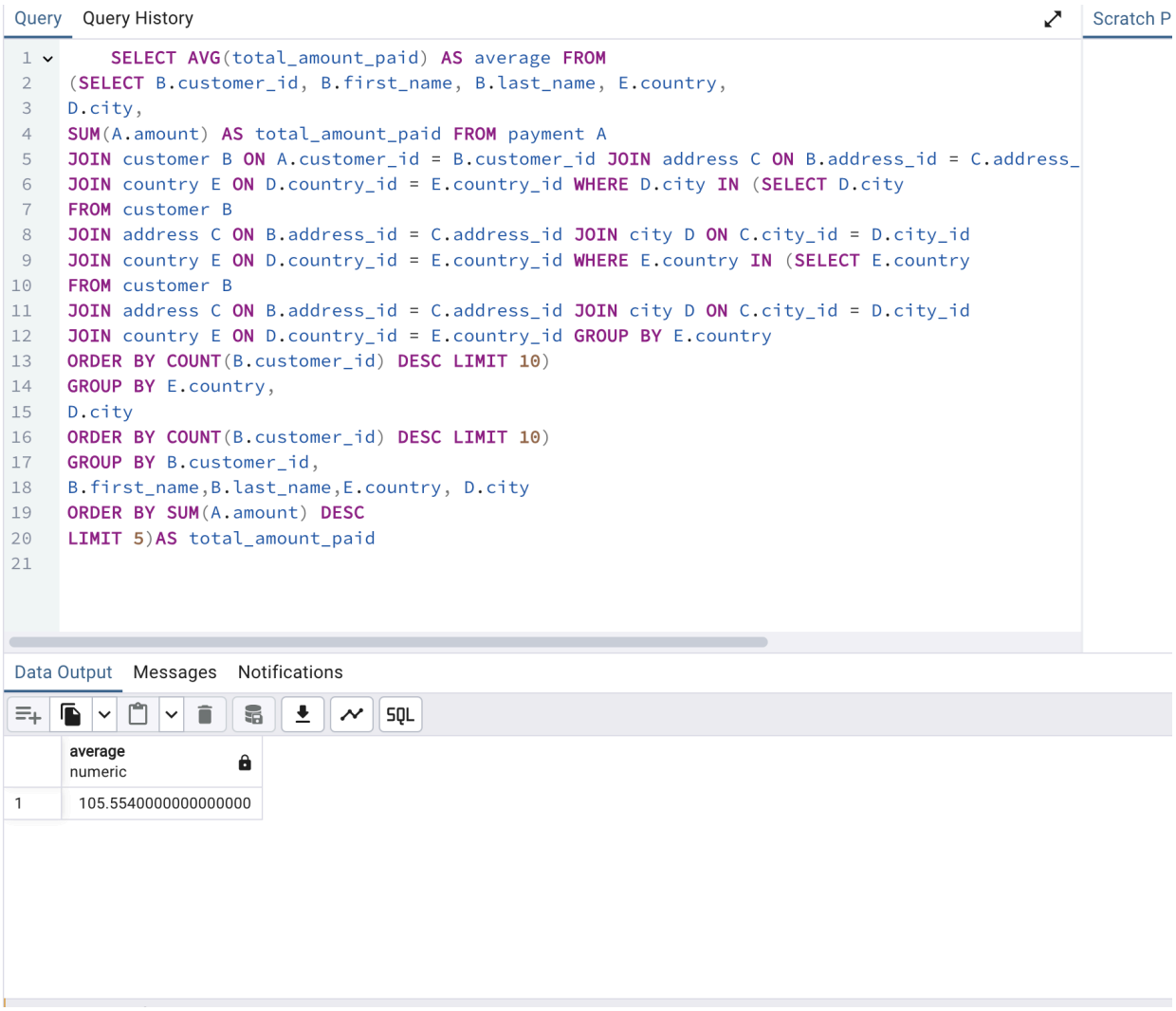
3.8 . Performing Subqueries

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

```
SELECT AVG(total_amount_paid) AS average FROM
(SELECT
    B.customer_id,
    B.first_name,
    B.last_name,
    E.country,
  D.city,
    SUM(A.amount) AS total_amount_paid
FROM payment A
    JOIN customer B ON A.customer_id = B.customer_id
    JOIN address C ON B.address_id = C.address_id
    JOIN city D ON C.city_id = D.city_id
    JOIN country E ON D.country_id = E.country_id
WHERE D.city IN (SELECT D.city
                 FROM customer B
                 JOIN address C ON B.address_id = C.address_id
                 JOIN city D ON C.city_id = D.city_id
                 JOIN country E ON D.country_id = E.country_id
                 WHERE E.country IN (SELECT E.country
                                     FROM customer B
                                     JOIN address C ON B.address_id = C.address_id
                                     JOIN city D ON C.city_id = D.city_id
                                     JOIN country E ON D.country_id = E.country_id
                                     GROUP BY E.country
                                     ORDER BY COUNT(B.customer_id) DESC
                                     LIMIT 10)
                 GROUP BY E.country,
                          D.city
                 ORDER BY COUNT(B.customer_id) DESC
                 LIMIT 10)
GROUP BY B.customer_id,
         B.first_name
         ,B.last_name
         ,E.country,
         D.city
ORDER BY SUM(A.amount) DESC
LIMIT 5)AS total_amount _paid
```



2. Step 2: Find out how many of the top 5 customers you identified in step 1 are based within each country.

```
SELECT E.country,
        COUNT(DISTINCT B.customer_id) AS all_customer_count,
        COUNT(DISTINCT top_5_customers) AS top_customer_count
FROM customer B
JOIN address C ON B.address_id = C.address_id
JOIN city D ON C.city_id = D.city_id
JOIN country E ON D.country_id = E.country_id

LEFT JOIN
(SELECT B.customer_id,
```

```
            B.first_name,
            B.last_name,
            E.country,
            D.city,
            SUM(A.amount) AS total_amount_paid
FROM payment A
    JOIN customer B ON A.customer_id = B.customer_id
    JOIN address C ON B.address_id = C.address_id
    JOIN city D ON C.city_id = D.city_id
    JOIN country E  ON D.country_id = E.country_id
WHERE D.city IN (SELECT D.city
                 FROM customer B
                      JOIN address C ON B.address_id = C.address_id
                      JOIN city D ON C.city_id = D.city_id
                      JOIN country E  ON D.country_id = E.country_id
                 WHERE E.country IN (SELECT E.country
                                     FROM customer B
                                          JOIN address C ON B.address_id = C.address_id
                                          JOIN city D ON C.city_id = D.city_id
                                          JOIN country E  ON D.country_id = E.country_id
                                     GROUP BY E.country
                                     ORDER BY COUNT(B.customer_id) DESC
                                     LIMIT 10)
                 GROUP BY E.country,
                          D.city
                 ORDER BY COUNT(B.customer_id) DESC
                 LIMIT 10)
GROUP BY B.customer_id,
            B.first_name,
            B.last_name,
            E.country,
            D.city
ORDER BY SUM(A.amount) DESC
LIMIT 5) AS top_5_customers
ON B.customer_id = top_5_customers.customer_id
GROUP BY E.country
ORDER BY all_customer_count DESC
LIMIT 10;
```

Query | Query History | Scratch P

```
SELECT E.country,
          COUNT(DISTINCT B.customer_id) AS all_customer_count,
          COUNT(DISTINCT top_5_customers) AS top_customer_count
FROM customer B
JOIN address C ON B.address_id = C.address_id JOIN city D ON C.city_id = D.city_id
JOIN country E ON D.country_id = E.country_id
LEFT JOIN
(SELECT B.customer_id,
        B.first_name,
        B.last_name,
        E.country,
        D.city,
       SUM(A.amount) AS total_amount_paid
FROM payment A
      JOIN customer B ON A.customer_id = B.customer_id
      JOIN address C ON B.address_id = C.address_id
      JOIN city D ON C.city_id = D.city_id
      JOIN country E ON D.country_id = E.country_id
WHERE D.city IN (SELECT D.city
                      FROM customer B
                           JOIN address C ON B.address_id = C.address_id
                          JOIN city D ON C.city_id = D.city_id
                         JOIN country E ON D.country_id = E.country_id
                       WHERE E.country IN (SELECT E.country
```

Data Output | Messages | Notifications

SQL

	country character varying (50)	all_customer_count bigint	top_customer_count bigint
1	India	60	1
2	China	53	1
3	United States	36	1
4	Japan	31	1
5	Mexico	30	1
6	Brazil	28	0
7	Russian Federation	28	0

Step 3. Write 1 to 2 short paragraphs on the following:

- Do you think steps 1 and 2 could be done without using subqueries**?**The subqueries used in step 1 and step 2 are quite complex which implies that they can't be done without using subqueries,and more analysis could be done with the same other results in the table.

- When do you think subqueries are useful**?** They are useful since they analyze the results of a complex query and involve data from multiple tables that can be used for joins or further operations.The Subqueries also filter results in the **WHERE** clause based on output of another query.