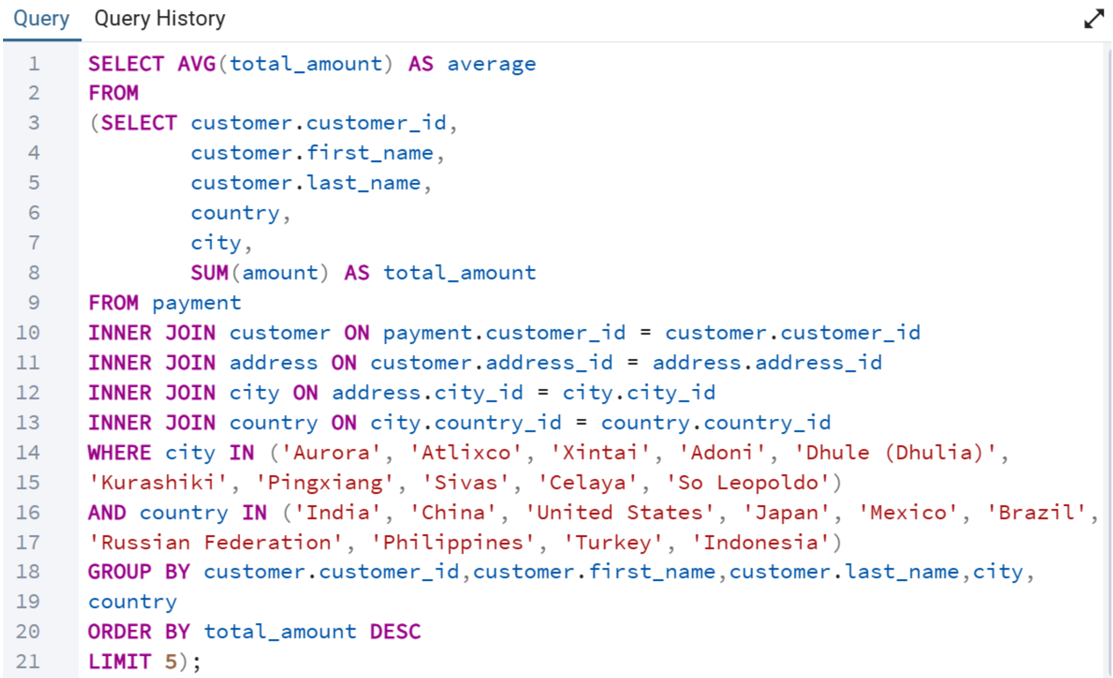
Performing Subqueries

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

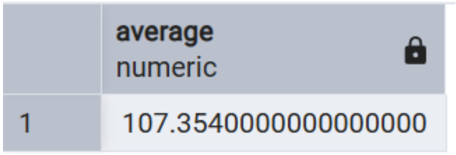
Commands:

```
SELECT AVG (total_amount) AS average
FROM
(SELECT customer.customer_id,
        customer.first_name,
        customer.last_name,
        country,
        city,
        SUM(amount) AS total_amount
FROM payment
INNER JOIN customer ON payment.customer_id = customer.customer_id
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)',
'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
AND country IN ('India', 'China', 'United States', 'Japan', 'Mexico', 'Brazil',
'Russian Federation', 'Philippines', 'Turkey', 'Indonesia')
GROUP BY customer.customer_id,customer.first_name,customer.last_name,city,country
ORDER BY total_amount DESC
LIMIT 5)
```

Screenshots:



```
SELECT AVG(total_amount) AS average
FROM
(SELECT customer.customer_id,
        customer.first_name,
        customer.last_name,
        country,
        city,
        SUM(amount) AS total_amount
FROM payment
INNER JOIN customer ON payment.customer_id = customer.customer_id
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)',
'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
AND country IN ('India', 'China', 'United States', 'Japan', 'Mexico', 'Brazil',
'Russian Federation', 'Philippines', 'Turkey', 'Indonesia')
GROUP BY customer.customer_id,customer.first_name,customer.last_name,city,
country
ORDER BY total_amount DESC
LIMIT 5);
```



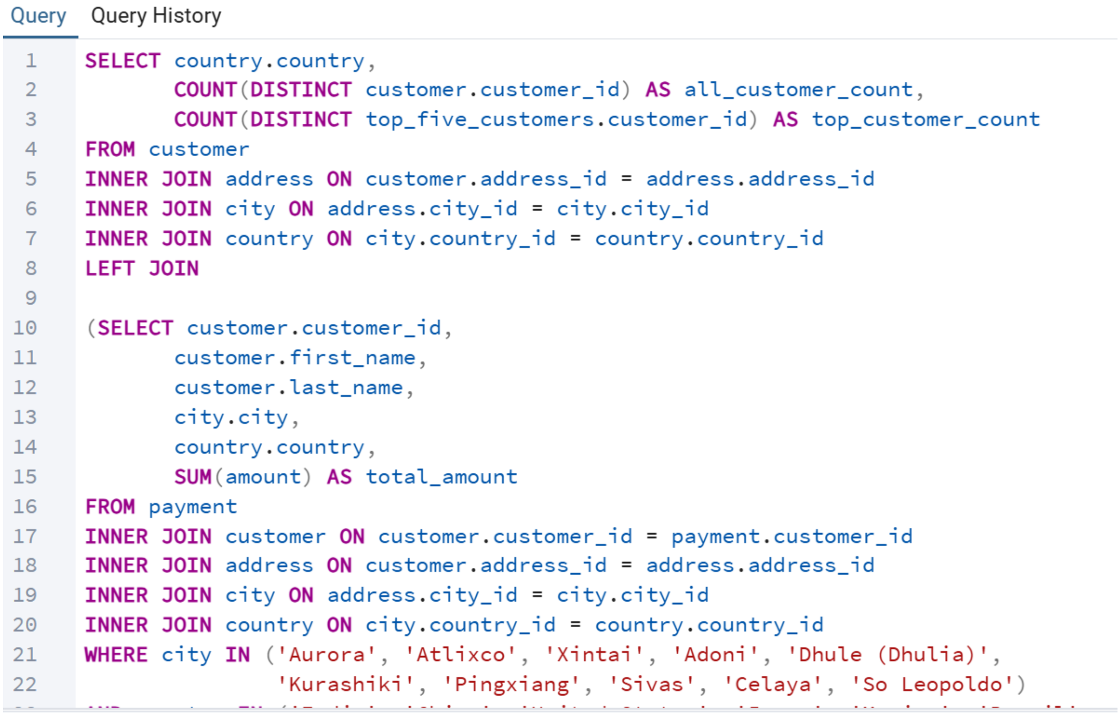
	average numeric
1	107.3540000000000000

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

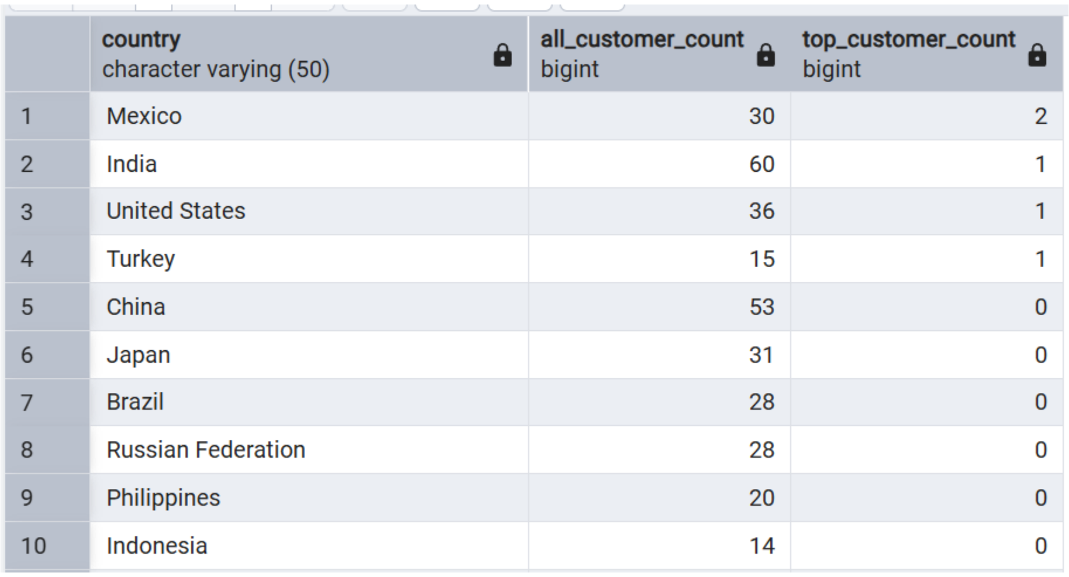
Commands:

```
SELECT country.country,
    COUNT(DISTINCT customer.customer_id) AS all_customer_count,
        COUNT(DISTINCT top_five_customers.customer_id) AS top_customer_count
FROM customer
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
LEFT JOIN

(SELECT customer.customer_id,
          customer.first_name,
           customer.last_name,
           city.city,
           country.country,
           SUM(amount) AS total_amount
FROM payment
INNER JOIN customer ON customer.customer_id = payment.customer_id
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)',
        'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
AND country IN ('India', 'China', 'United States', 'Japan', 'Mexico', 'Brazil',
        'Russian Federation', 'Philippines', 'Turkey', 'Indonesia')
GROUP BY customer.customer_id, customer.first_name, customer.last_name, city.city, country.country
ORDER BY total_amount DESC
LIMIT 5) AS top_five_customers

ON top_five_customers.country = country.country

GROUP BY country.country
ORDER BY top_customer_count DESC, all_customer_count DESC;
```

Screenshots:



```
SELECT country.country,
       COUNT(DISTINCT customer.customer_id) AS all_customer_count,
       COUNT(DISTINCT top_five_customers.customer_id) AS top_customer_count
FROM customer
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
LEFT JOIN

(SELECT customer.customer_id,
       customer.first_name,
       customer.last_name,
       city.city,
       country.country,
       SUM(amount) AS total_amount
FROM payment
INNER JOIN customer ON customer.customer_id = payment.customer_id
INNER JOIN address ON customer.address_id = address.address_id
INNER JOIN city ON address.city_id = city.city_id
INNER JOIN country ON city.country_id = country.country_id
WHERE city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)',
               'Kurashiki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
```



	country character varying (50)	all_customer_count bigint	top_customer_count bigint
1	Mexico	30	2
2	India	60	1
3	United States	36	1
4	Turkey	15	1
5	China	53	0
6	Japan	31	0
7	Brazil	28	0
8	Russian Federation	28	0
9	Philippines	20	0
10	Indonesia	14	0

Step 3:

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

Steps 1 and 2 could be done without subqueries. The subqueries are a bit long and make the query somewhat hard to read.
Subqueries are useful when the logic is short.