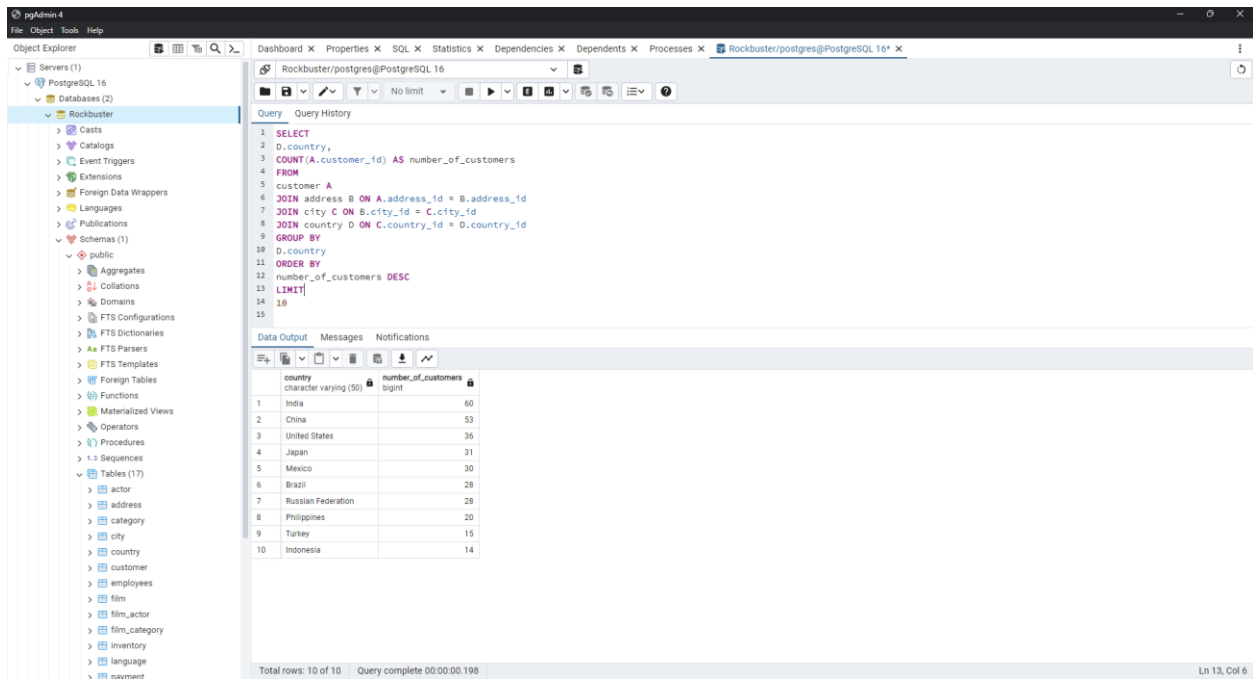


Joining Tables of Data



The screenshot shows the pgAdmin 4 interface. On the left, the Object Explorer displays the database structure for 'Rockbuster', including tables like 'customer', 'address', 'city', and 'country'. The main pane shows a SQL query that joins these tables to find the top 10 countries by the number of customers. The query is as follows:

```
1 SELECT
2   D.country,
3   COUNT(A.customer_id) AS number_of_customers
4 FROM
5   customer A
6 JOIN address B ON A.address_id = B.address_id
7 JOIN city C ON B.city_id = C.city_id
8 JOIN country D ON C.country_id = D.country_id
9 GROUP BY
10  D.country
11 ORDER BY
12  number_of_customers DESC
13 LIMIT
14  10
15
```

Below the query, the 'Data Output' tab shows the results of the query. The table has two columns: 'country' (character varying (50)) and 'number_of_customers' (bigint). The results are as follows:

| | country | number_of_customers |
|----|--------------------|---------------------|
| 1 | India | 60 |
| 2 | China | 53 |
| 3 | United States | 36 |
| 4 | Japan | 31 |
| 5 | Mexico | 30 |
| 6 | Brazil | 28 |
| 7 | Russian Federation | 28 |
| 8 | Philippines | 20 |
| 9 | Turkey | 15 |
| 10 | Indonesia | 14 |

The status bar at the bottom indicates 'Total rows: 10 of 10' and 'Query complete 00:00:00.198'.

To find the top 10 countries where Rockbuster has the most customers, we need to join the customer, address, city and country tables to link each customer to their country. We use `COUNT(A.customer_id)` to total the number of customers in their respective countries, then grouping the results by country and limiting the output to top 10.

Query

```

1 SELECT
2   D.country,
3   C.city,
4   COUNT(A.customer_id) AS number_of_customers
5 FROM
6   customer A
7 JOIN address B ON A.address_id = B.address_id
8 JOIN city C ON B.city_id = C.city_id
9 JOIN country D ON C.country_id = D.country_id
10 WHERE
11   D.country IN (SELECT country
12                 FROM customer A
13                 JOIN address B ON A.address_id = B.address_id
14                 JOIN city C ON B.city_id = C.city_id
15                 JOIN country D ON C.country_id = D.country_id
16                 GROUP BY D.country
17                 ORDER BY COUNT(A.customer_id) DESC
18                 LIMIT 10)
19 GROUP BY
20   D.country, C.city
21 ORDER BY
22   number_of_customers DESC
23 LIMIT
24   10
25

```

| country | city | number_of_customers |
|--------------------|----------------|---------------------|
| United States | Aurora | 2 |
| Mexico | Acua | 1 |
| United States | Citrus Heights | 1 |
| Japan | Iwak | 1 |
| India | Ambattur | 1 |
| China | Shanwei | 1 |
| Brazil | So Leopoldo | 1 |
| Russian Federation | Teboksary | 1 |
| China | Tianjin | 1 |

Total rows: 10 of 10 Query complete 00:00:00.072 Ln 17, Col 39

We first created a join to connect customer, address, city and country tables. Then had to determined the top 10 countries with the highest customer count, which was used to filter the main query, focusing only on cities within these top countries. The main query aggregated customer data by city, using GROUP BY for city and country, and COUNT customers. Then it was sorted to find the cities with the most customers but limited to top 10.

3. **REVISED**

Query

```

1 SELECT C.customer_id, C.first_name, C.last_name, CO.country, CI.city, SUM(P.amount) AS
2   total_amount_payment FROM payment AS P
3 INNER JOIN customer AS C ON C.customer_id = P.customer_id
4 INNER JOIN address AS A ON A.address_id = C.address_id
5 INNER JOIN city AS CI ON CI.city_id = A.city_id
6 INNER JOIN country CO ON CO.country_id = CI.country_id
7 WHERE CI.city IN (
8   SELECT CI.city FROM customer AS C
9   INNER JOIN address AS A ON A.address_id = C.address_id
10  INNER JOIN city AS CI ON CI.city_id = A.city_id
11  INNER JOIN country CO ON CO.country_id = CI.country_id
12  WHERE CO.country IN (
13    SELECT CO.country FROM customer AS C
14    INNER JOIN address AS A ON A.address_id = C.address_id
15    INNER JOIN city AS CI ON CI.city_id = A.city_id
16    INNER JOIN country CO ON CO.country_id = CI.country_id
17    GROUP BY CO.country
18    ORDER BY COUNT(C.customer_id) DESC
19    LIMIT 10)
20  GROUP BY CO.country, CI.city
21  ORDER BY Count(C.customer_id) DESC
22  LIMIT 10)
23 GROUP BY C.customer_id, CO.country, CI.city
24 ORDER BY total_amount_payment DESC
25 LIMIT 5;

```

| customer_id | first_name | last_name | country | city | total_amount_payment |
|-------------|------------|-----------|---------------|----------|----------------------|
| 225 | Ariene | Harvey | India | Ambattur | 111.76 |
| 424 | Kyle | Spurlock | China | Shanwei | 109.71 |
| 240 | Mariene | Welch | Japan | Iwak | 106.77 |
| 486 | Glen | Talbert | Mexico | Acua | 100.77 |
| 537 | Clinton | Buford | United States | Aurora | 98.76 |

Total rows: 5 of 5 Query complete 00:00:00.120 Ln 21, Col 35