3.7: Joining Tables of Data
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1.

```sql
1  SELECT D.country,
2  COUNT (customer_id) AS customer_count
3  FROM customer A
4  INNER JOIN address B ON A.address_id = B.address_id
5  INNER JOIN city C ON B.city_id = C.city_id
6  INNER JOIN country D ON C.country_id = D.country_id
7  GROUP BY country
8  ORDER BY customer_count DESC
9  LIMIT 10;
```

Query Editor   Query History

Data Output   Explain   Messages   Notifications

	country character varying (50)	customer_count bigint
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 needed information is found in the customer and country tables, but those two tables cannot be joined without the use of the address and country tables as well. I began by defining my desired columns of country and customer_count but using the SELECT and COUNT functions and selecting customer_id from the customer table. I then used INNER JOIN to connect tables using the follow: table A -> table B using address_id, table B -> table C using city_id, and table C to table D using country_id. Lastly, I grouped the records by country using GROUP BY and ordered the records from most to least customers using ORDER BY and DESC and limited the counts to the top ten countries using LIMIT.

2.

Query Editor   Query History

```
1   SELECT C.city AS top_ten_cities, D.country,
2   COUNT (customer_id) AS customer_count
3   FROM customer A
4   INNER JOIN address B ON A.address_id = B.address_id
5   INNER JOIN city C ON B.city_id = C.city_id
6   INNER JOIN country D ON C.country_id = D.country_id
7   WHERE country IN ('India',
8                     'China',
9                     'United States',
10                    'Japan',
11                    'Mexico',
12                    'Brazil',
13                    'Russian Federation',
14                    'Philippines',
15                    'Turkey',
16                    'Indonesia')
17  GROUP BY C.city, D.country
18  ORDER BY customer_count DESC
19  LIMIT 10;
```

Data Output   Explain   Messages   Notifications

	top_ten_cities character varying (50)	country character varying (50)	customer_count bigint
1	Aurora	United States	2
2	Atlixco	Mexico	1
3	Xintai	China	1
4	Adoni	India	1
5	Dhule (Dhulia)	India	1
6	Kurashiki	Japan	1

I used the same general format as the last query but made slight edits in order to pull the top ten cities instead. With the SELECT function, I added a city column. I then inserted a WHERE function to ensure it was only pulling cities from the top ten countries I discovered in the previous query. Lastly, I added city to the GROUP BY function to ensure the records were being grouped by both city and country.

3.

```sql
SELECT A.customer_id, B.first_name, B.last_name, D.city, E.country,
SUM(amount) AS customer_total_payments
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 country IN ('India',
                                'China',
                                'United States',
                                'Japan',
                                'Mexico',
                                'Brazil',
                                'Russian Federation',
                                'Philippines',
                                'Turkey',
                                'Indonesia')
AND city IN ('Aurora',
                        'Atlixco',
                        'Xintai',
                        'Adoni',
                        'Dhule (Dhulia)',
                        'Kurashiki',
                        'Pingxiang',
                        'Sivas',
                        'Celaya',
                        'So Leopoldo')
GROUP BY A.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY customer_total_payments DESC
LIMIT 5;
```

	customer_id smallint	first_name character varying (45)	last_name character varying (45)	city character varying (50)	country character varying (50)	customer_total_payments numeric
1	84	Sara	Perry	Atlixco	Mexico	128.70
2	518	Gabriel	Harder	Sivas	Turkey	108.75
3	587	Sergio	Stanfield	Celaya	Mexico	102.76
4	537	Clinton	Buford	Aurora	United States	98.76
5	367	Adam	Gooch	Adoni	India	97.80