

HW 4 mk07202 Part 1 Solution

Creating the Table for Countries



The screenshot shows a SQL query editor with a tab labeled 'Query' and 'Query History'. The query is a CREATE TABLE statement for a table named 'countries'. The table has 12 columns: 'fact_id' (INT, PRIMARY KEY), 'country_code' (VARCHAR(2)), 'country_name' (VARCHAR(255)), 'country_region' (VARCHAR(255)), 'country_sub_region' (VARCHAR(255)), 'country_area' (INT), 'country_area_land' (INT), 'country_area_water' (INT), 'country_population' (BIGINT), 'country_population_growth' (FLOAT), and 'country_birth_rate' (FLOAT). The query is numbered 1 through 12. Below the query, there are tabs for 'Data Output', 'Messages', and 'Notifications'. The 'Messages' tab is selected, showing the output 'CREATE TABLE' and a message 'Query returned successfully in 306 msec.'

```
1 CREATE TABLE countries (  
2     fact_id INT PRIMARY KEY,  
3     country_code VARCHAR(2),  
4     country_name VARCHAR(255),  
5     country_region VARCHAR(255),  
6     country_sub_region VARCHAR(255),  
7     country_area INT,  
8     country_area_land INT,  
9     country_area_water INT,  
10    country_population BIGINT,  
11    country_population_growth FLOAT,  
12    country_birth_rate FLOAT,
```

Data Output Messages Notifications

CREATE TABLE

Query returned successfully in 306 msec.

Now I created the table for cities

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Query Query History

```

13 -- country_death_rate FLOAT,
14 -- country_migration_rate FLOAT
15 -- );
16
17 CREATE TABLE cities (
18   city_id INT PRIMARY KEY,
19   city_name VARCHAR(255),
20   city_population INT,
21   capital BOOLEAN,
22   fact_id INT,
23   FOREIGN KEY (fact_id) REFERENCES countries(fact_id)
24 )

```

Data Output Messages Notifications

CREATE TABLE

Query returned successfully in 239 msec.

After importing data from the CSV files, the cities and countries table look like here respectively

26 SELECT *

27 FROM countries

28

29

Data Output Messages Notifications

| | fact_id [PK] integer | country_code character varying (2) | country_name character varying (255) | country_region character varying (255) | country_sub_region character varying (255) |
|---|-------------------------|---------------------------------------|---|---|---|
| 1 | 1 | af | Afghanistan | Asia | Southern Asia |
| 2 | 2 | al | Albania | Europe | Southern Europe |
| 3 | 3 | ag | Algeria | Africa | Northern Africa |
| 4 | 4 | an | Andorra | Europe | Southern Europe |
| 5 | 5 | ao | Angola | Africa | Sub-Saharan Africa |
| 6 | 6 | ac | Antigua and Barbuda | Americas | Latin America and the Caribbean |
| 7 | 7 | ar | Argentina | Americas | Latin America and the Caribbean |
| 8 | 8 | am | Armenia | Asia | Western Asia |
| 9 | 9 | au | Australia | Oceania | Australia and New Zealand |

Total rows: 261 of 261 Query complete 00:00:00.352 Ln 27, Col 16

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SELECT *

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FROM cities

Data Output

Messages

Notifications

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SQL

| | city_id [PK] integer | city_name character varying (255) | city_population integer | capital boolean | fact_id integer |
|---|-------------------------|--------------------------------------|----------------------------|--------------------|--------------------|
| 1 | 1 | Oranjestad | 37000 | true | 216 |
| 2 | 2 | Saint John'S | 27000 | true | 6 |
| 3 | 3 | Abu Dhabi | 942000 | true | 184 |
| 4 | 4 | Dubai | 1978000 | false | 184 |
| 5 | 5 | Sharjah | 983000 | false | 184 |
| 6 | 6 | Kabul | 3097000 | true | 1 |
| 7 | 7 | Algiers | 2916000 | true | 3 |
| 8 | 8 | Oran | 783000 | false | 3 |
| 9 | 9 | Baku | 2123000 | true | 11 |

Total rows: 397 of 397

Query complete 00:00:00.330

Ln 27, Col 19

1) Count of total rows of each table

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SELECT COUNT(*) AS total_countries

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FROM countries

Data Output

Messages

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SQL

| | total_countries bigint |
|---|---------------------------|
| 1 | 261 |

Total rows: 1 of 1

Query complete 00:00:00.163

Ln 33, Col 16

```

35 SELECT COUNT(*) AS total_cities
36 FROM cities
37

```

Data Output Messages Notifications

| | total_cities bigint |
|---|------------------------|
| 1 | 397 |

Total rows: 1 of 1 Query complete 00:00:00.305 Ln 35, Col 32

2) the count of number of cities for each country in descending order of count (use group by)

```

38 SELECT co.country_name, COUNT(ci.city_id) AS city_count
39 FROM cities AS ci
40 JOIN countries AS co ON ci.fact_id = co.fact_id
41 GROUP BY co.country_name
42 ORDER BY city_count DESC

```

Data Output Messages Notifications

| | country_name character varying (255) | city_count bigint |
|---|---|----------------------|
| 1 | South Africa | 7 |
| 2 | China | 6 |
| 3 | Russia | 6 |
| 4 | France | 6 |
| 5 | Venezuela | 6 |
| 6 | Colombia | 6 |
| 7 | Canada | 6 |
| 8 | Korea, South | 6 |
| 9 | Morocco | 6 |

Total rows: 210 of 210 Query complete 00:00:00.396 Ln 42, Col 10

- 3) the count of regions and sub-regions in each country. Sort them by ascending order of country name. (use group by)

```
44 SELECT country_name,  
45 COUNT(country_region) AS region_count,  
46 COUNT(country_sub_region) AS sub_region_count  
47 FROM countries  
48 GROUP BY country_name  
49 ORDER BY country_name ASC;
```

Data Output Messages Notifications



| | country_name character varying (255) | region_count bigint | sub_region_count bigint |
|---|---|------------------------|----------------------------|
| 1 | Afghanistan | 1 | 1 |
| 2 | Akrotiri | 1 | 1 |
| 3 | Albania | 1 | 1 |
| 4 | Algeria | 1 | 1 |
| 5 | American Samoa | 1 | 1 |
| 6 | Andorra | 1 | 1 |
| 7 | Angola | 1 | 1 |
| 8 | Anguilla | 1 | 1 |
| 9 | Antarctica | 1 | 1 |

Total rows: 261 of 261 Query complete 00:00:00.270 Ln 49, Col 27

- 4) Top 10 most populous capital cities. Display country, city and population in descending order

```

51 SELECT co.country_name, ci.city_name, ci.city_population
52 FROM cities AS ci
53 JOIN countries AS co ON ci.fact_id = co.fact_id
54 WHERE ci.capital = true
55 ORDER BY ci.city_population DESC
56 LIMIT 10;

```

Data Output Messages Notifications

| | country_name character varying (255) | city_name character varying (255) | city_population integer |
|----|---|--------------------------------------|----------------------------|
| 1 | Japan | Tokyo | 37217000 |
| 2 | India | New Delhi | 22654000 |
| 3 | Mexico | Mexico City | 20446000 |
| 4 | China | Beijing | 15594000 |
| 5 | Bangladesh | Dhaka | 15391000 |
| 6 | Argentina | Buenos Aires | 13528000 |
| 7 | Philippines | Manila | 11862000 |
| 8 | Russia | Moscow | 11621000 |
| 9 | Egypt | Cairo | 11169000 |
| 10 | Indonesia | Jakarta | 9769000 |

Total rows: 10 of 10 Query complete 00:00:00.151 Ln 55, Col 33

- 5) Average city population of capital and non-capital cities. (use group by) where false indicates non capital cities and true indicates capital cities.

```

58 SELECT ci.capital, AVG(ci.city_population) AS avg_population
59 FROM cities ci
60 GROUP BY ci.capital;

```

Data Output Messages Notifications

| | capital boolean | avg_population numeric |
|---|--------------------|---------------------------|
| 1 | false | 2891392.063492063492 |
| 2 | true | 2140442.307692307692 |

- 6) Average country birth rate for each region and sub-region (use group by), since it was not mentioned in which order to do that, so we kept it as it is.

```
61
62 SELECT country_region, country_sub_region, AVG(country_birth_rate) AS
63 avg_birth_rate
64 FROM countries
65 GROUP BY country_region, country_sub_region;
66
```

| | country_region character varying (255) | country_sub_region character varying (255) | avg_birth_rate double precision |
|----|---|---|------------------------------------|
| 1 | Europe | Northern Europe | 11.662142857142856 |
| 2 | Asia | Southern Asia | 21.094444444444445 |
| 3 | Oceania | Micronesia | 19.7 |
| 4 | Africa | Sub-Saharan Africa | 32.40558139534885 |
| 5 | Americas | Northern America | 11.2 |
| 6 | Europe | Western Europe | 10.163333333333334 |
| 7 | NA | NA | 9.236458333333335 |
| 8 | Americas | Latin America and the Caribbean | 15.891538461538458 |
| 9 | Europe | Southern Europe | 9.869333333333334 |
| 10 | Asia | South-eastern Asia | 19.817777777777778 |

Total rows: 18 of 18 Query complete 00:00:00.218 Ln 66. Col 1