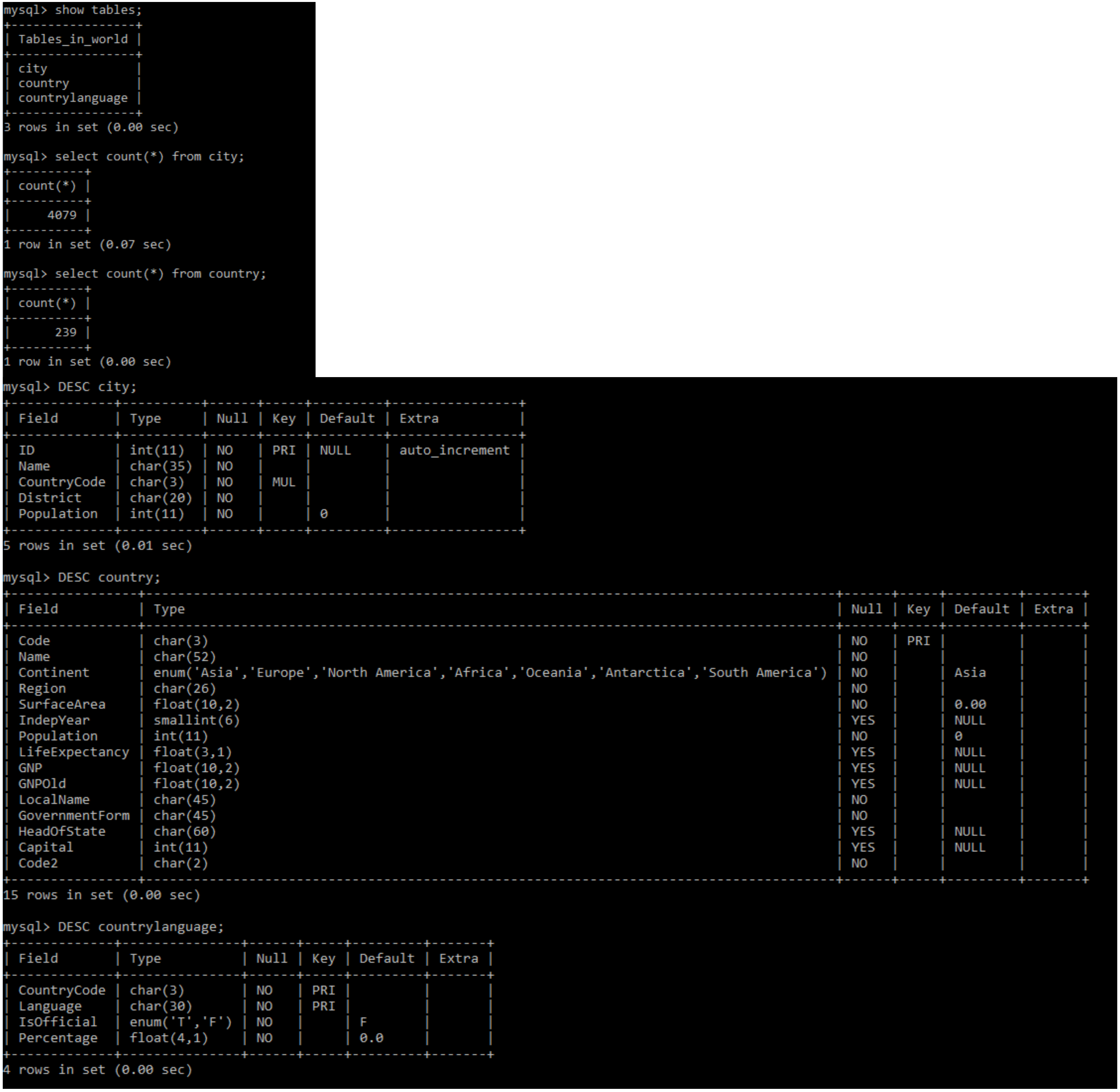
STAT 4260 – Databases
Spring 2018

Assignment 2 – [100 points]

For this assignment we will be using a provided database*. Follow the following steps to upload the database tables.

- Create a new database called ***world***; CREATE DATABASE world;
- Link to the currently empty database; USE world;
- Upload the pre-made tables into the ***world*** database; SOURCE C:/temp/world.sql (you should have the whole path to the location of the attached file if saved somewhere else)
- Confirm that the sample world database is installed correctly. Execute the following statements. You should see output similar to that shown here.



```
mysql> show tables;
+-----------------+
| Tables_in_world |
+-----------------+
| city            |
| country         |
| countrylanguage |
+-----------------+
3 rows in set (0.00 sec)

mysql> select count(*) from city;
+----------+
| count(*) |
+----------+
|     4079 |
+----------+
1 row in set (0.07 sec)

mysql> select count(*) from country;
+----------+
| count(*) |
+----------+
|      239 |
+----------+
1 row in set (0.00 sec)

mysql> DESC city;
+-------------+----------+------+-----+---------+----------------+
| Field       | Type     | Null | Key | Default | Extra          |
+-------------+----------+------+-----+---------+----------------+
| ID          | int(11)  | NO   | PRI | NULL    | auto_increment |
| Name        | char(35) | NO   |     |         |                |
| CountryCode | char(3)  | NO   | MUL |         |                |
| District    | char(20) | NO   |     |         |                |
| Population  | int(11)  | NO   |     | 0       |                |
+-------------+----------+------+-----+---------+----------------+
5 rows in set (0.01 sec)

mysql> DESC country;
+----------------+---------------------------------------------------------------------------------------+------+-----+---------+-------+
| Field          | Type                                                                                  | Null | Key | Default | Extra |
+----------------+---------------------------------------------------------------------------------------+------+-----+---------+-------+
| Code           | char(3)                                                                               | NO   | PRI |         |       |
| Name           | char(52)                                                                              | NO   |     |         |       |
| Continent      | enum('Asia','Europe','North America','Africa','Oceania','Antarctica','South America') | NO   |     | Asia    |       |
| Region         | char(26)                                                                              | NO   |     |         |       |
| SurfaceArea    | float(10,2)                                                                           | NO   |     | 0.00    |       |
| IndepYear      | smallint(6)                                                                           | YES  |     | NULL    |       |
| Population     | int(11)                                                                               | NO   |     | 0       |       |
| LifeExpectancy | float(3,1)                                                                            | YES  |     | NULL    |       |
| GNP            | float(10,2)                                                                           | YES  |     | NULL    |       |
| GNPOld         | float(10,2)                                                                           | YES  |     | NULL    |       |
| LocalName      | char(45)                                                                              | NO   |     |         |       |
| GovernmentForm | char(45)                                                                              | NO   |     |         |       |
| HeadOfState    | char(60)                                                                              | YES  |     | NULL    |       |
| Capital        | int(11)                                                                               | YES  |     | NULL    |       |
| Code2          | char(2)                                                                               | NO   |     |         |       |
+----------------+---------------------------------------------------------------------------------------+------+-----+---------+-------+
15 rows in set (0.00 sec)

mysql> DESC countrylanguage;
+-------------+---------------+------+-----+---------+-------+
| Field       | Type          | Null | Key | Default | Extra |
+-------------+---------------+------+-----+---------+-------+
| CountryCode | char(3)       | NO   | PRI |         |       |
| Language    | char(30)      | NO   | PRI |         |       |
| IsOfficial  | enum('T','F') | NO   |     | F       |       |
| Percentage  | float(4,1)    | NO   |     | 0.0     |       |
+-------------+---------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

*Provided by MySQL website

It's good practice to make SQL keywords uppercase to distinguish them from other parts of your query. Please do this to make it easier for the grader. Also remember to include a semicolon at the end of your query. This tells SQL where the end of your query is!

1. [9pts] Using at least the description of the ***city*** table above, provide the SQL code to create the table structure. Don't worry about the MUL key or the Defaults.

2. [4pts] Using complete sentences and at least the description of the ***countrylanguage*** table above, explain the structure of the table, e.g., primary keys, foreign keys, data type of columns, defaults, etc.

3. [4pts] Provide the SQL code to get the ***Name***, ***CountryCode***, and ***Population*** (in millions not individuals) of all the cities.

4. [5pts] Now provide the SQL code to get the ***Name***, ***CountryCode***, and ***Population*** (in millions not individuals) of all the cities, where the Population output is renamed ***Pop_millions***.

5. [3pts] Provide the SQL code to get a list of the different continents from the ***country*** table.

6. [3pts] What does the following query return?
```
SELECT Name
FROM city
WHERE Population > 2000000;
```

7. [9pts] Provide the SQL code that creates a virtual table called ***language_vw*** which stores the official language renamed ***Official_Lang*** for each CountryCode as well as the corresponding ***CountryCode*** and percent of the country that speaks it.

8. [2pts] Provide the SQL code that returns the Official Language and ***CountryCode*** from the virtual table ***language_vw***.

9. [4pts] Provide the SQL code that returns ***Name***, ***Regions***, ***Population*** for only Asian countries with a population greater than 100,000.

10. [5pts] Now provide the SQL code that returns ***Name***, ***Regions***, ***Population*** (in 100,000) renamed ***Pop_HundTho*** for only Asian countries with a population greater than 100,000.

11. [6pts] Provide the SQL code that returns ***Name***, ***Regions*** for Asian or African countries with a population less than 1,000,000.

12. [7pts] Now provide the SQL code that returns ***Name*** and ***Regions*** for Asian or African countries with a population less than 1,000,000 ordered by Region.

13. [8pts] Now provide the SQL code that returns ***Name*** and ***Regions*** for Asian or African countries with a population less than 1,000,000 ordered by Region and then by Population

14. [9pts] Provide the SQL code that returns ***Name***, ***Regions*** for Asian countries less than 1,000,000 or African countries with a population less than 100,000.

15. [21 pts total] State the final result for the following, e.g. TRUE or FALSE

a. WHERE true OR false
b. WHERE false AND true
c. WHERE false OR false
d. WHERE true AND true
e. WHERE false AND true
f. WHERE (true AND true) OR false
g. WHERE true AND (true OR false)
h. WHERE false OR (true AND true)
i. WHERE true AND (false OR false)
j. WHERE true AND NOT (true OR false)
k. WHERE true AND NOT (true OR true)
l. WHERE true AND NOT (false OR false)