COMP 306: Database Management Systems

Spring 2024 - Homework 2

Question 1) [5 pts] Import “world.sql” into MySQL through the terminal, then check the newly created database. In the MySQL client, use the newly imported database and run a “SHOW TABLES;” command. In your report, include the **command you typed to import the file** and a **screenshot of the result after you run “SHOW TABLES;”.**

Question 2) [2*5=10 pts] Write retrieval queries (SELECT - FROM - WHERE) for each of the following. Include the **command you used** and a **screenshot of the resulting output** in your report. You are free to use either the terminal client or MySQL Workbench.

A) Find the country codes, country names, city names and populations of cities that are in countries with a life expectancy greater than 75 years and country population less than 1 million people. Order the result in ascending city population.

B) Find the country codes and names of cities such that the city’s population is less than 90000 and the city is part of a country where more than 1 percent of the population speaks German.

Question 3) [3*7=21 pts] Write retrieval queries (SELECT - FROM - WHERE) for each of the following. Include the **command you used** and a **screenshot of the resulting output** in your report. You are free to use either the terminal client or MySQL Workbench.

A) Find the names of countries and their capital cities, where the number of spoken languages is less than 10 and the country name starts with one of the following letters: ‘S’, ‘P’, ‘A’, ‘D’, ‘E’.

B) For countries that have more than 30 cities, display the name of the country along with the number of cities that country has. The result should be displayed in descending order of the number of cities.

C) For countries in which Turkish is one of the spoken languages and the average GNP is higher than 80000, display the name of that country along with the total number of languages spoken in that country.

Question 4) [4*5=20 pts] Write SQL queries to perform the following actions. For each part, include the **SQL statement you used** and a **screenshot of the result** right after you executed that statement in your report. You can use either the terminal or MySQL Workbench, but you must complete the tasks by writing SQL statements regardless of which one you use.

A) Create a new table called “restaurant” to store restaurants from various cities. All restaurants **must** have ids, names, and type (IDs must be unique). Your restaurant table should contain the following attributes:

- An id attribute, to be used as primary key
- A name attribute
- A “type of restaurant” attribute
- A rating (integer from 1 to 5) attribute

B) Insert a restaurant with id = 1 and name of the restaurant containing your first name. Example: “1, Emre Restaurant, Italian, 3”. Then insert additional rows as follows (assign their ids sequentially starting with 2):

- El Taquito Loco, Mexican, 4
- The Greek Taverna, Greek, 1
- The Wok Inn, Chinese, 2
- La Pizzeria Bella, Italian, 4
- The Tap House, Pub Food, 1
- Bao Bun House, Asian Fusion, 4
- The Vegan Kitchen, Barbecue, 4
- La Brasserie Belge, Belgian, 4
- The Smokestack BBQ, Barbecue, 4
- Sushi Island, Japanese, 3
- Smoke Master, BBQ, 2

C) We need to fix a mistake we made in the last part. We had inserted “The Vegan Kitchen” with type = “Barbecue”, but its correct type should be “Vegan”. Write an UPDATE query to enforce this change.

D) Now imagine that there is a new universal ban on restaurants that contain the word “House” in their name. To enforce this ban in our database, write a DELETE query to delete the restaurant(s) which contain the word ‘House’ in their name.

Question 5) [40 pts (parts A and B: 5 pts each, parts C to G: 6 pts each)] Write SQL queries to perform the following actions. For each part, including the **SQL statement you used** and a **screenshot of the result** right after you executed that statement in your report. You are free to use either the terminal client or MySQL Workbench, but you must write SQL statements regardless of which one you use.

A) Create a new table called “city_restaurant” to store the relationship between restaurants and cities: Each city can have multiple restaurants, and each restaurant can have branches in multiple cities. Your table should contain the following attributes (in order):

- An attribute referencing the restaurant table.
- An attribute referencing the city table.

You must decide what name these attributes should have and how they should reference related tables. Primary key is the combination of the above two attributes. For referential integrity, you must restrict deletions and cascade updates.

B) Import the provided “city_restaurant.txt” file to the table to populate it. Two notes regarding your city_restaurant.txt path:
- If the path contains Turkish characters, MySQL may give an error.
- If the path is correct but MySQL is still giving errors, then copy the txt file to C:\ProgramData\MySQL\MySQL Server 8.0\Uploads.

C) Find the city id and city name of cities that have more than one restaurant.

D) Find the id and name of restaurants that have branches in Manchester but not Liverpool.

E) Update rating of all restaurants located in Baku by reducing their rating by one.

F) Find the id and name of restaurants that have branches in at least 2 cities in Azerbaijan.

G) Find the country codes and names of countries that have no restaurants and the country is located in ‘Asia’ but the region of the country is not ‘Middle East’. Ensure there are no duplicates in the output.

Question 6) [4 pts] Export your database to a file named “world-export.sql” using the terminal. Include the **command you typed** in your report and **include the exported file in your submission**.

Submission

Your submission should consist of two files:
- A pdf report with the commands and screenshots
- The exported file in the last question

Your screenshots must be legible. Limit the screenshots in your report to the relevant parts of your screen only, rather than adding screenshots of your entire screen.