Assignment: World Database Exploration

Objective

In this assignment you will navigate fundamental database operations, including:

1. **Installing the World Database** in MySQL.
2. **Reverse-engineering** the database to generate an **Entity-Relationship Diagram (ERD)**.
3. **Writing and executing SQL queries** to explore data from different perspectives.
4. **Submitting deliverables via GitHub** for version control and documentation.

Part 1: Install the World Database

Follow the official MySQL documentation to install the **World** sample database:
📌 **Installation Guide**

Deliverables:

- A screenshot showing the tables in your MySQL database after running `SHOW TABLES;`.

Part 2: Reverse Engineer the Database

Use **MySQL Workbench** or another database tool to reverse engineer the database structure and generate an **Entity-Relationship Diagram (ERD)**.

Deliverables:

- A screenshot of your **ERD** showing the relationships between tables.

Part 3: SQL Queries

Write and execute the following **SQL queries**, covering different topics such as filtering, aggregation, joins, and subqueries.

Basic Queries

1. Retrieve all country names and their official languages.
2. List all cities in **Germany** along with their population.
3. Find the **five smallest** countries by surface area.

Filtering & Aggregation

4. Find all countries with a **population greater than 50 million** and sort them in descending order of population.
5. Retrieve the **average life expectancy** per continent.
6. Calculate the **total population per region**.
7. Count the **number of cities** in each country and sort by the highest count.

Joins & Subqueries

8. Display the **top 10 largest cities** along with their country name.
9. Retrieve the names of all countries that **have an official language of French**.
10. Find all countries where **English is spoken, but it is not the official language**.

Advanced Queries

11. Find countries where the population **tripled** in the past 50 years (if historical data is available).
12. List the **richest and poorest** countries in each continent based on **GNP (Gross National Product)**.
13. Identify countries with a **life expectancy below the global average**.
14. Retrieve the **capital cities** of countries with a population above **100 million**.
15. Find the **continent with the highest number of countries**.

Deliverables:

- A `queries.sql` file containing **all your SQL queries**.
- A **screenshot of the execution results** for each query.

Part 4: Submission via GitHub

1. **In your GitHub public repository**, in a separate folder named `exploring-world`
2. Upload the following files:
    - `queries.sql` – All your SQL queries.
    - `ERD.png` or `ERD.jpg` – Your Entity-Relationship Diagram.
    - `screenshots/` – A folder containing execution results of your queries.
3. Submit the **GitHub repository link** pointing to the `exploring-world` folder