

LAB 1

Lab Presentation

For the lab presentation, make sure you have the following ready to be shown to the TA:

- The queries specified in this document, ready to be executed.
 - Refrain from creating functions since this is a course designed to teach query programming languages.

Project Background

You have been asked to manage the [Mondial database system](https://www.dbis.informatik.uni-goettingen.de/Mondial/)¹. For this lab, you will have to create a series of SQL queries that will retrieve information from the database. To your help you have the Mondial database [relational schema](https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-RS.pdf)².

You will need to set up your work environment and load the provided data into your database. The queries only need to be able to execute in PostgreSQL, so there is **no** need to create a Graphic User Interface to visualize your data.

Loading data into your database

1. To set up your lab environment, please read the “Postgre installation guide” available on Canvas.
2. Download the files [mondial-schema.psml](https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-RS.pdf)³ and [mondial-inputs.psml](https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-inputs.psml)⁴ from the Mondial website. Note that we are using PostgreSQL.
3. One file at a time, move the downloaded files from the Mondial DB to a folder in your home catalogue. Suggested method for doing this remotely this is available under “Moving files local → KTH-remote “ in the installation guide.
4. Run the `psql -h nestor2.csc.kth.se` command and connect to the database
5. Run the `\i <filename>.psml` command with your moved files and remember to create the schema before the inputs.

¹ <https://www.dbis.informatik.uni-goettingen.de/Mondial/>

² <https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-RS.pdf>

³ <https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-schema.psml>

⁴ <https://www.dbis.informatik.uni-goettingen.de/Mondial/mondial-inputs.psml>



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Queries

The following queries should be ready to be executed on your database and show a satisfactory result. Lists and tables are expected to be alphabetical or numerical in order.

1. Present the country of Zimbabwe, along with the capital of Zimbabwe and the capitals population.
2. Present a list of all the cities that start with the letter 'S' and end with the letter 'M'
3. Present the country with the highest population.
4. Present a table of all the countries that have between 15 and 20 cities along with the amount of cities.
5. Present the world wide average amount of cities in a country.
6. Present a table of the top 10% of the countries with the highest GDP per person along with its GDP per person.
7. Calculate the distance between the Themes' source and Dalälvs source. *Tips: You can acquire the latitude or longitude of a geocoord data type through writing (<Attribute-name>).latitude or (<Attribute-name>).longitude.*
8. Present a table of the top 5 countries with the highest population in each continent along with its population. *Tips: Use CTE to shorten your answer.*