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## Introduction to Databases

The purpose of this exercise is to practice the important skill of analyzing data in databases using Structured Query Language (SQL).

# Learning Objectives

After completing this exercise, students will understand:

- How to write **SELECT** statements.
- How to filter data using WHERE clauses.
- How to execute mathematical expressions in SQL statements.
- How to filter data for NULL values.

#### **Evaluation Criteria & Functional Requirements**

- All of the queries run as expected.
- The number of results returned from your query is equal to the number of results specified in each question.
- Code is clean, concise, and readable.

To complete this exercise, you need to write SQL queries in the intro-to-databases-exercises.sql file. Below each commented out question, you'll write the query necessary to answer the question being asked using the world database as the source.

## **Getting Started**

- Open the intro-to-databases-exercises.sql file in DB Visualizer.
- If you have not done so already, create the world database. The script for this should be available in today's lecture code.
- In the "Database Connection" properties above the file, select the world database.
- You can run all of the database commands in the file at one time by pressing the command + enter key at the same time.
- You can run a single database command at a time by highlighting the command and then pressing the command + enter key at the same time.

## Tips and Tricks

- SELECT statements specify the columns of a table that you want to return from a query. While the
  values in the SELECT statement are usually directly mapped to a column name, they can also be used
  aliased using the AS keyword.
- WHERE clauses filter results. Some operators you can use for filtering out data include:
  - o =, <>, !=, >, >=, <, <=
  - IN(values), NOT IN(values)
  - BETWEEN value AND value
  - IS NULL, IS NOT NULL
  - LIKE, ILIKE (with wildcard characters)

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- Multiple filter conditions can be combined using AND and OR.
- The **DISTINCT** clause removes duplicate values from the results.

• The PostgreSQL documentation includes a tutorial for querying database tables, as well as documentation related to the SELECT statement.