Final Project: Using SQL in MYSQL with phpMyAdmin

Estimated time needed: 20 minutes

In this lab, you will learn how to create tables and load data in the MySQL database service using the phpMyAdmin graphical user interface (GUI) tool.

Software Used in this Lab

In this lab, you will use MySQL. MySQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.

To complete this lab you will utilize MySQL relational database service available as part of IBM Skills Network Labs (SN Labs) Cloud IDE. SN Labs is a virtual lab environment used in this course.

Review and familiarize yourself with the datasets

To complete the assignment problems you will be using three datasets that are available on the city of Chicago's Data Portal:

1. Socioeconomic Indicators in Chicago

2. Chicago Public Schools

3. Chicago Crime Data

1. Socioeconomic Indicators in Chicago

This dataset contains a selection of six socioeconomic indicators of public health significance and a "hardship index," for each Chicago community area, for the years 2008 – 2012.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Health-Human-Services/Census-Data-Selected-socioeconomic-indicators-in-C/kn9c-c2s2

2. Chicago Public Schools

This dataset shows all school level performance data used to create CPS School Report Cards for the 2011-2012 school year.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Education/Chicago-Public-Schools-Progress-Report-Cards-2011-/9xs2-f89t

3. Chicago Crime Data

This dataset reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001 to present, minus the most recent seven days.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Public-Safety/Crimes-2001-to-present/ijzp-q8t2

This dataset is quite large - over 1.5GB in size with over 6.5 million rows. For the purposes of this assignment we will use a much smaller subset of this dataset.

Database Used in this Lab

Mysql_learners database has been used in this lab.

Here you will be creating and inserting data into the below mentioned 3 tables

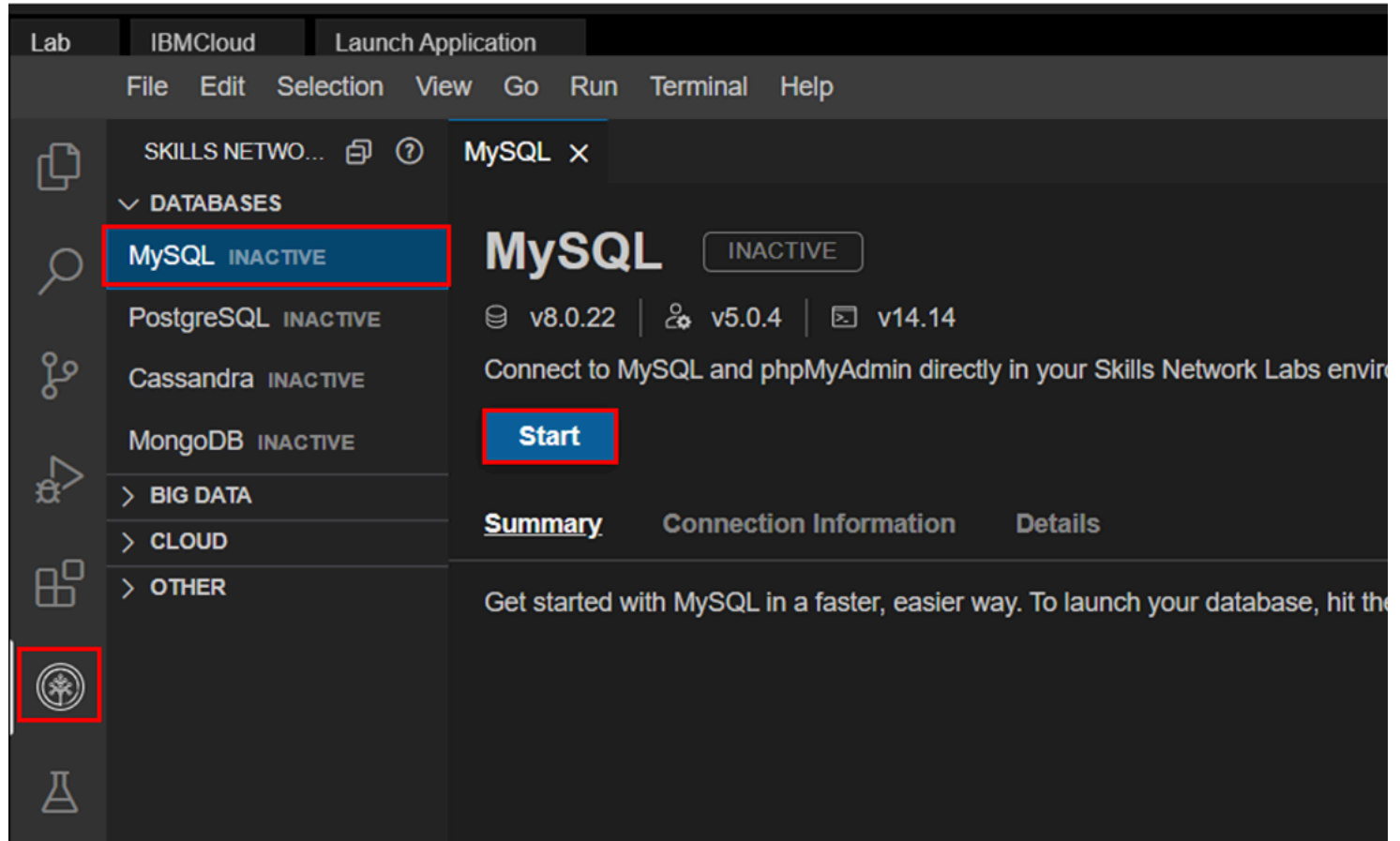1.chicago_public_schools
2.chicago_socioeconomic_data
3.chicago_crime

Here you will be using 3 dump files for this purpose.

chicago_public_schools

chicago_crime

chicago_socioeconomic_data

Create a database

1. Click on **Skills Network Toolbox**. In **Database** section, click **MySQL**.

To start the MySQL click **Start**.

2. Once **MySQL** has started, click on **phpMyAdmin button** to open **phpMyAdmin** in the same window.

3. You will see the phpMyAdmin GUI tool.

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phpMyAdmin

Recent | Favorites

- New
- information_schema
- mysql
- performance_schema
- sakila
- sys

Server: mysql:3306

Databases | **SQL** | **Status** |

General settings

Server connection collation: ⓘ utf8mb4_u

🔧 More settings

Appearance settings

Language ⓘ English

Theme: pmahomme ⌄

4. In the tree-view, click **New** to create a new empty database. Then enter **Mysql_Learners** as the name of the database and click **Create**.

The encoding will be left as **utf8mb4_0900_ai_ci**. UTF-8 is the most commonly used character encoding for content or data.

| 🗄 Databases | 📄 SQL | 📊 Status | 📇 User accounts | 📤 Export | 📥 Import | 🔧 Settings | 📰 Binary log | ⬇ Replica |

Databases

🗄 Create database ⓘ

| Mysql_learners | | utf8mb4_0900_ai_ci | ▾ | Create |

	Database ▲	Collation	Master replication	Action
☐	information_schema	utf8_general_ci	✔ Replicated	📇 Check privileges
☐	mysql	utf8mb4_0900_ai_ci	✔ Replicated	📇 Check privileges
☐	performance_schema	utf8mb4_0900_ai_ci	✔ Replicated	📇 Check privileges
☐	sys	utf8mb4_0900_ai_ci	✔ Replicated	📇 Check privileges
Total: 4				

⬆   ☐ Check all   *With selected:*   🗑 Drop

⚠ Note: Enabling the database statistics here might cause heavy traffic between the web server and the MySQL server.

- **Enable statistics**

Load the dump files one by one into the database **Mysql_learners** by clicking the **Import** tab and choose the file. Click on **Go** button.

Importing into the database "Mysql_learners"

File to import:

File may be compressed (gzip, bzip2, zip) or uncompressed.
A compressed file's name must end in **.[format].[compression]**. Example: **.sql.zip**

Browse your computer: [Choose File] chicago_pu..._schools.sql   (Max: 2,048KiB)

You may also drag and drop a file on any page.

Character set of the file: [utf-8   ⌄]

Partial import:

☑ Allow the interruption of an import in case the script detects it is close to the PHP timeout limit. *(This might be a good way to import large files, howe*

Skip this number of queries (for SQL) starting from the first one: [0]

Other options:

☑ Enable foreign key checks

Format:

[▌Console   ⌄]

phpMyAdmin

Recent   Favorites

- New
- + information_schema
- + mysql
- − Mysql_learners
  - New
  - + chicago_public_schools
- + performance_schema
- + sys

Server: mysql:3306 » Database: Mysql_learners

Structure | SQL | Search | Query | Export | Import | Operations

✔ *Import has been successfully finished, 22 queries executed. (chicago_public_schools.sql)*

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0008 seconds.)

```
-- phpMyAdmin SQL Dump -- version 5.0.4 -- https://www.phpmyadmin.net/ -- -- Host: mysq
Version: 7.4.15 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO"
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
START TRANSACTION
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
SET time_zone = "+00:00"
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0005 seconds.)

```
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */
```

The tables are created and the data is loaded successfully. Repeat the same operation with the other 2 dump files to create and load the tables.

You will see a screen as below

`PERCENT_OF_HOUSING_CROWDED`, `PERCENT_HOUSEHOLDS_BELOW_POVERTY`, `PERCENT_AGED_16__UNI
`PERCENT_AGED_UNDER_18_OR_OVER_64`, `PER_CAPITA_INCOME`, `HARDSHIP_INDEX`) VALUES ('1'
Ridge', '7.8', '17.2', '8.8', '20.8', '38.5', 23040, '46'), ('3', 'Uptown', '3.8', '24
'8.2', '13.4', '25.5', 37524, '17'), ('5', 'North Center', '0.3', '7.5', '5.2', '4.5',
60058, '5'), ('7', 'Lincoln Park', '0.8', '12.3', '5.1', '3.6', '21.5', 71551, '2'), (

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0002 seconds.)

COMMIT

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0002 seconds.)

/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */

■ Console

Problems

Now write and execute SQL queries to solve assignment problems

Problem 1

Find the total number of crimes recorded in the CRIME table.

Problem 2

Retrieve first 10 rows from the CRIME table.

Problem 3

How many crimes involve an arrest?

Problem 4

Which unique types of crimes have been recorded at GAS STATION locations?

▶ Click here for a hint

Problem 5

In the CENUS_DATA table list all Community Areas whose names start with the letter 'B'.

Problem 6

Which schools in Community Areas 10 to 15 are healthy school certified?

Problem 7

What is the average school Safety Score?

Problem 8

List the top 5 Community Areas by average College Enrollment [number of students]

Problem 9

Use a sub-query to determine which Community Area has the least value for school Safety Score?

Problem 10

[Without using an explicit JOIN operator] Find the Per Capita Income of the Community Area which has a school Safety Score of 1.

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