

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.

Database Used in this Lab

The database used in this lab is an internal database. You will be working on a sample HR database. This HR database schema consists of 5 tables called **EMPLOYEES**, **JOB_HISTORY**, **JOBS**, **DEPARTMENTS** and **LOCATIONS**. Each table has a few rows of sample data. The following diagram shows the tables for the HR database:

SAMPLE HR DATABASE TABLES

EMPLOYEES

EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID
E1001	John	Thomas	123456	1976-01-09	M	5631 Rice, OakPark,IL	100	100000	30001	2
E1002	Alice	James	123457	1972-07-31	F	980 Berry Ln, Elgin,IL	200	80000	30002	5
E1003	Steve	Wells	123458	1980-08-10	M	291 Springs, Gary,IL	300	50000	30002	5

JOB_HISTORY

EMPL_ID	START_DATE	JOBS_ID	DEPT_ID
E1001	2000-01-30	100	2
E1002	2010-08-16	200	5
E1003	2016-08-10	300	5

JOBS

JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY
100	Sr. Architect	60000	100000
200	Sr. Software Developer	60000	80000
300	Jr. Software Developer	40000	60000

DEPARTMENTS

DEPT_ID	DEPT_NAME	MANAGER_ID	LOC_ID
2	Architect Group	30001	L0001
5	Software Development	30002	L0002
7	Design Team	30003	L0003

LOCATIONS

LOC_ID	DEPT_ID
L0001	2
L0002	5
L0003	7

Objectives

After completing this lab, you will be able to use phpMyAdmin with MySQL to:

- Create a database.
- Create tables using SQL scripts
- Load data into tables

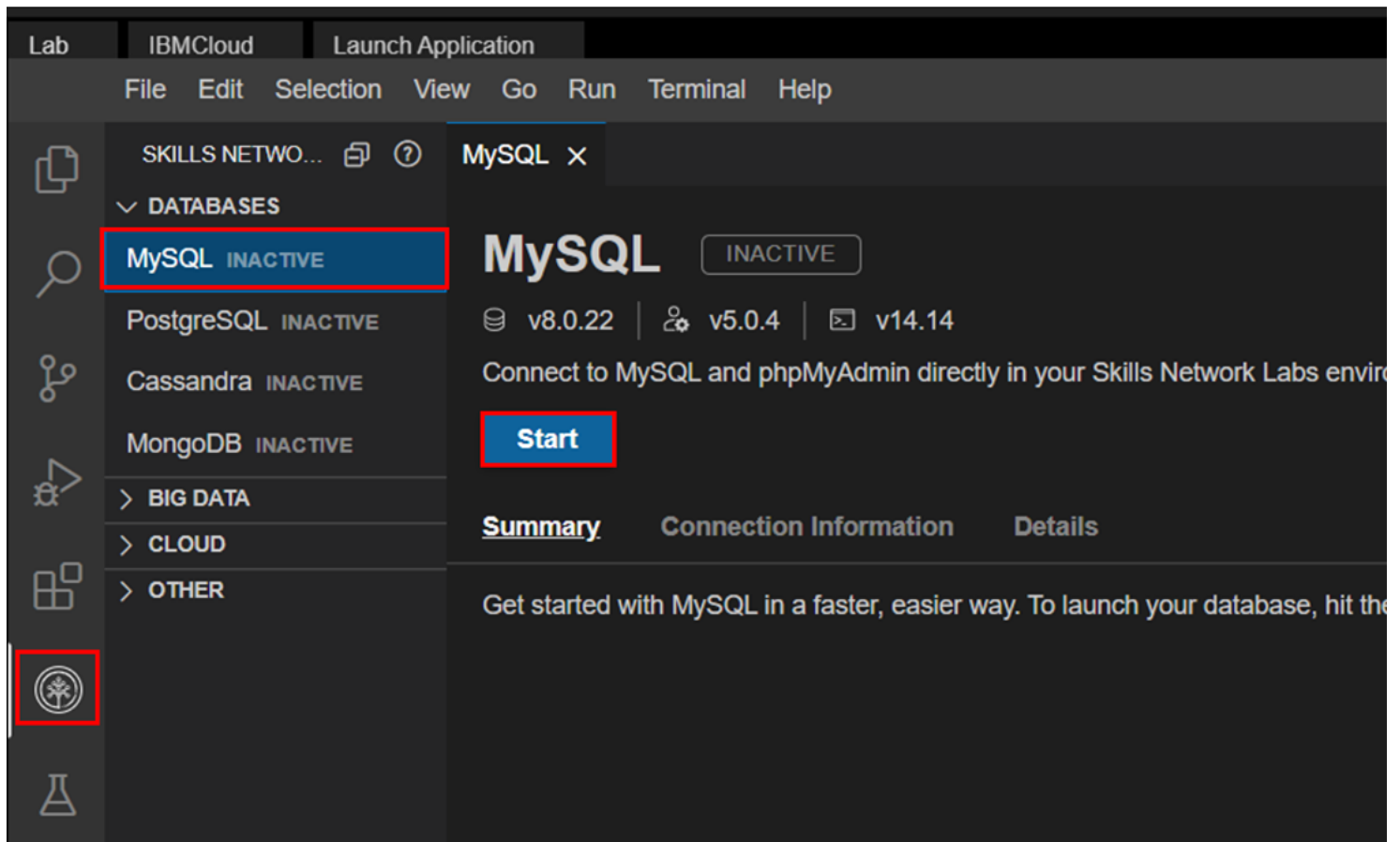
Exercise

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

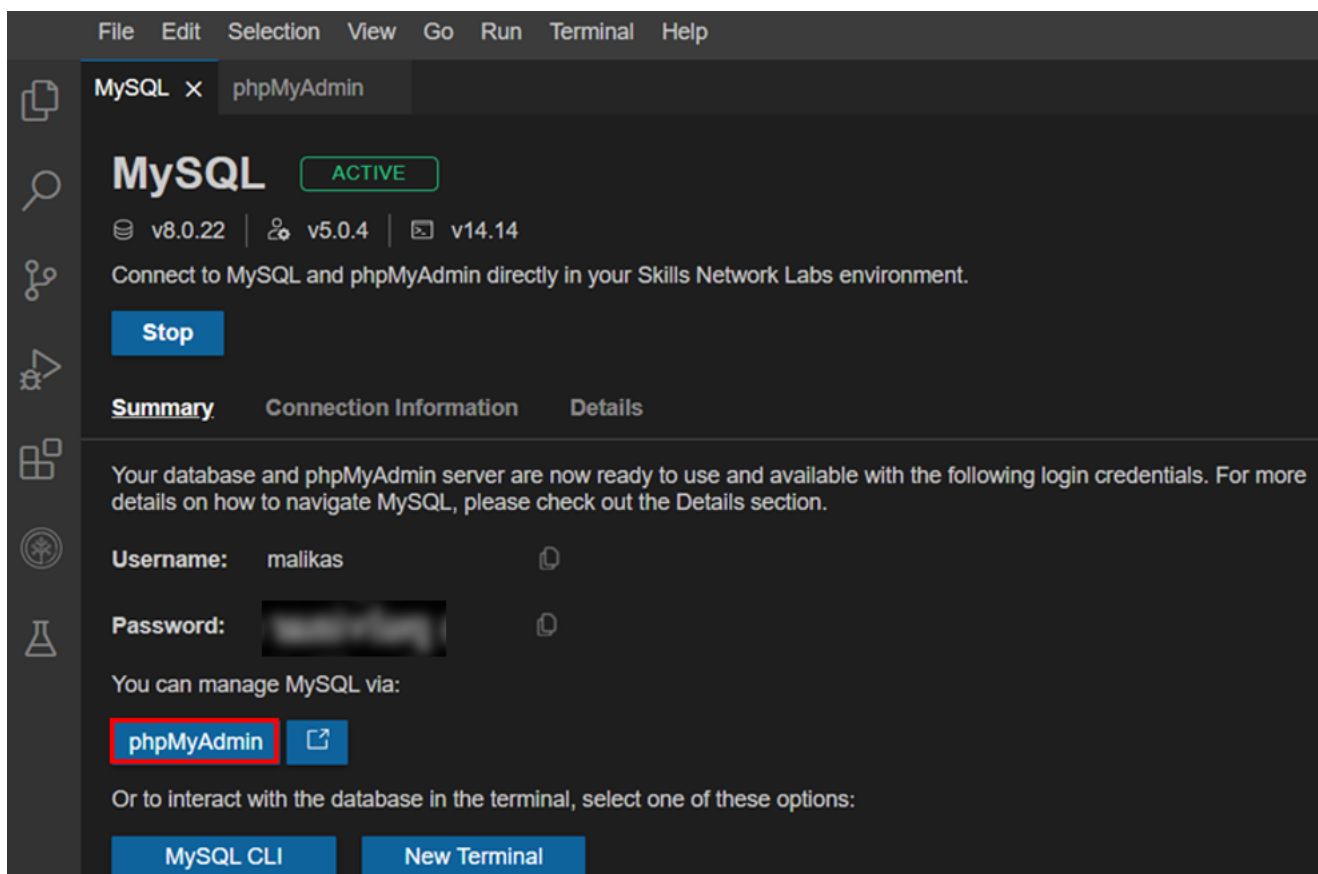
Task A: Create a database

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

🔑 [More settings](#)

Appearance settings

🗣️ Language ⓘ English

🎨 Theme: pmahomme ▼

4. In the tree-view, click **New** to create a new empty database. Then enter **HR** 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.

Proceed to Task B.

Databases

Create database ?

HR utf8mb4_0900_ai_ci Create

Database	Collation	Master replication	Action
<input type="checkbox"/> information_schema	utf8_general_ci	✓ Replicated	Check privileges
<input type="checkbox"/> mysql	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> Mysql_learners	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> performance_schema	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> sys	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges

Total: 5

⬆️ ☐ 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](#)

Console

Exercise 1: Create tables using SQL scripts

In this exercise, you will learn how to execute a script containing the CREATE TABLE commands for all the tables rather than create each table manually by typing the DDL commands in the SQL editor.

- Download the script file to your computer:
 - [HR_Database_Create_Tables_Script.sql](#)
- Select the HR database. Later click on the Import tab.
- Click on **choose file**. Browse for the file and upload it.
- Later scroll down and click on **Go**.

The screenshot shows the phpMyAdmin web interface. On the left, a sidebar contains a tree view of databases: 'New', 'HR' (highlighted with a red box), 'information_schema', 'mysql', 'Mysql_learners', 'New', 'PETSALE', 'performance_schema', and 'sys'. The main panel is titled 'Importing into the database "HR"'. It features a 'File to import:' section with instructions on file formats and a 'Choose File' button next to the file 'HR_Databa...es_Script.sql (Max: 2,048KiB)'. Below this is a 'Partial import:' section with a checkbox for 'Allow the interruption of an import...' and a text input for 'Skip this number of queries...'. The 'Other options:' section includes a checked checkbox for 'Enable foreign key checks'. The 'Format:' section has a dropdown menu set to 'SQL'. At the bottom, there is a 'Console' tab.

Recent Favorites

New

HR

information_schema

mysql

Mysql_learners

New

PETSALE

performance_schema

sys

Structure SQL Search Query Export Import Operations

Importing into the database "HR"

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** HR_Databa...es_Script.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 m*

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

Other options:

☒ Enable foreign key checks

Format:

SQL

Console

- The script then gets imported successfully.

The screenshot displays the phpMyAdmin web interface. On the left, the 'Database: HR' is selected in the sidebar, showing a tree view of its tables: DEPARTMENTS, EMPLOYEES, JOBS, JOB_HISTORY, and LOCATIONS. The main panel shows the 'SQL' tab with a list of executed queries and their results. The queries are: 1. Import of HR_Database_Create_Tables_Script.sql. 2. DROP TABLE IF EXISTS EMPLOYEES. 3. Note: #1051 Unknown table 'HR.EMPLOYEES'. 4. DROP TABLE IF EXISTS JOB_HISTORY. 5. Note: #1051 Unknown table 'HR.JOB_HISTORY'. 6. DROP TABLE IF EXISTS JOBS. 7. Note: #1051 Unknown table 'HR.JOBS'. 8. Console output showing a query result.

Server: mysql:3306 » Database: HR

Structure SQL Search Query Export Import Operations

Import has been successfully finished, 10 queries executed. (HR_Database_Create_Tables_Script.sql)

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0033 seconds.)

`DROP TABLE IF EXISTS EMPLOYEES`

Note: #1051 Unknown table 'HR.EMPLOYEES'

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0024 seconds.)

`DROP TABLE IF EXISTS JOB_HISTORY`

Note: #1051 Unknown table 'HR.JOB_HISTORY'

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0051 seconds.)

`DROP TABLE IF EXISTS JOBS`

Note: #1051 Unknown table 'HR.JOBS'

Console returned an empty result set (i.e. zero rows). (Query took 0.0037 seconds.)

- Click on any of the tables and you will see its Table Definition (that is, its list of columns, data types, etc).

The screenshot shows the phpMyAdmin interface with the 'EMPLOYEES' table selected in the 'DEPARTMENTS' database. The 'Table structure' tab is active, displaying the table's columns and their properties.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	EMP_ID	char(9)	utf8mb4_0900_ai_ci		No	None		PRIMARY
2	F_NAME	varchar(15)	utf8mb4_0900_ai_ci		No	None		
3	L_NAME	varchar(15)	utf8mb4_0900_ai_ci		No	None		
4	SSN	char(9)	utf8mb4_0900_ai_ci		Yes	NULL		
5	B_DATE	date			Yes	NULL		
6	SEX	char(1)	utf8mb4_0900_ai_ci		Yes	NULL		
7	ADDRESS	varchar(30)	utf8mb4_0900_ai_ci		Yes	NULL		
8	JOB_ID	char(9)	utf8mb4_0900_ai_ci		Yes	NULL		
9	SALARY	decimal(10,2)			Yes	NULL		
10	MANAGER_ID	char(9)	utf8mb4_0900_ai_ci		Yes	NULL		
11	DEP_ID	char(9)	utf8mb4_0900_ai_ci		No	None		

Below the table structure, there are options to 'Check all', 'With selected:', 'Browse', 'Change', 'Drop', 'Primary', and 'U'.

At the bottom, there are buttons for 'Print', 'Move columns', and 'Normalize'. Below these, there is a section for 'Indexes' with a table showing the primary index.

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Drop	PRIMARY	BTREE	Yes	No	EMP ID	0	A	No	

Exercise 2: Load data into tables

In this exercise, you will learn how data can be loaded into MySQL. You could manually insert each row into the table one by one, but that would take a long time. Instead, MySQL (and almost every other database) allows you to load data from .CSV files.

The steps below explain the process of loading data into the tables you created earlier in exercise 1.

1. Download the 5 .csv files below to your local computer:

- [Departments.csv](#)
- [Employees.csv](#)
- [Jobs.csv](#)
- [Locations.csv](#)
- [JobsHistory.csv](#)

To load each table do the following steps.

- Select each table .
- Click on Import tab.
- Select the **csv** file and click on **Go** to load the csv file.

The screenshot shows the phpMyAdmin interface. On the left sidebar, the database 'HR' is expanded, and the table 'EMPLOYEES' is selected, highlighted with a red box. The main panel shows the 'Import' tab for the 'EMPLOYEES' table. A red box highlights the title 'Importing into the table "EMPLOYEES"'. Below this, the 'File to import:' section includes instructions on file formats (gzip, bzip2, zip) and a 'Choose File' button next to 'Employees.csv'. The 'Character set of the file:' is set to 'utf-8'. The 'Partial import:' section has a checked checkbox for 'Allow the interruption of an import...' and a text input for 'Skip this number of queries...' set to '0'. The 'Other options:' section has a checked checkbox for 'Enable foreign key checks'. The 'Format:' section has a dropdown menu set to 'CSV'. At the bottom, a 'Console' tab is visible.

Once the tables are loaded , you will get a message that the records are inserted successfully.


```
Server: MySQL 5.6.23 | Database: HR2 | Table: EMPLOYEES  
Browse Structure SQL Search Insert Export Import Privileges Operations  
✓ 1 row inserted. (Query took 0.0038 seconds.)  
INSERT INTO `EMPLOYEES` VALUES ('E1004', 'Santosh', 'Kumar', '123459', '1985-07-20', 'M', '511 Aurora Av, Aurora,IL', '600', '1234567890')  
✓ 1 row inserted. (Query took 0.0036 seconds.)  
INSERT INTO `EMPLOYEES` VALUES ('E1005', 'Ahmed', 'Hussain', '123410', '1981-04-01', 'M', '216 Oak Tree, Geneva,IL', '600', '1234567890')  
✓ 1 row inserted. (Query took 0.0038 seconds.)  
INSERT INTO `EMPLOYEES` VALUES ('E1006', 'Nancy', 'Allen', '123411', '1978-06-02', 'F', '111 Green Pl, Elgin,IL', '600', '1234567890')  
✓ 1 row inserted. (Query took 0.0039 seconds.)  
INSERT INTO `EMPLOYEES` VALUES ('E1007', 'Mary', 'Thomas', '123412', '1975-05-05', 'F', '100 Rose Pl, Gary,IL', '650', '1234567890')  
✓ 1 row inserted. (Query took 0.0051 seconds.)  
INSERT INTO `EMPLOYEES` VALUES ('E1008', 'Bharath', 'Gupta', '123413', '1985-06-05', 'M', '145 Berry Ln, Naperville,IL', '600', '1234567890')
```

Further you can click on browse and view the data of each table.

Browse

Structure

SQL

Search

Insert

Export

Import

Privileges

Operations

Showing rows 0 - 9 (10 total, Query took 0.0007 seconds.)

SELECT * FROM `EMPLOYEES`

Profilin

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

+ Options

EMP_ID

F_NAME

L_NAME

SSN

B_DATE

SEX

ADDRESS

JOB_ID

SALARY

Edit

Copy

Delete

E1001

John

Thomas

123456

1976-09-01

M

5631 Rice, OakPark,IL

100

100000.

Edit

Copy

Delete

E1002

Alice

James

123457

1972-07-31

F

980 Berry Ln, Elgin,IL

200

80000.

Edit

Copy

Delete

E1003

Steve

Wells

123458

1980-10-08

M

291 Springs, Gary,IL

300

50000.

Edit

Copy

Delete

E1004

Santosh

Kumar

123459

1985-07-20

M

511 Aurora Av, Aurora,IL

400

60000.

Edit

Copy

Delete

E1005

Ahmed

Hussain

123410

1981-04-01

M

216 Oak Tree, Geneva,IL

500

70000.

Edit

Copy

Delete

E1006

Nancy

Allen

123411

1978-06-02

F

111 Green Pl, Elgin,IL

600

90000.

Edit

Copy

Delete

E1007

Mary

Thomas

123412

1975-05-05

F

100 Rose Pl, Gary,IL

650

65000.

Edit

Copy

Delete

E1008

Bharath

Gupta

123413

1985-06-05

M

145 Berry Ln, Naperville,IL

660

65000.

Edit

Copy

Delete

E1009

Andrea

Jones

123414

1990-09-07

F

120 Fall Creek, Gary,IL

234

70000.

Edit

Copy

Delete

E1010

Ann

Jacob

123415

1982-03-30

F

111 Britany Springs,Elgin,IL

220

70000.

Check all

With selected:

Edit

Copy

Delete

Export

Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

Console

Congratulations! You have completed this lab, and you are ready for the next topic.

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Changelog

Date	Version	Changed by	Change Description
2023-05-11	0.8	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-10	0.7	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-10	0.6	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-05	0.5	Benny Li	Updated and Re-Published
2022-08-03	0.4	Sathya Priya	Updated CSV Links
2022-07-27	0.3	Lakshmi Holla	Updated HTML tag
2022-04-07	0.2	Malika Singla	Updated screenshot
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version

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