

Hands-on Lab: String Patterns, Sorting and Grouping in MySQL using 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.

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**, **JOB**, **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 In, Elgin,IL	200	80000	30002	5
E1003	Steve	Wells	123458	1980-08-10	M	291 Springs, Gary,IL	300	50000	30002	5

JOB_HISTORY				JOBS			
EMPL_ID	START_DATE	JOBS_ID	DEPT_ID	JOB_IDENT	JOB_TITLE	MIN_SALARY	MAX_SALARY
E1001	2000-01-30	100	2	100	Sr. Architect	60000	100000
E1002	2010-08-16	200	5	200	Sr.SoftwareDeveloper	60000	80000
E1003	2016-08-10	300	5	300	Jr.SoftwareDeveloper	40000	60000

DEPARTMENTS				LOCATIONS			
DEPT_ID_DEP	DEP_NAME	MANAGER_ID	LOC_ID	LOC_ID	DEP_ID_LOC		
2	Architect Group	30001	L0001	L0001	2		
5	Software Development	30002	L0002	L0002	5		
7	Design Team	30003	L0003	L0003	7		

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-DB0201EN-SkillsNetwork/labs/MySQL/week2/Create_and_Load.md.html

Once you have created the required tables, you may proceed with the exercises given in the lab.

Objectives

After completing this lab, you will be able to:

- Simplify a SELECT statement by using string patterns, ranges, or sets of values
- Sort the result set in either ascending or descending order and identify which column to use for the sorting order
- Eliminate duplicates from a result set and further restrict a result set

Once the tables are loaded open the sql editor to start executing the functions.

The screenshot shows the phpMyAdmin interface. On the left, the database structure tree is visible, showing databases like HR, EMPLOYEES, JOBS, and PETSAL. The main area is a SQL query editor titled "Run SQL query/queries on database Mysql_learners:". The editor has tabs for Structure, SQL, Search, Query, Export, Import, and Operations. Below the tabs, there is a text input field with the number "1" and a placeholder "Run SQL query/queries on database Mysql_learners:". Below the input field are buttons for Clear, Format, Get auto-saved query, Bind parameters, Delimiter (set to ;), and checkboxes for Show this query here again, Retain query box, and Rollback when finished.

Exercise 1: String Patterns

In this exercise, you will go through some SQL problems on String Patterns.

1. Problem:

Retrieve all employees whose address is in Elgin,IL.

- ▶ Hint
- ▶ Solution
- ▶ Output

2. Problem:

Retrieve all employees who were born during the 1970's.

- ▶ Hint
- ▶ Solution
- ▶ Output

3. Problem:

Retrieve all employees in department 5 whose salary is between 60000 and 70000.

- ▶ Hint
- ▶ Solution
- ▶ Output

Exercise 2: Sorting

In this exercise, you will go through some SQL problems on Sorting.

1. Problem:

Retrieve a list of employees ordered by department ID.

- ▶ Hint
- ▶ Solution
- ▶ Output

2. Problem:

Retrieve a list of employees ordered in descending order by department ID and within each department ordered alphabetically in descending order by last name.

- ▶ Hint
- ▶ Solution
- ▶ Output

3. (Optional) Problem:

In SQL problem 2 (Exercise 2 Problem 2), use department name instead of department ID. Retrieve a list of employees ordered by department name, and within each department ordered alphabetically in descending order by last name.

- ▶ Hint
- ▶ Solution
- ▶ Output

Exercise 3: Grouping

In this exercise, you will go through some SQL problems on Grouping.

NOTE: The SQL problems in this exercise involve usage of SQL Aggregate functions AVG and COUNT. COUNT has been covered earlier. AVG is a function that can be used to calculate the Average or Mean of all values of a specified column in the result set. For example, to retrieve the average salary for all employees in the EMPLOYEES table, issue the query: `SELECT AVG(SALARY) FROM EMPLOYEES;`. You will learn more about AVG and other aggregate functions later in the lecture **Built-in Database Functions**.

1. Problem:

For each department ID retrieve the number of employees in the department.

- ▶ Hint
- ▶ Solution
- ▶ Output

2. Problem:

For each department retrieve the number of employees in the department, and the average employee salary in the department..

- ▶ Hint
- ▶ Solution
- ▶ Output

3. Problem:

Label the computed columns in the result set of SQL problem 2 (Exercise 3 Problem 2) as NUM_EMPLOYEES and AVG_SALARY.

- ▶ Hint
- ▶ Solution
- ▶ Output

4. Problem:

In SQL problem 3 (Exercise 3 Problem 3), order the result set by Average Salary..

- ▶ Hint
- ▶ Solution
- ▶ Output

5. Problem:

In SQL problem 4 (Exercise 3 Problem 4), limit the result to departments with fewer than 4 employees.

- ▶ Hint
- ▶ Solution
- ▶ Output

Solution Script

If you would like to run all the solution queries of the SQL problems of this lab with a script, download the script below. Import the script to phpadmin mysql interface and run. Follow [Hands-on Lab : Create tables using SQL scripts and Load data into tables](#) on how to upload a script to phpmyadmin console and run it.

- [StringPattern-Sorting-Grouping_Solution_Script.sql](#)

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

Author(s)

[Lakshmi Holla](#)

[Malika Singla](#)



Skills Network