# Hands-on Lab: Working with Joins 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**

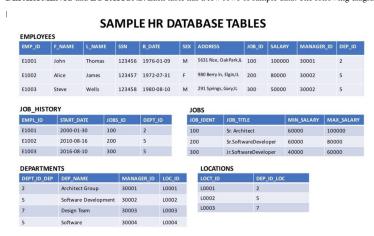
In this lab, you will use MySQL. MySQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.



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, JOBS, DEPARTMENTS and LOCATIONS. Each table has a few rows of sample data. The following diagram shows the tables for the HR database:



In this lab, you will run through some SQL practice problems that will provide hands-on experience with the different kinds of join operations.

#### How does a CROSS JOIN (also known as Cartesian Join) statement syntax look?

- 2. 2
- SELECT column\_name(s)
   FROM table1
- 3. CROSS JOIN table2;

Copied!

#### How does an INNER JOIN statement syntax look?

- 1. 1 2. 2 3. 3 4. 4 5. 5
- 1. SELECT column\_name(s)
- 2. FROM table1
- 3. INNER JOIN table2
  4. ON table1.column\_name = table2.column\_name;
- 5. WHERE condition;

Copied!

### How does a LEFT OUTER JOIN statement syntax look?

- 2. 2 3. 3

- 1. SELECT column\_name(s)
- 2. FROM table1 3. LEFT OUTER JOIN table2
- ON table1.column\_name = table2.column\_name
- 5. WHERE condition:

Copied!

#### How does a RIGHT OUTER JOIN statement syntax look?

```
2. 2
3. 3
4. 4
5. 5
1. SELECT column_name(s)
2. FROM table1
3. RIGHT OUTER JOIN table2
4. ON table1.column_name = table2.column_name
WHERE condition;
```

Copied!

#### How does a FULL OUTER JOIN statement syntax look?

```
2. 2
   2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
 10. 10
11. 11
  12. 12
 13. 13
   1. SELECT column_name(s)
  1. SELECT COUNTINIANNE(S)
2. FROM table1
3. LEFT OUTER JOIN table2
4. ON table1.column_name = table2.column_name
5. WHERE condition
6.
7. UNION
   8.
9. SELECT column_name(s)
 10. FROM table1
11. RIGHT OUTER JOIN table2
12. ON table1.column_name = table2.column_name
 13. WHERE condition
Copied!
```

#### Union operator

The UNION operator is used to combine the result-set of two or more SELECT statements.

Every SELECT statement within UNION must have the same number of columns

The columns must also have similar data types
The columns in every SELECT statement must also be in the same order

```
1. 1
2. 2
1. SELECT column_name(s) FROM table1
2. UNION
SELECT column_name(s) FROM table2;
```

Copied!

#### How does a SELF JOIN statement syntax look?

```
1. 1
2. 2
3. 3
1. SELECT column_name(s)

    FROM table1 T1, table1 T2
    WHERE condition;
```

### **Exercise**

Copied!

1. Problem:

Select the names and job start dates of all employees who work for the department number 5.

```
► Hint
▼ Solution
    1. 1
    2. 2
    3. 3
   4. 4
1. select E.F_NAME,E.L_NAME, JH.START_DATE
2. from EMPLOYEES as E
3. INNER JOIN JOB_HISTORY as JH on E.EMP_ID=JH.EMPL_ID
4. where E.DEP_ID = '5';
Copied!
```

▼ Output

Query1A select E.F_NAME,E.L_NAME, JH		Run time: <b>0.010 s</b>		
Result set 1		Search	Q	<u>↑</u> 7
F_NAME	L_NAME		START_DA	ΙΤΕ
Alice	James		2001-08-0	01
Steve	Wells		2001-08-2	16
Santosh	Kumar		2000-08-2	16
Ann	Jacob		2016-08-2	16

#### 2. Problem:

Select the names, job start dates, and job titles of all employees who work for the department number 5.

```
► Hint
▼ Solution
      1. 1
     1. 1
2. 2
3. 3
4. 4
5. 5
5. 5
1. select E.F_NAME,E.L_NAME, JH.START_DATE, J.JOB_TITLE
2. from EMPLOYEES as E
3. INNER JOIN JOB HISTORY as JH on E.EMP_ID=JH.EMPL_ID
4. INNER JOIN JOBS as J on E.JOB_ID=J.JOB_IDENT
5. where E.DEP_ID = '5';
Conjed!
 Copied!
```

Result set 1

**▼** Output

--- Query1B --- select E.F\_NAME,E.L\_NAME, JH.... Run time: 0.007 s

F_NAME	L_NAME	START_DATE	JOB_TITLE
Alice	James	2001-08-01	Sr.Software Dev
Ann	Jacob	2016-08-16	Sr. Designer
Steve	Wells	2001-08-16	Jr.Software Dev

Search

2000-08-16

Jr.Software Dev

#### 3. Problem:

Perform a Left Outer Join on the EMPLOYEES and DEPARTMENT tables and select employee id, last name, department id and department name for

- ► Hint
- ▼ Solution
- 1. 1
- 2. 2 3. 3
- 1. select E.EMP\_ID,E.L\_NAME,E.DEP\_ID,D.DEP\_NAME

Santosh

Kumar

Copied!
▼ Output

--- Query 2A --- select E.EMP\_ID,E.L\_NAME,E.D...

Run time: 0.004 s

Result set 1

Search





EMP_ID	L_NAME	DEP_ID	DEP_NAME
E1001	Thomas	2	Architect Group
E1006	Allen	2	Architect Group
E1005	Hussain	2	Architect Group
E1002	James	5	Software Group
E1010	Jacob	5	Software Group
E1004	Kumar	5	Software Group
E1003	Wells	5	Software Group
E1007	Thomas	7	Design Team
E1009	Jones	7	Design Team
E1008	Gupta	7	Design Team

**Show Less** 

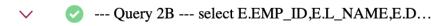
#### 4. Problem:

Re-write the previous query but limit the result set to include only the rows for employees born before 1980.

- ► Hint ▼ Solution
- 1. 1
  2. 2
  3. 3
  4. 4
  1. select E.EMP\_ID,E.L\_NAME,E.DEP\_ID,D.DEP\_NAME
  2. from EMPLOYEES AS 2
  3. LEFT OUTER JOIN DEPARTMENTS AS D ON E.DEP\_ID=D.DEPT\_ID\_DEP
  4. where YEAR(E.B\_DATE) < 1980;

  Copied!

- ▼ Output



Run time: 0.003 s

Result set 1

Search





EMP_ID ▲	L_NAME	DEP_ID	DEP_NAME
E1001	Thomas	2	Architect Group
E1006	Allen	2	Architect Group
E1002	James	5	Software Group
E1007	Thomas	7	Design Team

#### 5. Problem:

Re-write the previous query but have the result set include all the employees but department names for only the employees who were born before 1980.

```
► Hint
▼ Solution
```

1. 1
2. 2
3. 3
4. 4
1. select E.EMP\_ID,E.L\_NAME,E.DEP\_ID,D.DEP\_NAME
2. from EMPLOYEES AS E
3. LEFT OUTER JOIN DEPARTMENTS AS D ON E.DEP\_ID=D.DEPT\_ID\_DEP
4. AND YEAR(E.B\_DATE) < 1980;
Conied!

Copied!

**▼** Output



# --- Query 2C --- select E.EMP\_ID,E.L\_NAME,E.D...

Run time: 0.002 s

Result set 1

Search

Q





EMP_ID	L_NAME	DEP_ID	DEP_NAME
E1001	Thomas	2	Architect Group
E1002	James	5	Software Group
E1003	Wells	5	
E1004	Kumar	5	
E1005	Hussain	2	
E1006	Allen	2	Architect Group
E1007	Thomas	7	Design Team
E1008	Gupta	7	
E1009	Jones	7	
E1010	Jacob	5	

**Show Less** 

#### 6. Problem:

Perform a Full Join on the EMPLOYEES and DEPARTMENT tables and select the First name, Last name and Department name of all employees.

```
► Hint
▼ Solution

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
1. select E.F_NAME,E.L_NAME,D.DEP_NAME
2. from EMPLOYEES AS E
3. LEFT OUTER JOIN DEPARTMENTS AS D ON E.DEP_ID=D.DEPT_ID_DEP
4.
5. UNION
6.
7. select E.F_NAME,E.L_NAME,D.DEP_NAME
8. from EMPLOYEES AS E
9. RIGHT OUTER JOIN DEPARTMENTS AS D ON E.DEP_ID=D.DEPT_ID_DEP
COpied!
```

▼ Output

Run time: 0.003 s

Result set 1

Search

Q





F_NAME	L_NAME	DEP_NAME
John	Thomas	Architect Group
Alice	James	Software Group
Steve	Wells	Software Group
Santosh	Kumar	Software Group
Ahmed	Hussain	Architect Group
Nancy	Allen	Architect Group
Mary	Thomas	Design Team
Bharath	Gupta	Design Team
Andrea	Jones	Design Team
Ann	Jacob	Software Group

**Show Less** 

#### 7. Problem:

Re-write the previous query but have the result set include all employee names but department id and department names only for male employees.

```
► Hint
▼ Solution

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
1. select E.F_NAME,E.L_NAME,D.DEPT_ID_DEP, D.DEP_NAME
2. from EMPLOYEES AS E
3. LEFT OUTER JOIN DEPARTMENTS AS D ON E.DEP_ID=D.DEPT_ID_DEP AND E.SEX = 'M'
4.
5. UNION
6.
7. select E.F_NAME,E.L_NAME,D.DEPT_ID_DEP, D.DEP_NAME
8. from EMPLOYEES AS E
9. RIGHT OUTER JOIN DEPARTMENTS AS D ON E.DEP_ID=D.DEPT_ID_DEP AND E.SEX = 'M';
COpied!
▼ Output
```

Result se	et 1	Search	Q <u>1</u> 7
F_NAME	L_NAME	DEPT_ID_DEP	DEP_NAME
John	Thomas	2	Architect Group
Steve	Wells	5	Software Group
Santosh	Kumar	5	Software Group
Ahmed	Hussain	2	Architect Group
Bharath	Gupta	7	Design Team
Alice	James		
Nancy	Allen		
Mary	Thomas		
Andrea	Jones		
Ann	Jacob		

Run time: 0.003 s

**Show Less** 

--- Query 3B --- select E.F\_NAME,E.L\_NAME,D....

# **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 mysql phpadmin interface. Follow Hands-on Lab: Create tables using SQL scripts and Load data into tables on how to import a script to mysql phpadmin interface.

• JOIN Solution Script.sql

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

# Author(s)

Lakshmi Holla

Malika Singla

# Changelog

Date	Version	Changed by	Change Description
2023-05-05	0.4	Rahul Jaideep	Updated Markdown file
2022-10-28	0.3	Appalabhaktula Hema	Updated image links
2021-08-09	0.2	Sathya Priya	Updated SQL link
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version