

Hands-on Lab: Working with Multiple Tables 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.

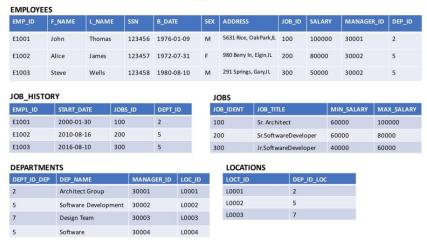


To complete this lab you will utilize MySQL relational database service available as part of IBM Skills Network Labs (SN Labs) Cloud IDE. SN Labs is a virtual lab environment used in this course.

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:

SAMPLE HR DATABASE TABLES



Objectives

After completing this lab you will be able to:

Write SQL queries that access more than one table

- Compose queries that access multiple tables using a nested statement in the WHERE clause
- Build queries with multiple tables in the FROM clause
- Write Implicit Join queries with join criteria specified in the WHERE clause
- Specify aliases for table names and qualify column names with table aliases

In this lab, you will through some SQL practice problems that will provide hands-on experience with SQL queries that access multiple tables. You will be:

- Accessing Multiple Tables with Sub-Queries
- Accessing Multiple Tables with Implicit Joins

How does an Implicit version of CROSS JOIN (also known as Cartesian Join) statement syntax look?

```
SELECT column_name(s)
FROM table1, table2;
```

How does an Implicit version of INNER JOIN statement syntax look?

```
SELECT column_name(s)
FROM table1, table2
WHERE table1.column_name = table2.column_name;
```

Exercise 1: Accessing Multiple Tables with Sub-Queries

1. Problem:

Retrieve only the EMPLOYEES records that correspond to jobs in the JOBS table.

▼ Solution

select * from EMPLOYEES where JOB_ID IN (select JOB_IDENT from JOBS);

▼ Output

+ Opt	ions													
←Ţ	→		∇	EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID
	🥜 Edit	≩ € Copy	Delete	E1001	John	Thomas	123456	1976-09-01	M	5631 Rice, OakPark,IL	100	100000.00	30001	2
	<i></i> €dit	≩ € Copy	Delete	E1002	Alice	James	123457	1972-07-31	F	980 Berry In, Elgin,IL	200	80000.00	30002	5
	<i></i> €dit	≩ € Copy	Delete	E1003	Steve	Wells	123458	1980-10-08	M	291 Springs, Gary,IL	300	50000.00	30002	5
	<i></i> €dit	≩ € Copy	Delete	E1004	Santosh	Kumar	123459	1985-07-20	M	511 Aurora Av, Aurora,IL	400	60000.00	30004	5
	🥜 Edit	≩ € Copy	Delete	E1005	Ahmed	Hussain	123410	1981-04-01	M	216 Oak Tree, Geneva,IL	500	70000.00	30001	2
	🥒 Edit	≩ € Copy	Delete	E1006	Nancy	Allen	123411	1978-06-02	F	111 Green PI, Elgin,IL	600	90000.00	30001	2
	🥜 Edit	≩ € Copy	Delete	E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose Pl, Gary,IL	650	65000.00	30003	7
	<i></i> €dit	≩ € Copy	Delete	E1008	Bharath	Gupta	123413	1985-06-05	M	145 Berry Ln, Naperville, IL	660	65000.00	30003	7
	🥜 Edit	∄ € Copy	Delete	E1009	Andrea	Jones	123414	1990-09-07	F	120 Fall Creek, Gary,IL	234	70000.00	30003	7
	🥒 Edit	≩ в Сору	Delete	E1010	Ann	Jacob	123415	1982-03-30	F	111 Britany Springs, Elgin, IL	220	70000.00	30004	5

2. Problem:

Retrieve only the list of employees whose JOB_TITLE is Jr. Designer.

▼ Solution

select * from EMPLOYEES where JOB_ID IN (select JOB_IDENT from JOBS where JOB_TITLE= 'Jr. Designer');



	+ Opt	tions														
ı	←Τ	\vdash			~	EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID
ı			Edit	≩ Copy	Delete	E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose PI, Gary,IL	650	65000.00	30003	7
ı		0	Edit	≩ Copy	Delete	E1008	Bharath	Gupta	123413	1985-06-05	М	145 Berry Ln, Naperville, IL	660	65000.00	30003	7
	↑	_		heck all	With se	elected:	<i></i> €dit	≩ Copy	Delete	Expo	ort					

3. Problem:

Retrieve JOB information and list of employees who earn more than \$70,000.

▼ Solution

select JOB_TITLE, MIN_SALARY,MAX_SALARY,JOB_IDENT from JOBS where JOB_IDENT IN (select JOB_ID from EMPLOYEES where SALARY >
70000);

▼ Output



4. Problem:

Retrieve JOB information and list of employees whose birth year is after 1976.

▼ Solution

select JOB_TITLE, MIN_SALARY,MAX_SALARY,JOB_IDENT from JOBS where JOB_IDENT IN (select JOB_ID from EMPLOYEES where
YEAR(B_DATE)>1976);

▼ Output



5. Problem:

Retrieve JOB information and list of female employees whose birth year is after 1976.

▼ Solution

select JOB_TITLE, MIN_SALARY,MAX_SALARY,JOB_IDENT from JOBS where JOB_IDENT IN (select JOB_ID from EMPLOYEES where
YEAR(B_DATE)>1976 and SEX='F');

▼ Output



Exercise 2: Accessing Multiple Tables with Implicit Joins

1. Problem:

Perform an implicit cartesian/cross join between EMPLOYEES and JOBS tables.

▼ Solution

select * from EMPLOYEES, JOBS;

▼ Output

+ Options EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID	JOB_IDENT	JOB_TITLE	MIN_SALARY	MAX_SALARY
E1010	Ann	Jacob	123415	1982-03-30	F	111 Britany Springs,Elgin,IL	220	70000.00	30004	5	100	Sr. Architect	60000.00	100000.00
E1009	Andrea	Jones	123414	1990-09-07	F	120 Fall Creek, Gary,IL	234	70000.00	30003	7	100	Sr. Architect	60000.00	100000.00
E1008	Bharath	Gupta	123413	1985-06-05	М	145 Berry Ln, Naperville,IL	660	65000.00	30003	7	100	Sr. Architect	60000.00	100000.00
E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose PI, Gary,IL	650	65000.00	30003	7	100	Sr. Architect	60000.00	100000.00
E1006	Nancy	Allen	123411	1978-06-02	F	111 Green PI, Elgin,IL	600	90000.00	30001	2	100	Sr. Architect	60000.00	100000.00
E1005	Ahmed	Hussain	123410	1981-04-01	М	216 Oak Tree, Geneva,IL	500	70000.00	30001	2	100	Sr. Architect	60000.00	100000.00
E1004	Santosh	Kumar	123459	1985-07-20	М	511 Aurora Av, Aurora,IL	400	60000.00	30004	5	100	Sr. Architect	60000.00	100000.0
E1003	Steve	Wells	123458	1980-10-08	M	291 Springs, Gary,IL	300	50000.00	30002	5	100	Sr. Architect	60000.00	100000.0
E1002	Alice	James	123457	1972-07-31	F	980 Berry In, Elgin,IL	200	80000.00	30002	5	100	Sr. Architect	60000.00	100000.0
E1001	John	Thomas	123456	1976-09-01	М	5631 Rice, OakPark,IL	100	100000.00	30001	2	100	Sr. Architect	60000.00	100000.0
E1010	Ann	Jacob	123415	1982-03-30	F	111 Britany Springs,Elgin,IL	220	70000.00	30004	5	200	Sr.Software Developer	60000.00	80000.0
E1009	Andrea	Jones	123414	1990-09-07	F	120 Fall Creek, Gary,IL	234	70000.00	30003	7	200	Sr.Software Developer	60000.00	80000.0
E1008	Bharath	Gupta	123413	1985-06-05	М	145 Berry Ln, Naperville,IL	660	65000.00	30003	7	200	Sr.Software Developer	60000.00	80000.0
E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose PI, Gary,IL	650	65000.00	30003	7	200	Sr.Software Developer	60000.00	80000.0
Conso	Nancy	Allen	123411	1978-06-02	F	111 Green PI, Elgin,IL	600	90000.00	30001	2	200	Sr.Software Developer	60000.00	80000.00

2. Problem:

Retrieve only the EMPLOYEES records that correspond to jobs in the JOBS table.

▼ Solution

select * from EMPLOYEES, JOBS where EMPLOYEES.JOB_ID = JOBS.JOB_IDENT;

▼ Output



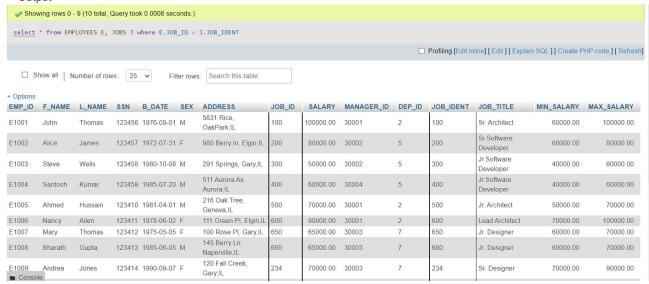
3. Problem:

Redo the previous query, using shorter aliases for table names.

▼ Solution

select * from EMPLOYEES E, JOBS J where E.JOB_ID = J.JOB_IDENT;

▼ Output



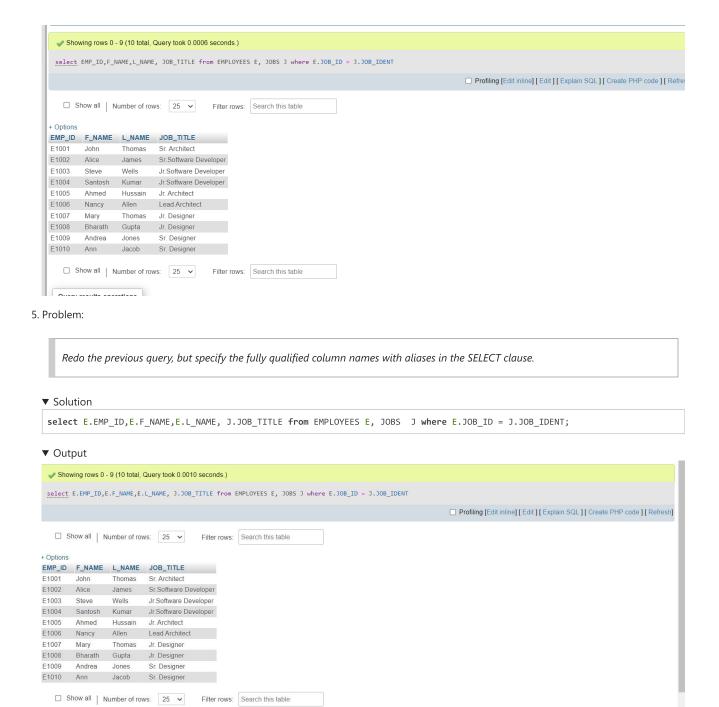
4. Problem:

Redo the previous query, but retrieve only the Employee ID, Employee Name and Job Title.

▼ Solution

select EMP ID, F NAME, L NAME, JOB_TITLE from EMPLOYEES E, JOBS J where E.JOB_ID = J.JOB_IDENT;

▼ 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 mysql phpadmin interface and run. Follow <u>Hands-on Lab</u>: <u>Create tables using SQL scripts and Load data into tables</u> on how to import a script to MYsql phpadmin interface and run it.

• MultipleTables Solution Script.sql

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

Author(s)

<u>Lakshmi Holla</u>

Malika Singla

Changelog

Date	Version	Changed by	Change Description
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version

© IBM Corporation 2021. All rights reserved.