# Hands-on Lab: Using Views in MySQL using phpMyAdmin



#### Estimated time needed: 20 minutes

In this lab, you will learn about using views. In SQL, a view is an alternative way of representing data that exists in one or more tables. Just like a real table, it contains rows and columns. The fields in a view are fields from one or more real tables in the database. Though views can be queried like a table, views are dynamic; only the definition of the view is stored, not the data.

### **Objectives**

After completing this lab, you will be able to:

- Create a View and show a selection of data for a given table
- Update a View to combine two or more tables in meaningful ways
- · Drop a created View

#### Software Used in this Lab

In this lab, you will use 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 a sample HR database. This HR database schema consists of five 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	М	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	М	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_IDENT	JOB_TITLE	MIN_SALARY	MAX_SALARY
100	Sr. Architect	60000	100000
200	Sr.SoftwareDeveloper	60000	80000
300	Jr.SoftwareDeveloper	40000	60000

#### **DEPARTMENTS**

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

### LOCATIONS

LOCT_ID	DEP_ID_LOC
L0001	2
L0002	5
L0003	7

Follow the steps below to create the database and the tables.

- 1. Open the MySQL interface from Skills Network menu.
- 2. Create a new database and name it HR.
- 3. Load and execute the script shared in the link below to create the necessary tables.

HR Database Create Tables Script.sql

4. Load all the tables with the data available in the CSV files shared below.

<u>Departments.csv</u> <u>Employees.csv</u>

Jobs.csv

<u>Locations.csv</u>

JobsHistory.csv

Note: Please refer to the instruction in the lab "Create and Load Tables using SQL Scripts" for instructions regarding loading scripts in MySQL.

## Task 1: Create a View

In this exercise, you will create a View and show a selection of data for a given table.

1. Let's create a view called EMPSALARY to display salary along with some basic sensitive data of employees from the HR database. To create the EMPSALARY view from the EMPLOYEES table, Copy the code below and paste it to the textarea of the SQL page. Click 60.

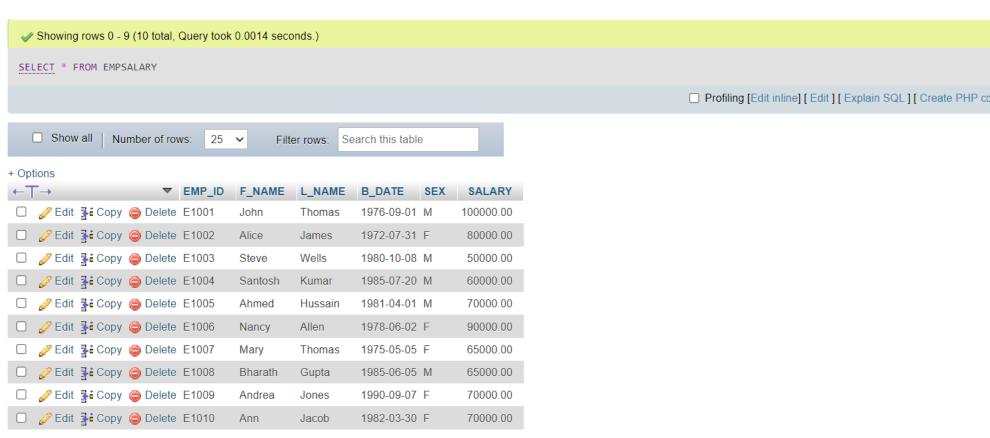
CREATE VIEW EMPSALARY AS SELECT EMP\_ID, F\_NAME, L\_NAME, B\_DATE, SEX, SALARY FROM EMPLOYEES; COIGITITIS 1 CREATE VIEW EMPSALARY AS EMP\_ID SELECT EMP\_ID, F\_NAME, L\_NAME, B\_DATE, SEX, SALARY F NAME FROM EMPLOYEES; L\_NAME SSN B DATE SEX **ADDRESS** JOB ID SALARY MANAGER ID DEP\_ID << SELECT SELECT \* **INSERT UPDATE** DELETE Clear Format Get auto-saved query Bind parameters (a) ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☑ Enable foreign key checks Go Delimiter Hide query box ✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0116 seconds.)

[Edit inline] [ Edit ] [ Create PHP code

2. Using SELECT, query the EMPSALARY view to retrieve all the records. Use the following statement.

CREATE VIEW EMPSALARY AS SELECT EMP\_ID, F\_NAME, L\_NAME, B\_DATE, SEX, SALARY FROM EMPLOYEES

SELECT \* FROM EMPSALARY;



Export

## Task 2: Update a View

Check all

In this exercise, you will update a View to combine two or more tables in meaningful ways.

Edit

**¾** Copy

Delete

With selected:

Assume that the EMPSALARY view we created in Task 1 doesn't contain enough salary information, such as max/min salary and the job title of the employees. For this, we need to get information from other tables in the database. You need all columns from EMPLOYEES table used above, except for SALARY. You also need the columns JOB\_TITLE, MIN\_SALARY of the JOBS table.

The command to be used is as follows:

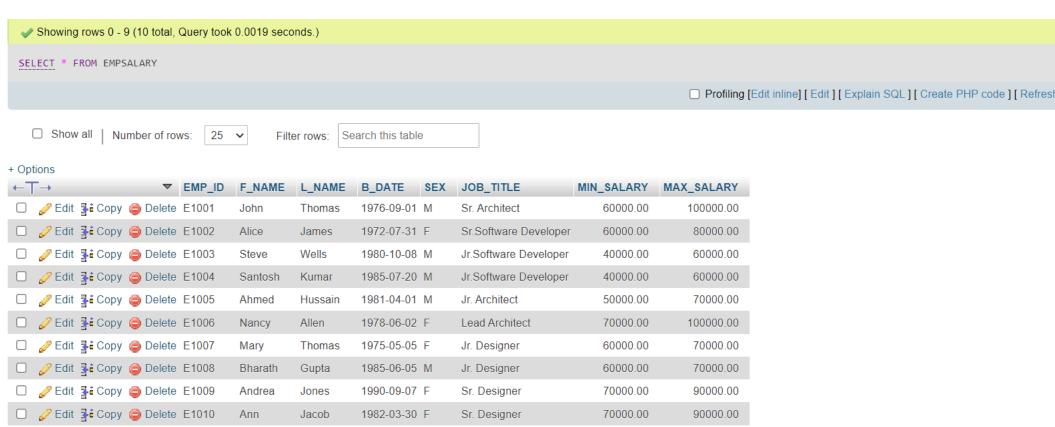
```
CREATE OR REPLACE VIEW EMPSALARY AS
SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, JOB_TITLE,
MIN_SALARY, MAX_SALARY
FROM EMPLOYEES, JOBS
WHERE EMPLOYEES.JOB_ID = JOBS.JOB_IDENT;
```

Run SQL query/queries on table HR.EMPLOYEES:	
Null out query/queries on table AIN.EMP LOTEES.	Columns
CREATE OR REPLACE VIEW EMPSALARY AS  SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, JOB_TITLE, MIN_SALARY, MAX_SALARY  FROM EMPLOYEES, JOBS  WHERE EMPLOYEES.JOB_ID = JOBS.JOB_IDENT;	EMP_ID F_NAME L_NAME SSN B_DATE SEX ADDRESS JOB_ID SALARY MANAGER_ID DEP_ID
SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query  Bind parameters 3	<<
[ Delimiter ] Show this query here again Retain query box Rollback when finished Z Enable foreign key checks	
Hide query box	
✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0461 seconds.)	
CREATE OR REPLACE VIEW EMPSALARY AS SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, JOB_TITLE, MIN_SALARY, MAX_SALARY FROM E	MPLOYEES, JOBS WHERE EMPLOYEES.JOB_ID = JOBS.JOB_ID
	[Edit inline] [ Edit ] [ Create PHP

**NOTE:** The technique used here to combine data from two tables is called implicit inner join. You will learn more about joins later on. For now, just assume you are combining the data of two different tables, EMPLOYEES and JOBS by connecting their respective columns JOB\_ID and JOB\_IDENT, since both the columns contain common unique data. You can have a look at the database description, shared at the beginning of the lab, to verify this.

2. Using SELECT, query the updated EMPSALARY view to retrieve all the records. Copy the code below and paste it to the textarea of the SQL page. Click 60.

SELECT \* FROM EMPSALARY;



Delete

Export

## Task 3: Drop a View

☐ Check all

In this exercise, you will drop the created View EMPSALARY. Use the code below.

With selected:

**≩** Copy

Edit

DROP VIEW EMPSALARY;

1 DROP VIEW EMPSALARY;		
	EMP_ID F_NAME L_NAME SSN B_DATE SEX ADDRESS JOB_ID SALARY MANAGER_ID DEP_ID	
SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query  Bind parameters (9)	// <<	
Delimiter ; Show this query here again Retain query box Rollback when finished Z Enable foreign key checks		
ide query box		
MySQL returned an empty result set (i.e. zero rows). (Query took 0.0056 seconds.)		
ROP VIEW EMPSALARY		
		[Edit inline] [ Edit ] [ Create PH
		[Edit inline] [ Edit ] [ Creat

Using SELECT, you can verify whether the EMPSALARY view has been deleted or not. Copy the code below and paste it to the textarea of the SQL page. Click Go.

SELECT \* FROM EMPSALARY;

■ Console



## **Practice Problems**

Try to solve the following practice problems based on your learning in this lab.

- 1. Create a view "EMP\_DEPT" which has the following information. EMP\_ID, FNAME, LNAME and DEP\_ID from EMPLOYEES table
- ▼ Click here for the solution

```
CREATE VIEW EMP_DEPT AS
SELECT EMP_ID, F_NAME, L_NAME, DEP_ID
FROM EMPLOYEES;
```

2. Modify "EMP\_DEPT" such that it displays Department names instead of Department IDs. For this, we need to combine information from EMPLOYEES and DEPARTMENTS as follows.

EMP\_ID, FNAME, LNAME from EMPLOYEES table and DEP\_NAME from DEPARTMENTS table, combined over the columns DEP\_ID and DEPT\_ID\_DEP.

▼ Click here for the solution

CREATE OR REPLACE VIEW EMP\_DEPT AS SELECT EMP\_ID, F\_NAME, L\_NAME, DEP\_NAME FROM EMPLOYEES, DEPARTMENTS WHERE EMPLOYEES.DEP\_ID = DEPARTMENTS.DEPT\_ID\_DEP;

- 3. Drop the view "EPM DEPT".
- ▼ Click here for the solution

DROP VIEW EMP\_DEPT

# **Conclusion**

Congratulations on completing this lab. You now have hands-on knowledge of how to use Views in SQL.

You have now learned how to:

- Create a new View as per the requirement
- Modify a view to include data from multiple tables in the data set
- Drop a view

### Author(s)

Lakshmi Holla

Malika Singla

### **Additional Contributor(s)**

Abhishek Gagneja

© IBM Corporation 2023. All rights reserved.