

## 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](#). 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	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

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.

[Departments.csv](#)

[Employees.csv](#)

[Jobs.csv](#)

[Locations.csv](#)

[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 [Go](#).

```
1. 1
2. 2
3. 3

1. CREATE VIEW EMPSALARY AS
2. SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, SALARY
3. FROM EMPLOYEES;
```

Copied!

```
1 CREATE VIEW EMP_SALARY AS
2   SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, SALARY
3   FROM EMPLOYEES;
```

Columns

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

Delimiter ; } ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0116 seconds.)

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

[Edit inline] [Edit] [Create PHP code]

2. Using SELECT, query the EMP\_SALARY view to retrieve all the records. Use the following statement.

```
1. 1
1. SELECT * FROM EMP_SALARY;
```

Copied!

✓ Showing rows 0 - 9 (10 total, Query took 0.0014 seconds.)

SELECT \* FROM EMP\_SALARY

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code]

☐ Show all | Number of rows: 25 | Filter rows: Search this table

+ Options

				EMP_ID	F_NAME	L_NAME	B_DATE	SEX	SALARY
<input type="checkbox"/>	Edit	Copy	Delete	E1001	John	Thomas	1976-09-01	M	100000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1002	Alice	James	1972-07-31	F	80000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1003	Steve	Wells	1980-10-08	M	50000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1004	Santosh	Kumar	1985-07-20	M	60000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1005	Ahmed	Hussain	1981-04-01	M	70000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1006	Nancy	Allen	1978-06-02	F	90000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1007	Mary	Thomas	1975-05-05	F	65000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1008	Bharath	Gupta	1985-06-05	M	65000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1009	Andrea	Jones	1990-09-07	F	70000.00
<input type="checkbox"/>	Edit	Copy	Delete	E1010	Ann	Jacob	1982-03-30	F	70000.00

☐ Check all With selected: Edit Copy Delete Export

## Task 2: Update a View

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

Assume that the EMP\_SALARY 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, MAX\_SALARY of the JOBS table.

The command to be used is as follows:

```
1. 1
2. 2
3. 3
4. 4
5. 5
1. CREATE OR REPLACE VIEW EMP_SALARY AS
2.   SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, JOB_TITLE,
3.   MIN_SALARY, MAX_SALARY
4.   FROM EMPLOYEES, JOBS
5.   WHERE EMPLOYEES.JOB_ID = JOBS.JOB_ID;
```

Copied!

Run SQL query/queries on table **HR.EMPLOYEES**:

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

Columns

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

[ Delimiter  ] ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks 

Go

Hide query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0461 seconds.)

CREATE OR REPLACE VIEW EMP\_SALARY 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

[Edit inline] [Edit] [Create PHP code]

**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 `EMP_SALARY` view to retrieve all the records. Copy the code below and paste it to the textarea of the **SQL** page. Click .

```
1. 1
1. SELECT * FROM EMP_SALARY;
```

Copied!

✓ Showing rows 0 - 9 (10 total, Query took 0.0019 seconds.)

SELECT \* FROM EMP\_SALARY

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows:  Filter rows:

+ Options

	EMP_ID	F_NAME	L_NAME	B_DATE	SEX	JOB_TITLE	MIN_SALARY	MAX_SALARY	
<input type="checkbox"/>		E1001	John	Thomas	1976-09-01	M	Sr. Architect	60000.00	100000.00
<input type="checkbox"/>		E1002	Alice	James	1972-07-31	F	Sr. Software Developer	60000.00	80000.00
<input type="checkbox"/>		E1003	Steve	Wells	1980-10-08	M	Jr. Software Developer	40000.00	60000.00
<input type="checkbox"/>		E1004	Santosh	Kumar	1985-07-20	M	Jr. Software Developer	40000.00	60000.00
<input type="checkbox"/>		E1005	Ahmed	Hussain	1981-04-01	M	Jr. Architect	50000.00	70000.00
<input type="checkbox"/>		E1006	Nancy	Allen	1978-06-02	F	Lead Architect	70000.00	100000.00
<input type="checkbox"/>		E1007	Mary	Thomas	1975-05-05	F	Jr. Designer	60000.00	70000.00
<input type="checkbox"/>		E1008	Bharath	Gupta	1985-06-05	M	Jr. Designer	60000.00	70000.00
<input type="checkbox"/>		E1009	Andrea	Jones	1990-09-07	F	Sr. Designer	70000.00	90000.00
<input type="checkbox"/>		E1010	Ann	Jacob	1982-03-30	F	Sr. Designer	70000.00	90000.00

☐ Check all With selected:

## Task 3: Drop a View

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

```
1. 1
1. DROP VIEW EMP_SALARY;
```

Copied!

Run SQL query/queries on table **HR.EMPLOYEES**:

1 DROP VIEW EMP\_SALARY;

Columns

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

[ Delimiter ; ] ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Go

Hide query box

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0056 seconds.)

DROP VIEW EMP\_SALARY

[Edit inline] [Edit] [Create PHP code]

Console

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

1 1  
1. SELECT \* FROM EMP\_SALARY;

Copied!

9  
10  
11 SELECT \* FROM EMP\_SALARY;

MANAGER\_ID  
DEP\_ID

SELECT \* SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

[ Delimiter ; ] ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Go

Hide query box

Error

SQL query: [Copy](#)

SELECT \* FROM EMP\_SALARY LIMIT 0, 25

MySQL said:

#1146 - Table 'HR.EMP\_SALARY' doesn't exist

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

```
1. 1  
2. 2  
3. 3  
  
1. CREATE VIEW EMP_DEPT AS  
2. SELECT EMP_ID, F_NAME, L_NAME, DEP_ID  
3. FROM EMPLOYEES;
```

Copied!

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

```
1. 1  
2. 2  
3. 3  
4. 4  
  
1. CREATE OR REPLACE VIEW EMP_DEPT AS  
2. SELECT EMP_ID, F_NAME, L_NAME, DEP_NAME  
3. FROM EMPLOYEES, DEPARTMENTS  
4. WHERE EMPLOYEES.DEP_ID = DEPARTMENTS.DEPT_ID_DEP;
```

Copied!

3. Drop the view "EPM\_DEPT".

▼ Click here for the solution

1. 1
1. DROP VIEW EMP\_DEPT

Copied!

## 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

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### Changelog

Date	Version	Changed by	Change Description
2023-10-13	0.5	Steve Hord	QA pass
2023-09-13	0.4	Misty Taylor	ID Check
2023-09-10	0.3	Abhishek Gagneja	Updated instructions
2023-05-04	0.2	Rahul Jaideep	Updated Markdown file
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version

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