

# 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.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.

[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 EMPSALARY AS
2     SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, SALARY
3     FROM EMPLOYEES;
```

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

Hide query box

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

```
CREATE VIEW EMPSALARY AS SELECT EMP_ID, F_NAME, L_NAME, B_DATE, SEX, SALARY FROM EMPLOYEES
```

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

1. 1

1. SELECT \* FROM EMPSALARY;

Copied!

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

SELECT \* FROM EMPSALARY

☐ Profiling

☐ Show all | Number of rows: 25 ▼ Filter rows:

+ Options

|                          |  |  |  | EMP_ID | F_NAME  | L_NAME  | B_DATE     | SEX | SALARY    |
|--------------------------|--|--|--|--------|---------|---------|------------|-----|-----------|
| <input type="checkbox"/> |  |  |  | E1001  | John    | Thomas  | 1976-09-01 | M   | 100000.00 |
| <input type="checkbox"/> |  |  |  | E1002  | Alice   | James   | 1972-07-31 | F   | 80000.00  |
| <input type="checkbox"/> |  |  |  | E1003  | Steve   | Wells   | 1980-10-08 | M   | 50000.00  |
| <input type="checkbox"/> |  |  |  | E1004  | Santosh | Kumar   | 1985-07-20 | M   | 60000.00  |
| <input type="checkbox"/> |  |  |  | E1005  | Ahmed   | Hussain | 1981-04-01 | M   | 70000.00  |
| <input type="checkbox"/> |  |  |  | E1006  | Nancy   | Allen   | 1978-06-02 | F   | 90000.00  |
| <input type="checkbox"/> |  |  |  | E1007  | Mary    | Thomas  | 1975-05-05 | F   | 65000.00  |
| <input type="checkbox"/> |  |  |  | E1008  | Bharath | Gupta   | 1985-06-05 | M   | 65000.00  |
| <input type="checkbox"/> |  |  |  | E1009  | Andrea  | Jones   | 1990-09-07 | F   | 70000.00  |
| <input type="checkbox"/> |  |  |  | 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 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, MAX\_SALARY of the JOBS table.

The command to be used is as follows:

- 1.
- 2.
- 3.
- 4.
- 5.

```
1. CREATE OR REPLACE VIEW EMPSALARY 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_IDENT;
```

Copied!

Run SQL query/queries on table HR.EMPLOYEES: 

```
1 CREATE OR REPLACE VIEW EMPSALARY 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;
```

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

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
```

**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 Go.

1. 1

1. SELECT \* FROM EMPSALARY;

Copied!

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

SELECT \* FROM EMPLOYEES

☐ Profiling

☐ Show all

Number of rows: 

25

Filter rows: 

Search this table

+ 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:

Edit

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Delete

Export

### Task 3: Drop a View

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

```
1. 1
1. DROP VIEW EMPLOYEES;
```

Copied!

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

```
1 DROP VIEW EMPSALARY;
```

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

Hide query box

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

DROP VIEW EMPSALARY

Console

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.

```
1. 1
```

```
1. SELECT * FROM EMPSALARY;
```

Copied!

9  
10  
11 SELECT \* FROM EMPSALARY;

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

Hide query box

## Error

SQL query: [Copy](#)

```
SELECT * FROM EMPSALARY LIMIT 0, 25
```

MySQL said:

#1146 - Table 'HR.EMPSALARY' 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](#)
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](#)
3. Drop the view “EPM\_DEPT”.  
[Click here for the solution](#)

# 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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