动手实验：使用 phpMyAdmin 在 MySQL 中进行子查询和嵌套选择

预计所需时间： 20 分钟

在本实验中，您将学习如何使用 phpMyAdmin 图形用户界面 (GUI) 工具在 MySQL 数据库服务中创建表和加载数据。

本实验室使用的软件

在本实验中，您将使用[MySQL](#)。MySQL 是一个关系数据库管理系统 (RDBMS)，旨在高效存储、操作和检索数据。

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

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_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
5	Software	30004	L0004

LOCATIONS

LOCT_ID	DEP_ID_LOC
L0001	2
L0002	5
L0003	7

Objectives

After completing this lab you will be able to:

- Write SQL queries that demonstrate the necessity of using sub–queries
- Compose sub–queries in the where clause
- Build Column Expressions (i.e. sub–query in place of a column)
- Write Table Expressions (i.e. sub–query in place of a table)

In this lab, you will run through some SQL practice problems that will provide hands–on experience with nested SQL SELECT statements (also known as Sub–queries).

How does a typical Nested SELECT statement syntax look?

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6

1. SELECT column_name [, column_name ]
2. FROM table1 [, table2 ]
3. WHERE column_name OPERATOR
4.    (SELECT column_name [, column_name ]
5.    FROM table1 [, table2 ]
6.    WHERE condition);
```

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Exercise:

1. Problem:

   Execute a failing query (i.e. one which gives an error) to retrieve all employees records whose salary is lower than the average salary.

   ▶ Hint
   ▶ Solution
   ▶ Output

2. Problem:

   Execute a working query using a sub–select to retrieve all employees records whose salary is lower than the average salary.

   ▶ Hint
   ▶ Solution
   ▶ Output

3. Problem:

   Execute a failing query (i.e. one which gives an error) to retrieve all employees records with EMP_ID, SALARY and maximum salary as MAX_SALARY in every row.

   ▶ Hint
   ▶ Solution
   ▶ Output

4. Problem:

   Execute a Column Expression that retrieves all employees records with EMP_ID, SALARY and maximum salary as MAX_SALARY in every row.

   ▶ Hint
   ▶ Solution
   ▶ Output

5. Problem:

   Execute a Table Expression for the EMPLOYEES table that excludes columns with sensitive employee data (i.e. does not include columns: SSN, B_DATE, SEX, ADDRESS, SALARY).

   ▶ Hint
   ▶ Solution
   ▶ Output

Solution Script

If you would like to run all the solution queries of the SQL problems in this lab with a script, download the script below. Import the script to the mysql phpadmin interface and run it. Follow [Hands–on Lab : Create tables using SQL scripts and Load data into tables](#) on how to upload a script to mysql phpadmin.

- [SubQueries_Solution_Script.sql](#)

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

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Changelog

Date	Version	Changed by	Change Description
2023–05–04	0.3	Rahul Jaideep	Updated Markdown file
2022–07–27	0.2	Lakshmi Holla	Updated HTML tag
2021–11–01	0.1	Lakshmi Holla, Malika Singla	Initial Version