Lab: Subqueries and JOINs

This document defines the lab assignments for "Databases Basics with MySQL Course" at Software University.

You will use the **soft_uni database** to write queries for the following exercises.

1. Managers

Write a query to retrieve information about the **managers** – **`id`**, **`full_name`**, **`deparment_id`** and **`department_name`**. Select the **first 5** deparments ordered by **`employee_id`**. Submit your queries using the "**MySQL prepare DB and Run Queries**" strategy.

Example

employee_id	full_name	department_id	deparment_name
3	Roberto Tamburello	10	Finance
4	Rob Walters	2	Tool Design
…	…	…	…

2. Towns Adresses

Write a query to get information about the **adresses** in the database, which are in **San Francisco**, **Sofia** or **Carnation**. Retrieve **`town_id`**, **`town_name`**, **`address_text`**. Order the result by **`town_id`**, then by **`address_id`**. Submit your queries using the "**MySQL prepare DB and Run Queries**" strategy.

Example

town_id	town_name	address_text
9	San Fransisco	1234 Seaside Way
9	San Fransisco	5725 Glaze Drive
15	Carnation	1411 Ranch Drive
…	…	…

3. Employees Without Managers

Write a query to get information about **`employee_id`**, **`first_name`**, **`last_name`**, **`department_id`** and **`salary`** for all employees who **don't have** a manager. Submit your queries using the "**MySQL prepare DB and Run Queries**" strategy.

Example

employee_id	first_name	last_name	department_id	salary
109	Ken	Sanchez	16	125 500
291	Svetlin	Nakov	6	48 000
292	Martin	Kulov	6	48 000
293	George	Denchev	6	48 000

4. Higher Salary

Write a query to count the number of employees who receive **`salary`** higher than the **average**. Submit your queries using the "**MySQL prepare DB and Run Queries**" strategy.

Example

count
88

Exercises: Subqueries and JOINs

This document defines the **exercise assignments** for the "Databases Basics - MySQL" course @ Software University.

For problems from 1 to 11 (inclusively) use "**soft_uni**" database and for the others – "**geography**".

1. Employee Address

Write a query that selects:

- `employee_id`
- `job_title`
- `address_id`
- `address_text`

Return the first 5 rows sorted by **`address_id` in ascending order.**

Example:

employee_id	job_title	address_id	address_text
142	Production Technician	1	108 Lakeside Court
30	Human Resources Manager	2	1341 Prospect St
…	…	…	…

2. Addresses with Towns

Write a query that selects:

- `first_name`
- `last_name`
- `town`
- `address_text`

Sort the result by **`first_name` in ascending order** then by **`last_name`**. Select first 5 employees.

Example:

first_name	last_name	town	address_text
A.Scott	Wright	Newport Hills	1400 Gate Drive
Alan	Brewer	Kenmore	8192 Seagull Court
…	…	…	…

3. Sales Employee

Write a query that selects:

- `employee_id`
- `first_name`

- `last_name`
- `department_name`

Sort the result by **`employee_id` in descending order**. Select only **employees** from the "**Sales**" department.

Example:

employee_id	first_name	last_name	department_name
290	Lynn	Tsoflias	Sales
289	Rachel	Valdez	Sales
…	…	…	…

4. Employee Departments

Write a query that selects:

- `employee_id`
- `first_name`
- `salary`
- `department_name`

Filter only **employees** with **`salary`** higher than 15000. Return the first 5 rows sorted by **`department_id` in descending order.**

Example:

employee_id	first_name	salary	department_name
109	Ken	125500.00	Executive
140	Laura	60100.00	Executive
…	…	…	…

5. Employees Without Project

Write a query that selects:

- `employee_id`
- `first_name`

Filter only **employees** without a project. Return the first 3 rows sorted by **`employee_id` in descending order.**

Example:

employee_id	first_name
293	George
292	Martin
…	…

6. Employees Hired After

Write a query that selects:

- `first_name`
- `last_name`
- `hire_date`
- `dept_name`

Filter only **employees** hired after 1/1/1999 and from either the **"Sales"** or the **"Finance" departments**. Sort the result by **`hire_date` (ascending).**

Example:

first_name	last_name	hire_date	dept_name
Debora	Poe	2001-01-19 00:00:00	Finance
Wendy	Kahn	2001-01-26 00:00:00	Finance
…	…	…	…

7. Employees with Project

Write a query that selects:

- `employee_id`
- `first_name`
- `project_name`

Filter only **employees** with a project, which has started after **13.08.2002** and it is still **ongoing** (no end date). Return the first 5 rows sorted by **`first_name` then by `project_name` both in ascending order.**

Example

employee_id	first_name	project_name
44	A. Scott	Hitch Rack - 4-Bike
170	Alan	LL Touring Handlebars
…	…	…

8. Employee 24

Write a query that selects:

- `employee_id`
- `first_name`
- `project_name`

Filter all the **projects** of employees with **id 24**. If the project has started after **2005 inclusively** the return value should be **`NULL`**. Sort the result by **`project_name` alphabetically.**

Example

employee_id	first_name	project_name
24	David	NULL
24	David	NULL

…	…	…

9. Employee Manager

Write a query that selects:

- **`employee_id`**
- **`first_name`**
- **`manager_id`**
- **`manager_name`**

Filter all **employees** with a manager who has **`id` equal to 3 or 7**. Return all rows sorted by **employee `first_name` in ascending order.**

Example

employee_id	first_name	manager_id	manager_name
122	Bryan	7	JoLynn
158	Dylan	3	Roberto
…	…	…	…

10. Employee Summary

Write a query that selects:

- **`employee_id`**
- **`employee_name`**
- **`manager_name`**
- **`department_name`**

Show the first 5 **employees** (only for employees who have a manager) with their **managers** and the **departments** they are in (show the departments of the **employees**). Order by **`employee_id`.**

Example

employee_id	employee_name	manager_name	department_name
1	Guy Gilbert	Jo Brown	Production
2	Kevin Brown	David Bradley	Marketing
…	…	…	…

11. Min Average Salary

Write a query that returns the value of the **lowest average `salary`** of all **departments**.

Example:

min_average_salary
10866.6666

12. Highest Peaks in Bulgaria

Write a query that selects:

- `country_code`
- `mountain_range`
- `peak_name`
- `elevation`

Filter all **peaks** in **Bulgaria** with **elevation** over **2835**. Return all rows sorted by `elevation` **in descending order.**

Example

country_code	mountain_range	peak_name	elevation
BG	Rila	Musala	2925
BG	Pirin	Vihren	2914
…	…	…	…

13. Count Mountain Ranges

Write a query that selects:

- `country_code`
- `mountain_range`

Filter the **count** of the **mountain ranges** in the **United States, Russia and Bulgaria.** Sort result by `mountain_range` **count** in **decreasing order**.

Example

country_code	mountain_range
BG	6
RU	1
…	…

14. Countries with Rivers

Write a query that selects:

- `country_name`
- `river_name`

Find the first 5 **countries** with or without **rivers** in **Africa**. Sort them by **country_name in ascending order.**

Example

country_name	river_name
Algeria	Niger
Angola	Congo
Benin	Niger
Botswana	NULL

Burkina Faso	Niger

15. *Continents and Currencies

Write a query that selects:

- **continent_code**
- **currency_code**
- **currency_usage**

Find all **continents** and their most used **currency**. Filter any **currency** that is used in only one **country**. Sort the result by **`continent_code` and `currency_code`.**

Example

continent_code	currency_code	currency_usage
AF	XOF	8
AS	AUD	2
AS	ILS	2
EU	EUR	26
NA	XCD	8
OC	USD	8

16. Countries without any Mountains

Find the count of all **countries** which don't have a **mountain**.

Example

country_count
231

17. Highest Peak and Longest River by Country

For each **country**, find the **elevation** of **the highest peak** and **the length of the longest river**, sorted by the highest **`peak_elevation` (from highest to lowest),** then by the **longest `river_length` (from longest to smallest),** then by **`country_name` (alphabetically).** Display **`NULL`** when no data is available in some of the columns. Limit only the **first 5 rows**.

Example

country_name	highest_peak_elevation	longest_river_length
China	8848	6300
India	8848	3180
Nepal	8848	2948
Pakistan	8611	3180
Argentina	6962	4880