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

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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