Exercises: Subqueries and Joins

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

For problems from 1 to 11 (inclusively) use "**SoftUni**" database and for the other problems – "**Geography**".

1. Employee Address

Create a query that selects:

- **EmployeeId**
- **JobTitle**
- **AddressId**
- **AddressText**

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

Example:

EmployeeId	JobTitle	AddressId	AddressText
142	Production Technician	1	108 Lakeside Court
30	Human Resources Manager	2	1341 Prospect St
...	...	...	...

2. Addresses with Towns

Write a query that selects:

- **FirstName**
- **LastName**
- **Town**
- **AddressText**

Sorted by **FirstName** in **ascending** order then by **LastName**. Select **first 50** employees.

Example:

FirstName	LastName	Town	AddressText
A.Scott	Wright	Newport Hills	1400 Gate Drive
Alan	Brewer	Kenmore	8192 Seagull Court
...	...	...	...

3. Sales Employee

Create a query that selects:

- **EmployeeID**
- **FirstName**
- **LastName**
- **DepartmentName**

Sorted by **EmployeeID** in **ascending** order. Select only **employees** from "**Sales**" department.

Example:

EmployeeID	FirstName	LastName	DepartmentName
268	Stephen	Jiang	Sales
273	Brian	Welcker	Sales
…	…	…	…

4. Employee Departments

Create a query that selects:

- **EmployeeID**
- **FirstName**
- **Salary**
- **DepartmentName**

Filter only **employees** with **salary higher than 15000**. Return the **first 5** rows **sorted** by **DepartmentID** in **ascending** order.

Example:

EmployeeID	FirstName	Salary	DepartmentName
3	Roberto	43300.00	Engineering
9	Gail	32700.00	Engineering
…	…	…	…

5. Employees Without Project

Create a query that selects:

- **EmployeeID**
- **FirstName**

Filter only **employees without** a **project**. Return the **first 3** rows **sorted** by **EmployeeID** in **ascending** order.

Example:

EmployeeID	FirstName
2	Kevin
6	David
…	…

6. Employees Hired After

Create a query that selects:

- **FirstName**
- **LastName**
- **HireDate**
- **DeptName**

Filter only **employees hired after 1.1.1999** and are from either **"Sales"** or **"Finance"** departments, **sorted** by **HireDate** (**ascending**).

Example:

FirstName	LastName	HireDate	DeptName
Debora	Poe	2001-01-19 00:00:00	Finance
Wendy	Kahn	2001-01-26 00:00:00	Finance
…	…	…	…

7. Employees with Project

Create a query that selects:

- **EmployeeID**
- **FirstName**
- **ProjectName**

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 **EmployeeID** in **ascending** order.

Example

EmployeeID	FirstName	ProjectName
1	Guy	Racing Socks
1	Guy	Road Bottle Cage
…	…	…

8. Employee 24

Create a query that selects:

- **EmployeeID**
- **FirstName**
- **ProjectName**

Filter all the **projects** of **employee** with **Id 24**. If the project has **started during or after 2005** the **returned** value should be **NULL**.

Example

EmployeeID	FirstName	ProjectName
24	David	NULL
24	David	Road-650
…	…	…

9. Employee Manager

Create a query that selects:

- **EmployeeID**
- **FirstName**
- **ManagerID**
- **ManagerName**

Filter all **employees** with a **manager** who has **ID** equals to **3 or 7**. Return all the rows, **sorted** by **EmployeeID** in **ascending** order.

Example

EmployeeID	FirstName	ManagerID	ManagerName
4	Rob	3	Roberto
9	Gail	3	Roberto
…	…	…	…

10. Employee Summary

Create a query that selects:

- **EmployeeID**
- **EmployeeName**
- **ManagerName**
- **DepartmentName**

Show **first 50 employees** with their **managers** and the **departments** they are in (show the departments of the employees). **Order** by **EmployeeID**.

Example

EmployeeID	EmployeeName	ManagerName	DepartmentName
1	Guy Gilbert	Jo Brown	Production
2	Kevin Brown	David Bradley	Marketing
3	Roberto Tamburello	Terri Duffy	Engineering
…	…	…	…

11. Min Average Salary

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

Example:

MinAverageSalary
10866.6666

12. Highest Peaks in Bulgaria

Create a query that selects:

- **CountryCode**
- **MountainRange**
- **PeakName**
- **Elevation**

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

Example

CountryCode	MountainRange	PeakName	Elevation
BG	Rila	Musala	2925
BG	Pirin	Vihren	2914
…	…	…	…

13. **Count Mountain Ranges**

Create a query that selects:

- **CountryCode**
- **MountainRanges**

Filter the **count** of the **mountain ranges** in the **United States**, **Russia** and **Bulgaria**.

Example

CountryCode	MountainRanges
BG	6
RU	1
…	…

14. **Countries with Rivers**

Create a query that selects:

- **CountryName**
- **RiverName**

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

Example

CountryName	RiverName
Algeria	Niger
Angola	Congo
Benin	Niger
Botswana	NULL
Burkina Faso	Niger

15. ***Continents and Currencies**

Create a query that selects:

- **ContinentCode**
- **CurrencyCode**
- **CurrencyUsage**

Find all **continents** and their **most used currency**. Filter any **currency** that is used in **only one country**. **Sort** your results by **ContinentCode**.

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Example

ContinentCode	CurrencyCode	CurrencyUsage
AF	XOF	8
AS	AUD	2
AS	ILS	2
EU	EUR	26
NA	XCD	8
OC	USD	8

Countries Without Any Mountains

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

Example

Count
231

16. 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

CountryName	HighestPeakElevation	LongestRiverLength
China	8848	6300
India	8848	3180
Nepal	8848	2948
Pakistan	8611	3180
Argentina	6962	4880

17. Highest Peak Name and Elevation by Country

For each country, find the **name** and **elevation** of **the highest peak**, along with its **mountain**. When no peaks are available in some countries, display elevation **0**, "**(no highest peak)**" as **peak name** and "**(no mountain)**" as **a mountain name**. When **multiple peaks** in some countries have the **same elevation**, display **all of them**. **Sort** the results by **country name alphabetically**, then by **highest peak name alphabetically**. Limit only the **first 5** rows.

Example

Country	Highest Peak Name	Highest Peak Elevation	Mountain
Afghanistan	(no highest peak)	0	(no mountain)
…	…	…	…
Argentina	Aconcagua	6962	Andes
…	…	…	…
Bulgaria	Musala	2925	Rila

Burkina Faso	(no highest peak)	0	(no mountain)
…	…	…	…
United States	Mount McKinley	6194	Alaska Range

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