

# Exercises: Subqueries and Joins

This document defines the **exercise** assignments for the ["Databases Basics - MSSQL" course @ Software University](https://softuni.org).

You can check your solutions in the [Judge system](#).

## Part I – Queries for SoftUni Database

### 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**

Sort them by **FirstName** in **ascending** order, then by **LastName**. Select the **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

Sort them by EmployeeID in ascending order. Select only employees from the "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 a 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"** department. **Sort them 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. Employees Summary

Create a query that selects:

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

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

## Part II – Queries for Geography Database

## 12. Highest Peaks in Bulgaria

Create a query that selects:

- **CountryCode**

- MountainRange
- PeakName
- Elevation

Filter all the **peaks** in **Bulgaria**, which have **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 or Without 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**, which is used in **only one country**. Sort your results by **ContinentCode**.

### Example

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

## 16. Countries Without Any Mountains

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

### Example

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

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

## 18. 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