

Exercises: Subqueries and Joins

This document defines the **exercise** assignments for the "["Databases Basics - MSSQL" course @ Software University.](#)" 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 |