

Exercises: SQL Language

Problems for exercises and homework for the "Software Technologies Back End" course from the official "Applied Programmer" curriculum.

You can check your solutions here: <https://judge.softuni.bg/Contests/2798/SQL-Language-Exercises>

Import the Databases

Unzip the **02. Samples-Databases.zip** file, containing the databases. Start your **SQL Server Manager Studio**.

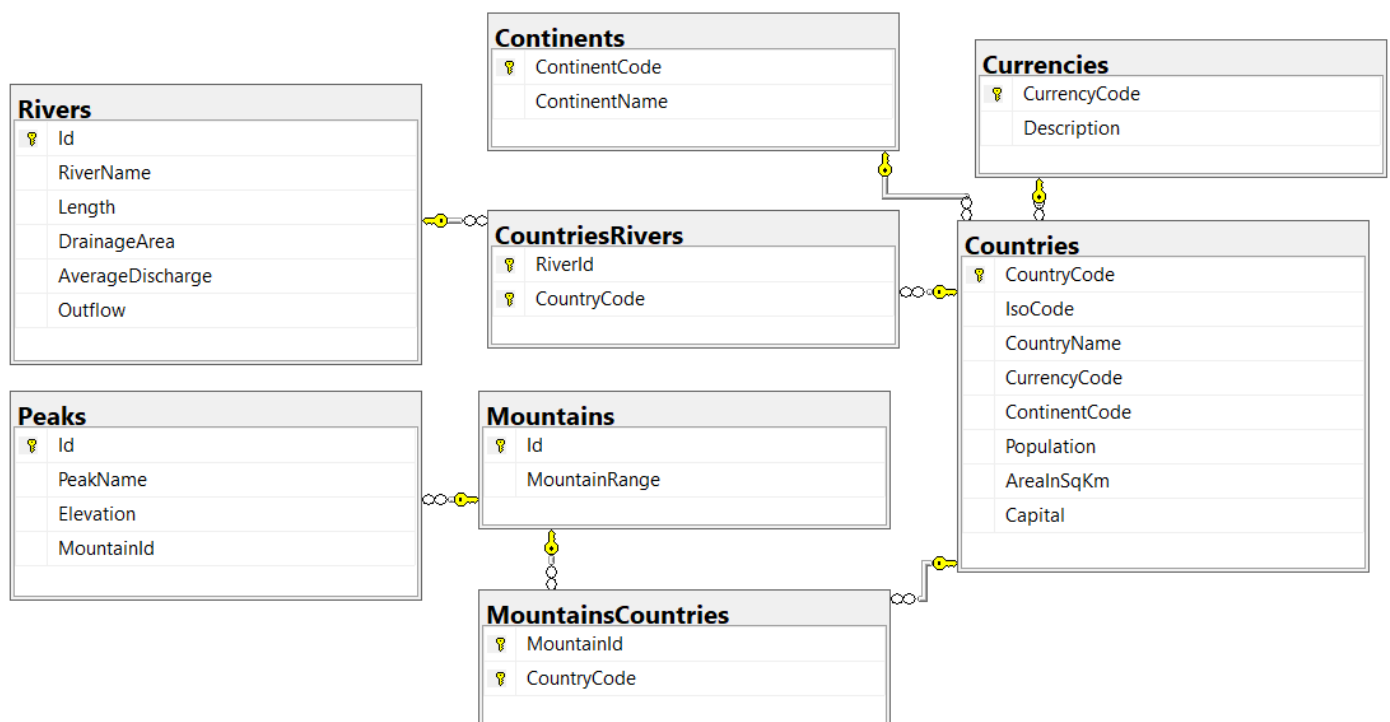
Import the **SoftUni**, **Geography** and **Diablo** databases. Follow the steps from "**02. Import-the-DB-Guide.docx**".

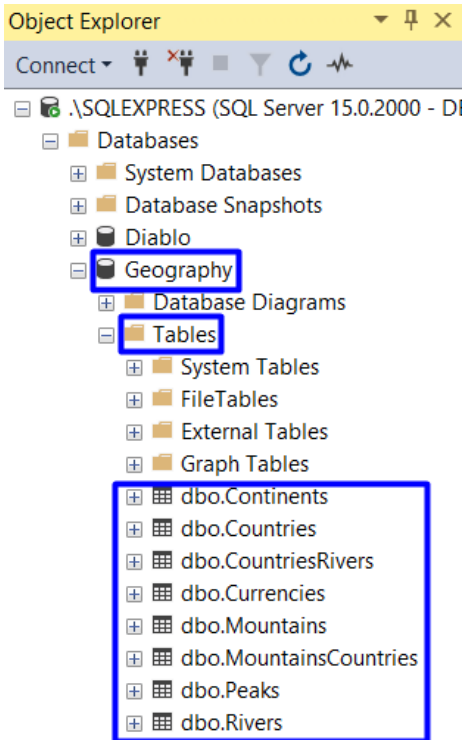
Examine the Databases

Get familiar with the **SoftUni**, **Geography** and **Diablo** databases **schemas** and **tables**. You will use them in the current and following exercises to write queries. It is a good idea that you **create E/R diagrams** of databases by yourself!

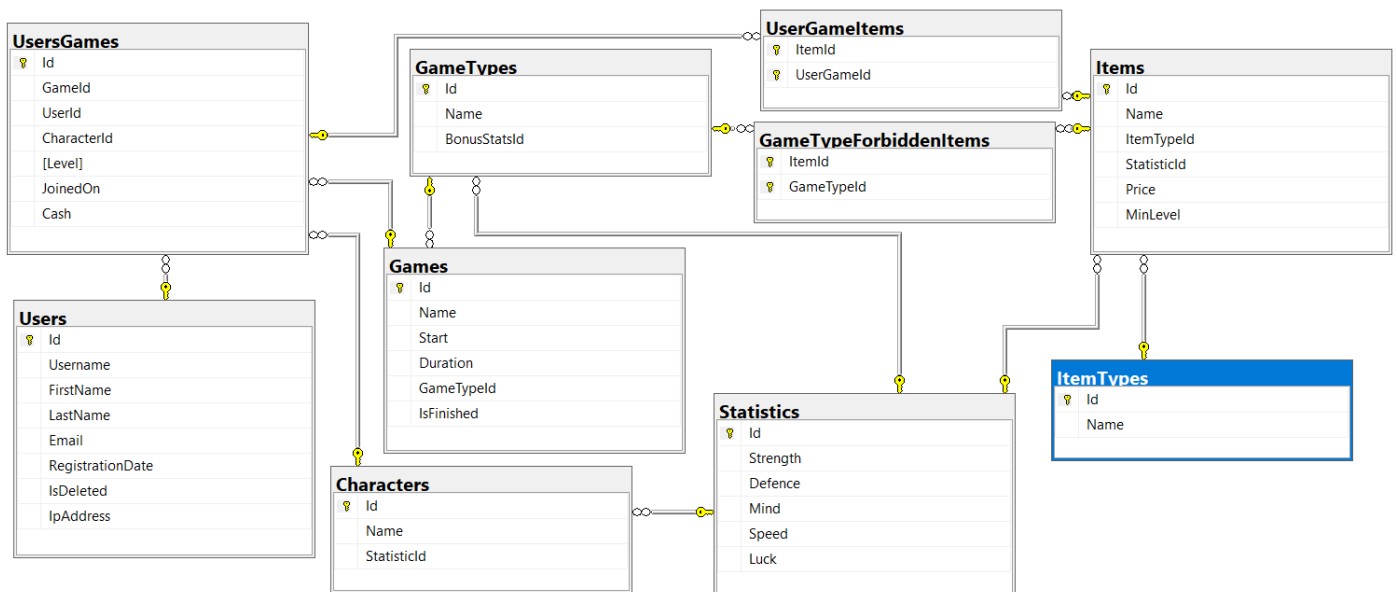
The **SoftUni** database is the **same** as this from the "**02.SQL-Language-Lab**" file.

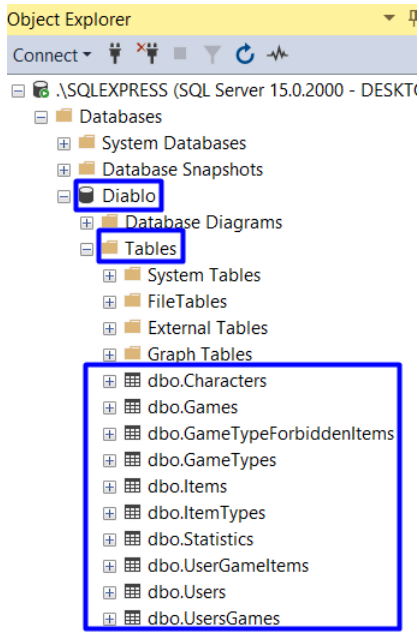
The **Geography** database schemas and tables are the following:



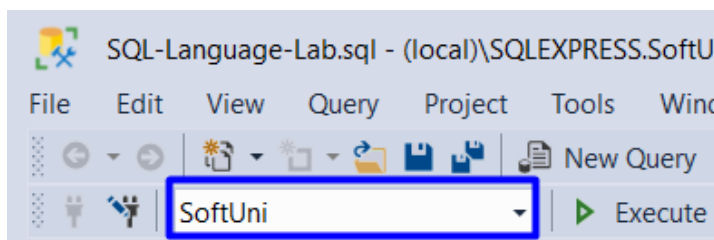


The **Diablo** database schemas and tables are the following:





Part I – Queries for SoftUni Database



1. Full Name of Each Employee

Write SQL query to find the **first**, **middle** and **last name** of each employee.

Example

FirstName	MiddleName	LastName
Guy	R	Gilbert
Kevin	F	Brown
Roberto	NULL	Tamburello
...

2. Email Address of Each Employee

Write a SQL query to find the **email address** of each employee. (By his **first and last name**). Consider that the email domain is **softuni.bg**. Emails should look like "John.Doe@softuni.bg". The **produced column** should be named "**Full Email Address**".

Example

Full Email Address
Guy.Gilbert@softuni.bg
Kevin.Brown@softuni.bg
Roberto.Tamburello@softuni.bg

...

3. All Information About Employees

Write a SQL query to find **all information** about the employees whose **job title** is "Sales Representative".

Example

ID	First Name	Last Name	Middle Name	Job Title	DeptID	MngrID	HireDate	Salary	AddressID
275	Michael	Blythe	G	Sales Representative	3	268	...	23100.00	60
276	Linda	Mitchell	C	Sales Representative	3	268	...	23100.00	170
277	Jillian	Carson	NULL	Sales Representative	3	268	...	23100.00	61
...

4. Names of All Employees

Write a SQL query to find the **full name** of all employees whose **salary** is **25000, 14000, 12500 or 23600**. Full Name is combination of **first, middle** and **last** name (separated with **single space**) and they should be **in one column** called "Full Name".

Example

Full Name
Guy R Gilbert
Thierry B D'Hers
JoLynn M Dobney

5. All Employees Except Marketing

Write a SQL query to find the **first** and **last names** of all employees whose **department ID** is **different from 4**.

Example

FirstName	LastName
Guy	Gilbert
Roberto	Tamburello
Rob	Walters

6. Sort Employees Table

Write a SQL query to sort all records in the Employees table by the following criteria:

- First by **salary** in **decreasing** order
- Then by **first name** **alphabetically**
- Then by **last name** **descending**
- Then by **middle name** **alphabetically**

Example

ID	First Name	Last Name	Middle Name	Job Title	DeptID	MngrID	HireDate	Salary	AddressID
109	Ken	Sanchez	J	Chief Executive Officer	16	NULL	...	125500.00	177
148	James	Hamilton	R	Vice President of Production	7	109	...	84100.00	158
273	Brian	Welcker	S	Vice President of Sales	3	109	...	72100.00	134
...

7. Distinct Job Titles

Write a SQL query to find **all distinct job titles**.

Example

JobTitle
Accountant
Accounts Manager
Accounts Payable Specialist
...

8. First 10 Started Projects

Write a SQL query to find **first 10 started projects**. Select **all information about them** and **sort** them **by start date**, then **by name**.

Example

Id	Name	Description	StartDate	EndDate
6	HL Road Frame	Research, design and development of HL Road ...	1998-05-02 00:00:00	2003-06-01 00:00:00
2	Cycling Cap	Research, design and development of C...	2001-06-01 00:00:00	2003-06-01 00:00:00
5	HL Mountain Frame	Research, design and development of HL M...	2001-06-01 00:00:00	2003-06-01 00:00:00
...

9. Employees with Project

Write 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
...

10. Employee 24

Write 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
...

11. Employee Manager

Write 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
...

12. Employee Summary

Write a query that selects:

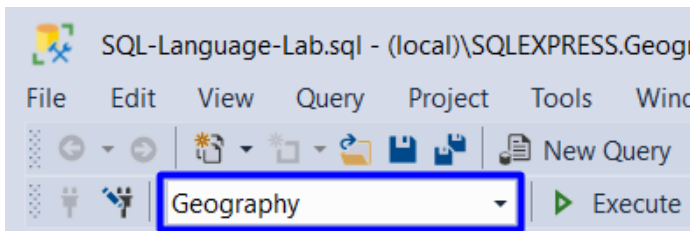
- EmployeeID
- EmployeeName
- ManagerName
- DepartmentName

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
...

Part II – Queries for Geography Database



13. All Mountain Peaks

Display all **mountain peaks** in alphabetical order.

Example

PeakName
Aconcagua
Banski Suhodol
Batashki Snezhnik
...

14. Biggest Countries by Population

Find the 30 biggest countries by population **from Europe**. Display the country name and population. Sort the results by population (from biggest to smallest), then by country alphabetically.

Example

CountryName	Population
Russia	140702000
Germany	81802257
France	64768389
...	...

15. *Countries and Currency (Euro / Not Euro)

Find all countries along with information about their currency. Display the country name, country code and information about its currency: either **"Euro"** or **"Not Euro"**. Sort the results by country name alphabetically.

*Hint: Use **CASE ... WHEN**.

Example

CountryName	CountryCode	Currency
-------------	-------------	----------

Afghanistan	AF	Not Euro
Åland	AX	Euro
Albania	AL	Not Euro
...

16. Highest Peaks in Bulgaria

Write a query that selects:

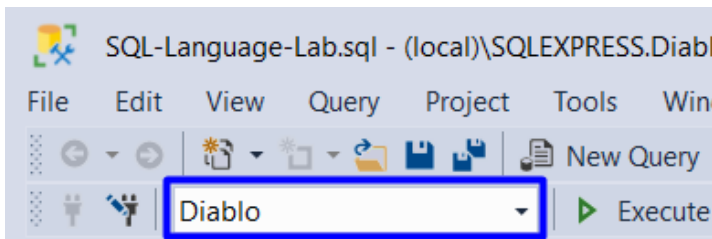
- **CountryCode**
- **MountainRange**
- **PeakName**
- **Elevation**

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
...

Part III – Queries for Diablo Database



17. All Diablo Characters

Display all **characters** in alphabetical order.

Example

Name
Amazon
Assassin
Barbarian
...