Lab: 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/2799/SQL-Language-Lab

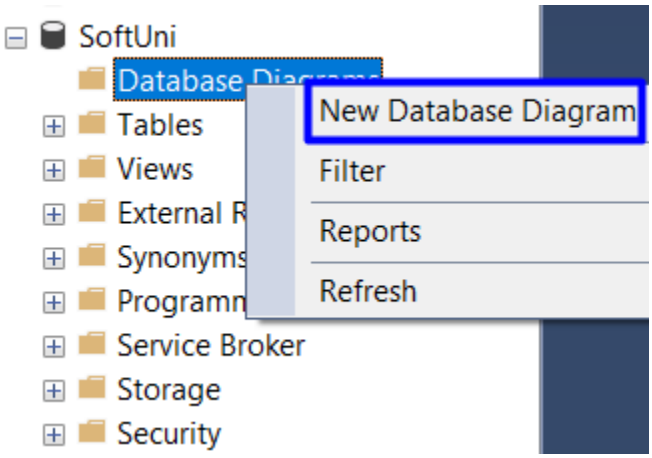
1. Import the Database

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

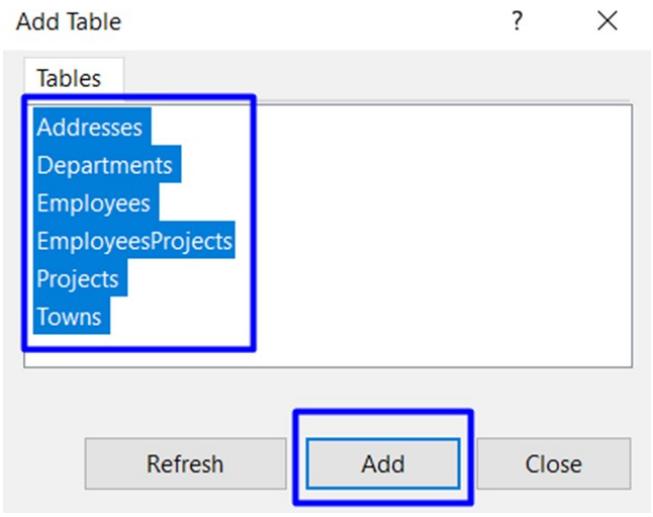
Import the "**SoftUni**" **database**. Follow the steps from "**02. Import-the-DB-Guide.docx**".

2. Create E/R Diagram

In order to create an **E/R diagram** of the **`SoftUni`** database, go to **`Object Explorer -> Databases -> SoftUni`** and **right-click** on **`Database Diagrams`**. Choose **`[New Database Diagram]`**.



Then, **select all tables** and press **`[Add]`**.



When tables are **loaded**, press **`[Close]`** and your diagram is already created. You can always **re-arrange** table blocks. The diagram should be something like this:

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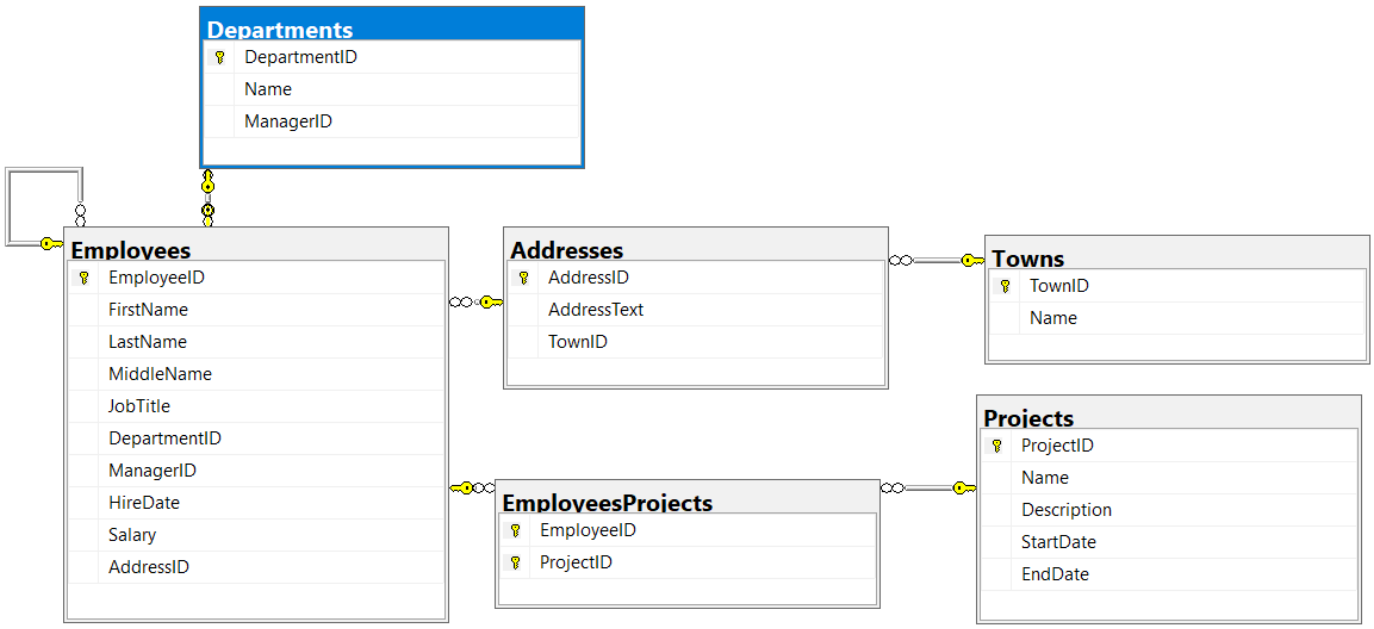
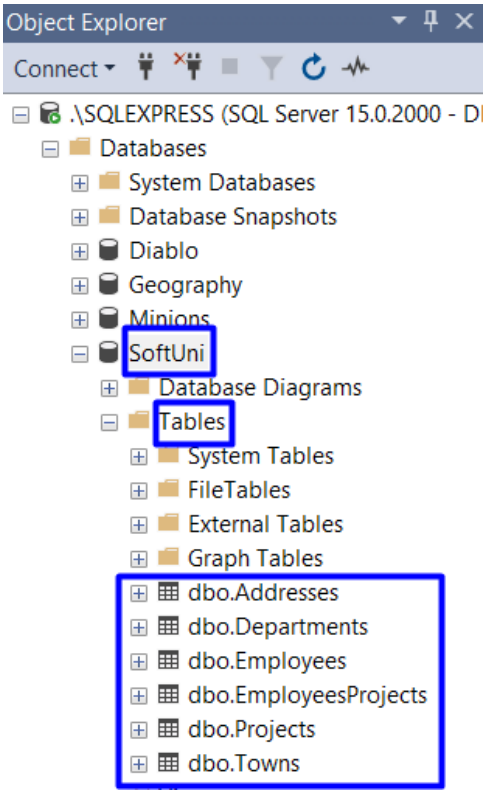


3. Explore the Database

Get familiar with the **SoftUni** database **schema** from the **E/R diagram** we already created and the **tables**. You will use them in the current and following exercises to write **queries**. The tables are the following:



4. Use the Database

First, select the "**SoftUni**" as **active database** in SQL Server Management Studio:

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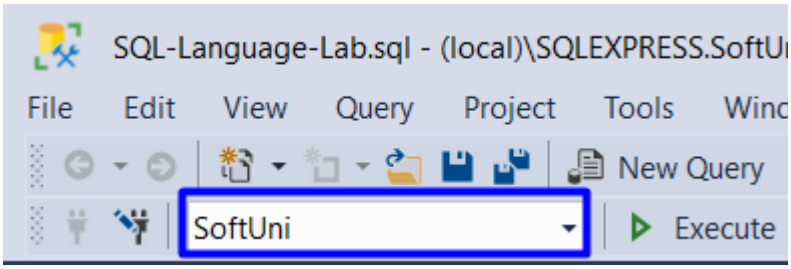
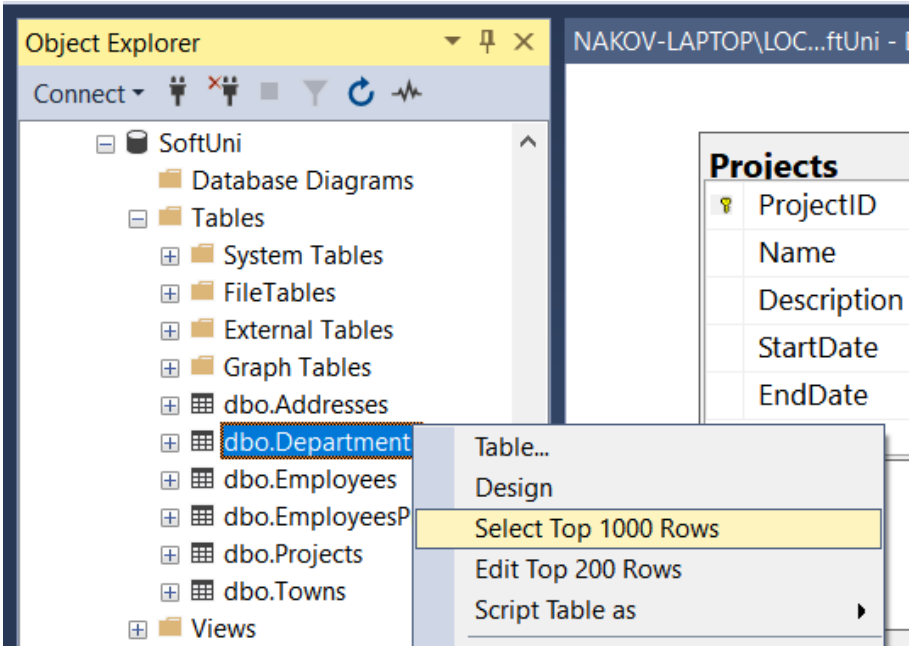
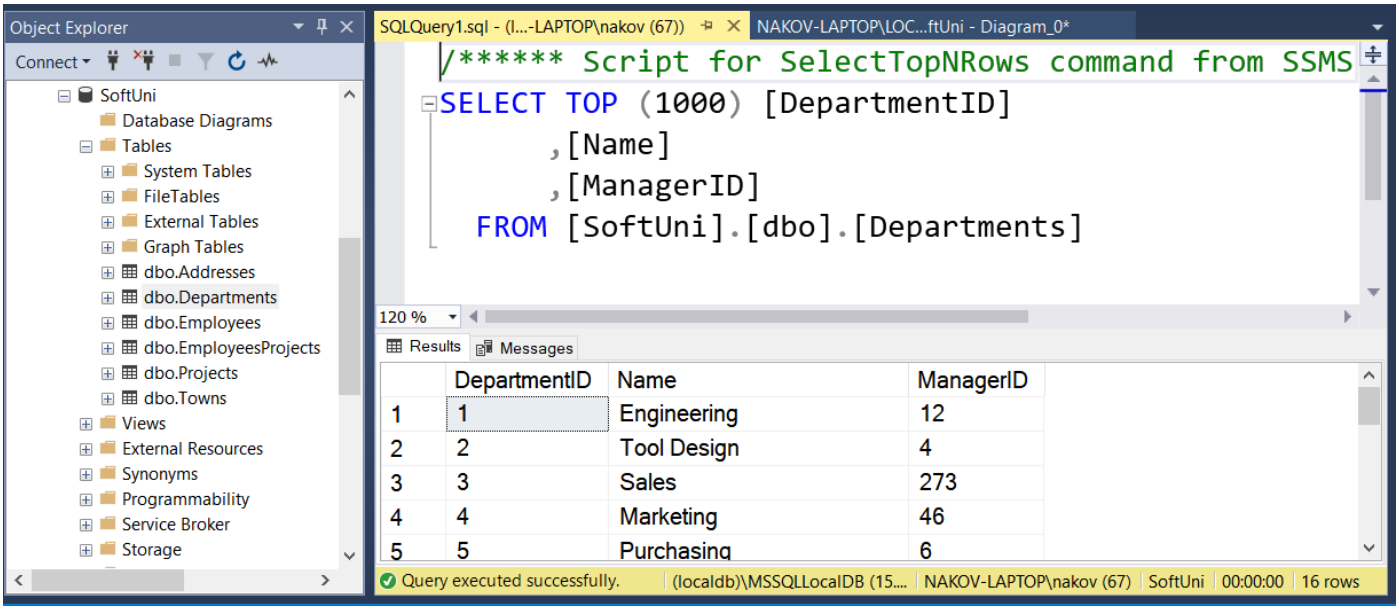


View the rows in the tables "**Departments**":



You will see the following output:



5. Display All Information About the Departments

Write a SQL query to find **all available information about the Departments**.

Example

DepartmentID	Name	ManagerID

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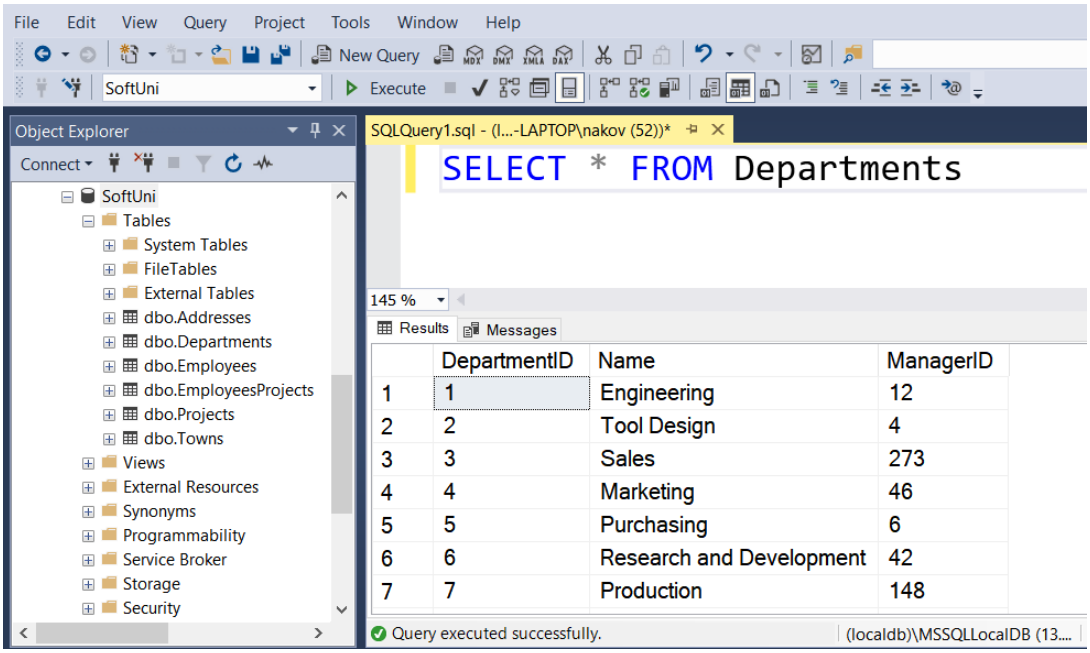
1	Engineering	12
2	Tool Design	4
3	Sales	273
...	...	...

Hints

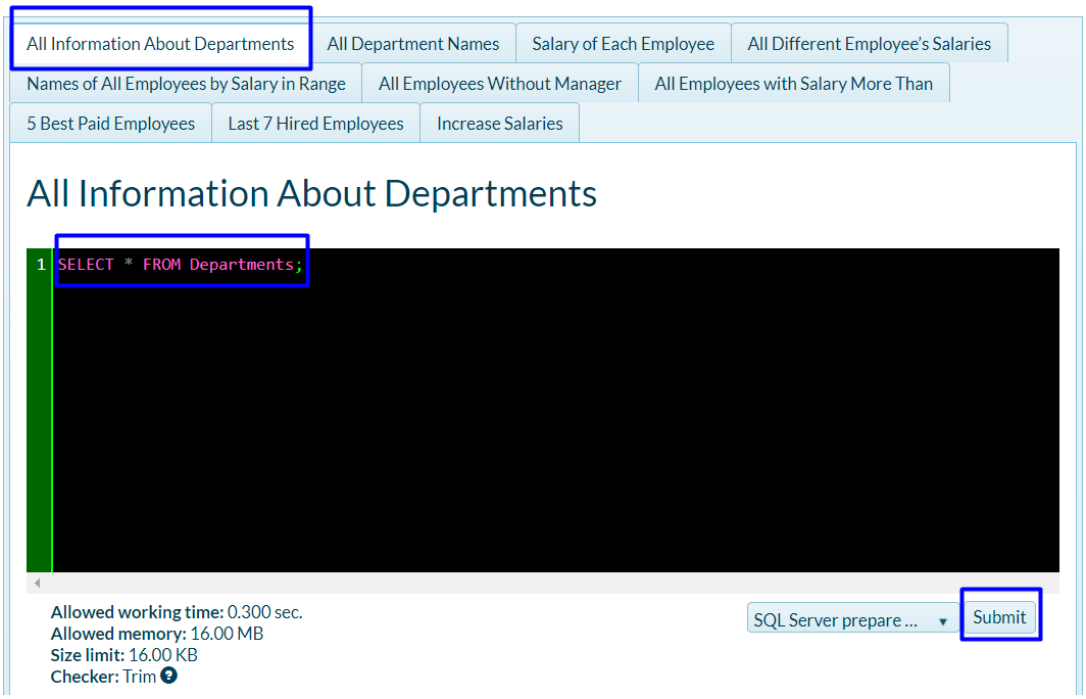


Submit Your Solution in Judge

SQL Language - Lab

Results

Submit a solution



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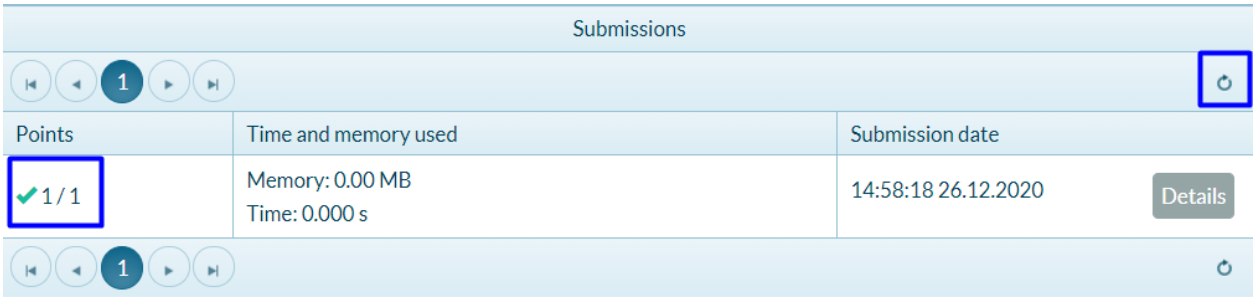


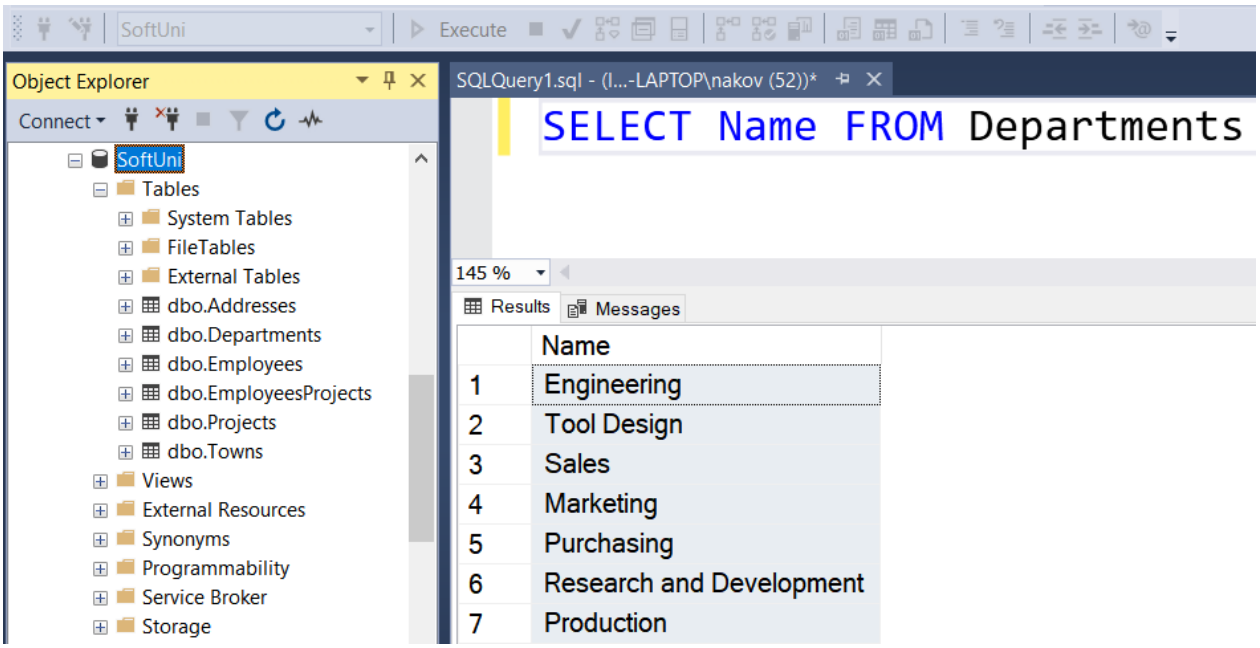
6. Display All Department Names

Write SQL query to find **all Department names**.

Example

Name
Engineering
Tool Design
Sales
...

Hints



7. Salary of Each Employee

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

Example

FirstName	LastName	Salary
Guy	Gilbert	12500.00
Kevin	Brown	13500.00
Roberto	Tamburello	43300.00
...	...	...

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8. All Different Employee's Salaries

Write a SQL query to find **all different employee's salaries**. Show only the salaries.

Example

Salary
9000.00
9300.00
9500.00
…

9. Names of All Employees by Salary in Range

Write a SQL query to find the **first name**, **last name** and **job title** of all employees whose **salary is in the range [20000, 30000].**

Example

FirstName	LastName	JobTitle
Rob	Walters	Senior Tool Designer
Thierry	D'Hers	Tool Designer
JoLynn	Dobney	Production Supervisor
…	…	…

10. All Employees Without Manager

Write a SQL query to find **first and last names** about those employees that **does not have a manager**.

Example

FirstName	LastName
Ken	Sanchez
Svetlin	Nakov
…	…

11. All Employees with Salary More Than 50000

Write a SQL query to find **first name**, **last name** and **salary** of those employees who has salary more than 50000. Order them in decreasing order by salary.

Example

FirstName	LastName	Salary
Ken	Sanchez	125500.00
James	Hamilton	84100.00
…	…	…

12. 5 Best Paid Employees.

Write SQL query to find **first and last names** about **5 best paid Employees** ordered **descending by their salary.**

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Example

FirstName	LastName
Ken	Sanchez
James	Hamilton
…	…

13. Last 7 Hired Employees

Write a SQL query to find **last 7 hired employees**. Select **their first, last name and their hire date**.

Example

FirstName	LastName	HireDate
Rachel	Valdez	2005-07-01 00:00:00
Lynn	Tsoflias	2005-07-01 00:00:00
Syed	Abbas	2005-04-15 00:00:00
…	…	…

14. Increase Salaries

Write a SQL query to increase salaries of all employees that are in the **Engineering**, **Tool Design**, **Marketing** or **Information Services** department by **12%**. Then **select Salaries column** from the **Employees** table.

Example

Salary
12500.00
15120.00
48496.00
33376.00
…

15. Employee Address

Write 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
…	…	…	…

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16. 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
…	…	…	…

17. Sales Employee

Write 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
…	…	…	…

18. Employee Departments

Write 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
…	…	…	…

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19. Employees Without Project

Write 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
…	…

20. Employees Hired After

Write 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
…	…	…	…

21. Backup the DB as SQL Script

In order to **generate** a **SQL script** of your DB, first **close** all windows in SSMS. Then, go to **`Object Explorer -> Databases`** and right-click on the **`SoftUni`** database. From the menu choose **`Tasks -> Generate Scripts…`** as shown below:

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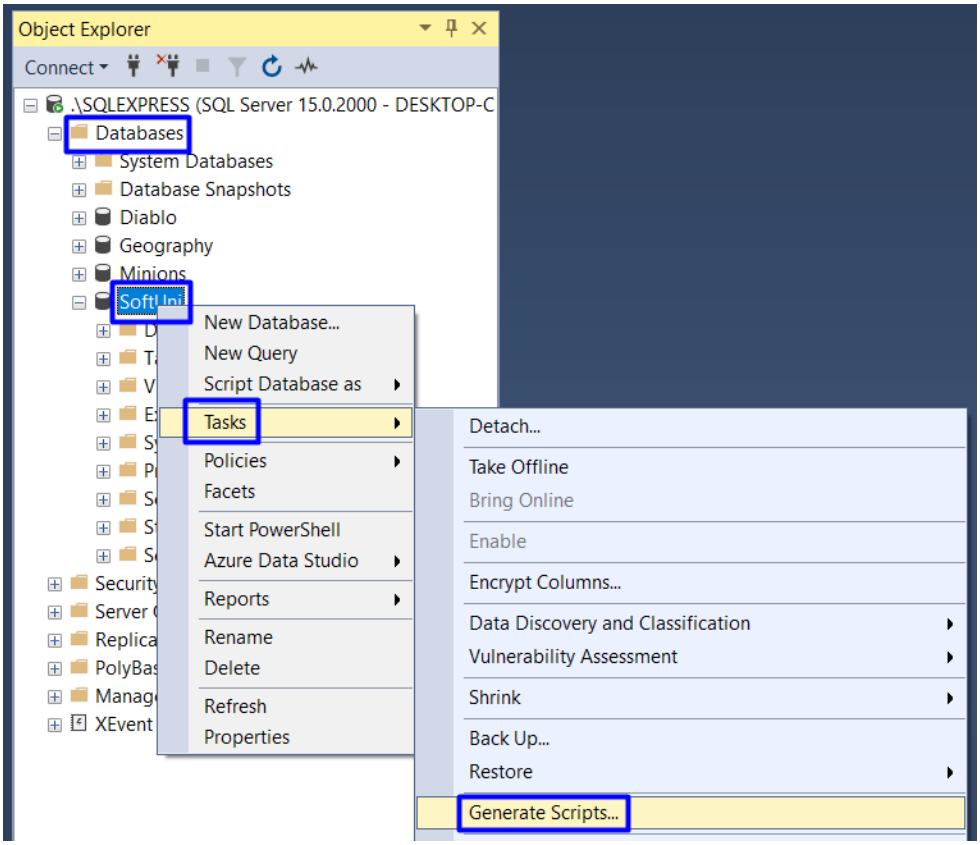
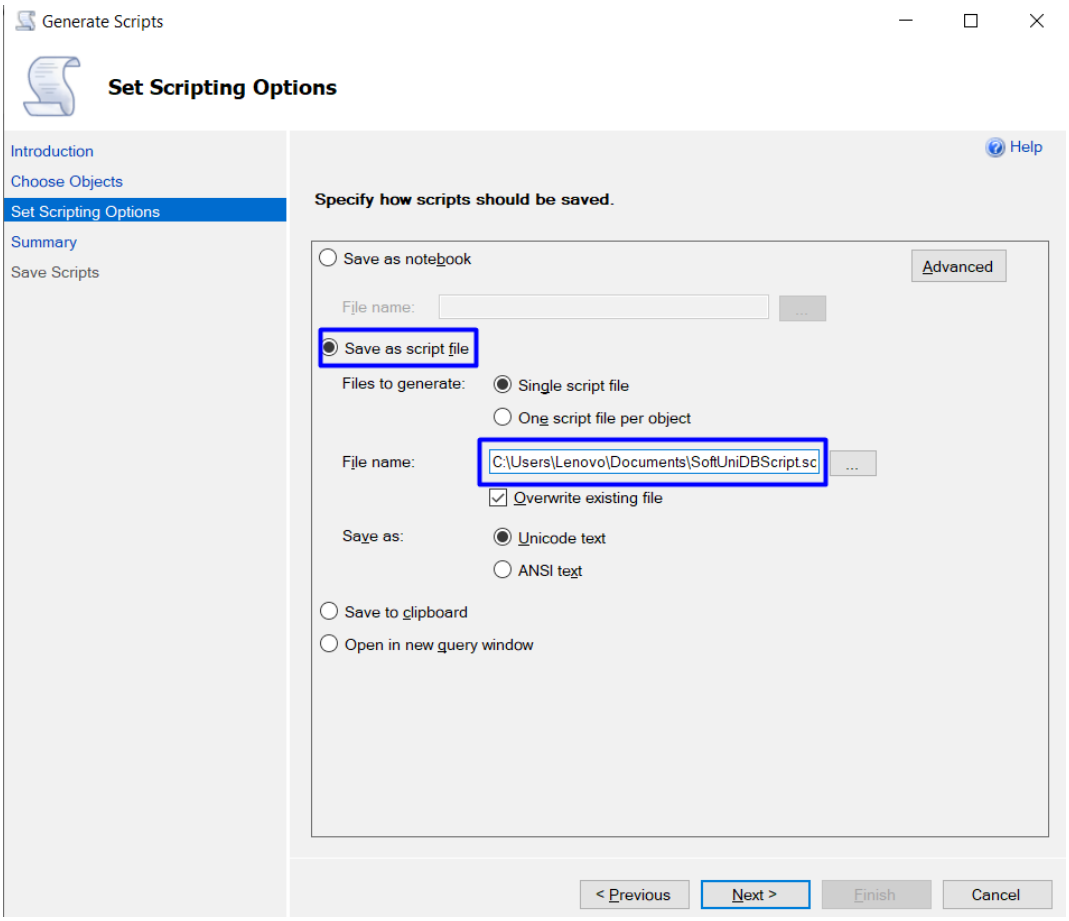


Press **[Next] twice** until the **Set Scripting Options** menu is displayed. Then select **[Save as script file]** and change the **File Name**.



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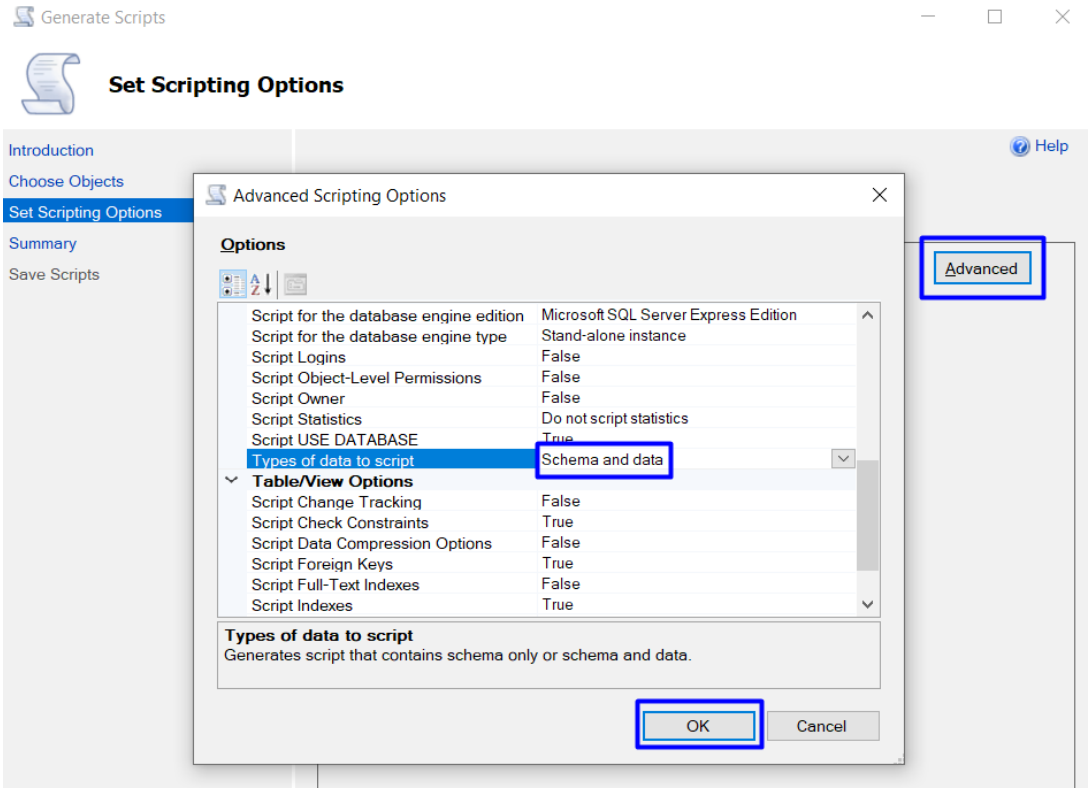
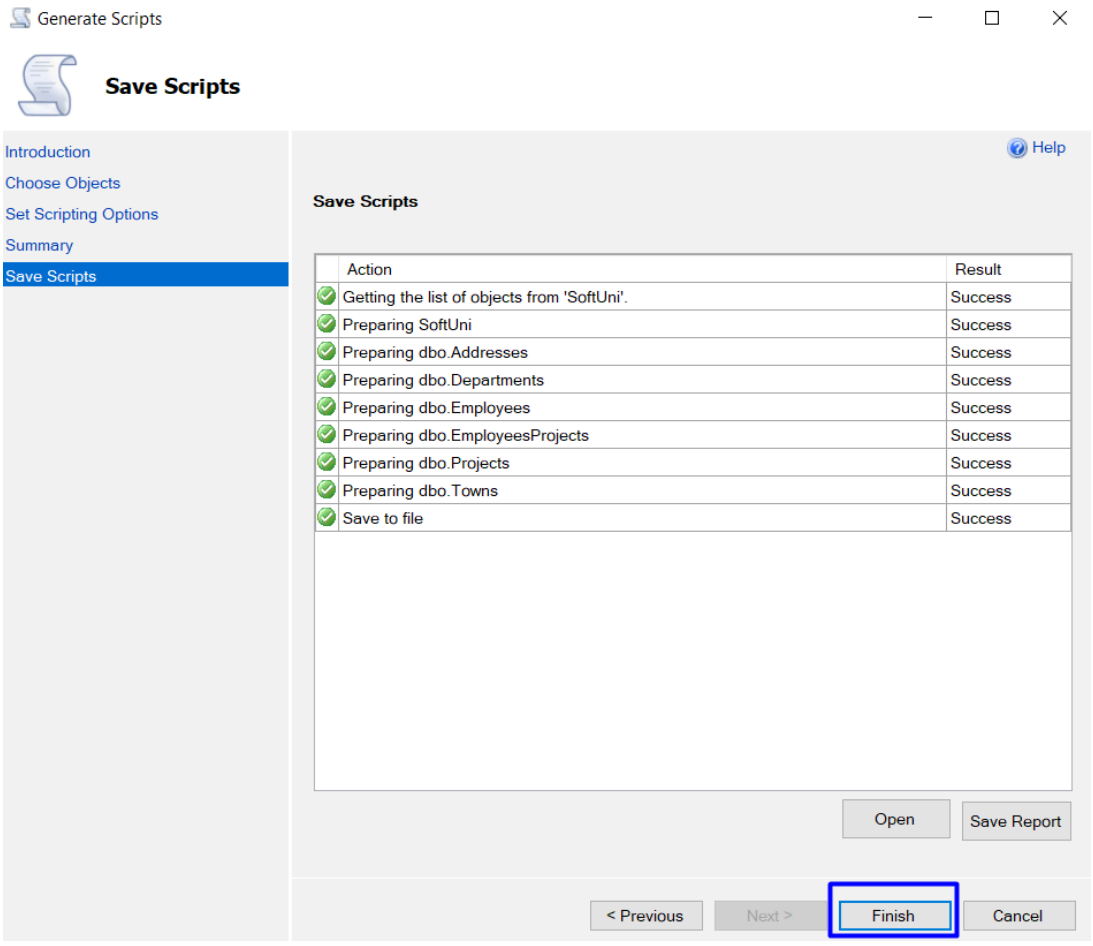
Then, press **[Advanced]** and scroll down to **General -> Types of data to script** and choose the option **[Schema and data]** from the dropdown menu. After that, press **[OK]**.



Then, press **[Next]** **twice** and when the scripts are ready, press **[Finish]**.



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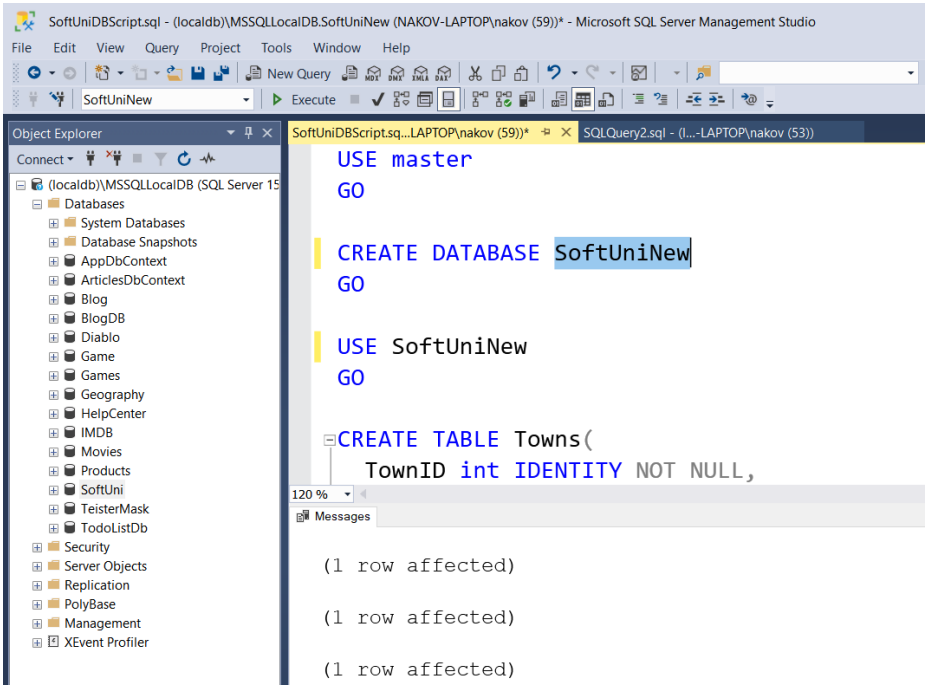
Check if the script file (**.sql**) appeared on the specified place in your **file system**. It should look like this:

22. Restore DB from Existing SQL Script

Try **restoring** your **SoftUni DB** by following the same steps as when **importing a database** from "**02. Work-with-DB-Guide.docx**".

- You should **delete** the SoftUni DB from SSMS first.
- Alternatively, edit the SQL script to restore the DB as different database name (e.g. "**SoftUniNew**").



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