

SQL Intro - Homework

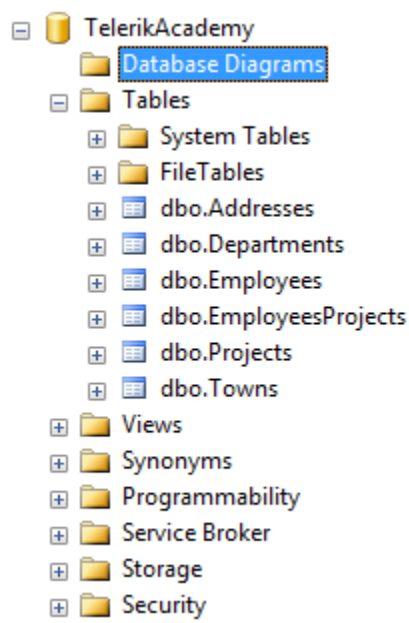
1. **What is SQL? What is DML? What is DDL? Recite the most important SQL commands.**

- SQL - Structured Query Language used for store information in relational tables .
- DML - Data manipulation language used for manipulating data stored in tables. It used CRUD operations: INSERT, SELECT, UPDATE and DELETE
- DDL - Data Definition Language used for creating and editing the schema of the database. Most common commands are: CREATE DATABASE, CREATE TABLE, ALTER TABLE, DROP TABLE and etc.

2. **What is Transact-SQL (T-SQL)?**

Transact-SQL (T-SQL) is Microsoft's and Sybase's proprietary extension to SQL. SQL, the acronym for Structured Query Language, is a standardized computer language that was originally developed by IBM for querying, altering and defining relational databases, using declarative statements. T-SQL expands on the SQL standard to include procedural programming, local variables, various support functions for string processing, date processing, mathematics, etc. and changes to the DELETE and UPDATE statements. These additional features make Transact-SQL Turing complete

3. **Start SQL Management Studio and connect to the database TelerikAcademy. Examine the major tables in the "TelerikAcademy" database.**



4. Write a SQL query to find all information about all departments (use "TelerikAcademy" database).

```
USE TelerikAcademy

SELECT * FROM Departments;
GO
```

5. Write a SQL query to find all department names.

```
USE TelerikAcademy

SELECT Name FROM Departments;
GO
```

6. Write a SQL query to find the salary of each employee.

```
USE TelerikAcademy

SELECT FirstName + ' ' + LastName AS Name, Salary
FROM Employees;
GO
```

7. Write a SQL query to find the full name of each employee.

```
USE TelerikAcademy

SELECT FirstName + ' ' + LastName AS [Full name]
FROM Employees;
GO
```

8. Write a SQL query to find the email addresses of each employee (by his first and last name). Consider that the mail domain is telerik.com. Emails should look like "John.Doe@telerik.com". The produced column should be named "Full Email Addresses".

```
USE TelerikAcademy

SELECT FirstName + '.' + LastName + '@telerik.com' AS [Full Email Addresses]
FROM Employees;
GO
```

9. Write a SQL query to find all different employee salaries.

```
USE TelerikAcademy;

SELECT DISTINCT Salary
FROM Employees
ORDER BY Salary;
GO
```

10. Write a SQL query to find all information about the employees whose job title is “Sales Representative”.

```
USE TelerikAcademy;

SELECT *
FROM Employees
WHERE JobTitle = 'Sales Representative';
GO
```

11. Write a SQL query to find the names of all employees whose first name starts with "SA".

```
USE TelerikAcademy;

SELECT FirstName + ' ' + LastName AS [Full Name]
FROM Employees
WHERE FirstName LIKE 'sa%';
GO
```

12. Write a SQL query to find the names of all employees whose last name contains "ei".

```
USE TelerikAcademy;

SELECT FirstName + ' ' + LastName AS [Full Name]
FROM Employees
WHERE LastName LIKE '%ei%';
GO
```

13. Write a SQL query to find the salary of all employees whose salary is in the range [20000...30000].

```
USE TelerikAcademy;

SELECT FirstName + ' ' + LastName AS [Full Name], Salary
FROM Employees
WHERE Salary BETWEEN 20000 AND 30000
ORDER BY Salary;
GO
```

14. Write a SQL query to find the names of all employees whose salary is 25000, 14000, 12500 or 23600.

```
USE TelerikAcademy;

SELECT FirstName + ' ' + LastName AS [Full Name], Salary
FROM Employees
WHERE Salary IN (25000, 14000, 12500, 23600)
ORDER BY Salary;
GO
```

15. Write a SQL query to find all employees that do not have manager.

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Employee Name]
FROM Employees AS e
WHERE e.ManagerID IS NULL;
GO
```

16. Write a SQL query to find all employees that have salary more than 50000. Order them in decreasing order by salary.

```
USE TelerikAcademy;

SELECT FirstName + ' ' + LastName AS [Full Name], Salary
FROM Employees
WHERE Salary > 50000
ORDER BY Salary DESC;
GO
```

17. Write a SQL query to find the top 5 best paid employees.

```
USE TelerikAcademy;

SELECT TOP 5 FirstName + ' ' + LastName AS [Full Name], Salary
FROM Employees
ORDER BY Salary DESC;
GO
```

18. Write a SQL query to find all employees along with their address. Use inner join with ON clause.

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Full Name], t.Name + ', ' + a.AddressText
FROM Employees AS e
INNER JOIN Addresses AS a
ON e.AddressID = a.AddressID
INNER JOIN Towns AS t
ON t.TownID = a.TownID;
GO
```

19. Write a SQL query to find all employees and their address. Use equijoins (conditions in the WHERE clause).

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Full Name], t.Name + ', ' + a.AddressText
FROM Employees AS e, Addresses AS a, Towns AS t
WHERE e.AddressID = a.AddressID AND t.TownID = a.TownID;
GO
```

20. Write a SQL query to find all employees along with their manager.

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Employee],
ISNULL(m.FirstName + ' ' + m.LastName, 'No Manager') AS [Manager]
FROM Employees AS e
LEFT JOIN Employees AS m
ON e.ManagerID = m.EmployeeID;
GO
```

21. Write a SQL query to find all employees, along with their manager and their address. Join the 3 tables: Employees e, Employees m and Addresses a.

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Employee], a.AddressText,
ISNULL(m.FirstName + ' ' + m.LastName, 'No Manager') AS [Manager]
FROM Employees AS e
INNER JOIN Addresses AS a
ON e.AddressID = a.AddressID
LEFT JOIN Employees AS m
ON e.ManagerID = m.EmployeeID;
GO
```

22. Write a SQL query to find all departments and all town names as a single list. Use UNION.

```
USE TelerikAcademy;

(SELECT 'Town: ' + Name AS Name
FROM Towns)
UNION
(SELECT 'Department: ' + Name AS Name
FROM Departments);
GO
```

23. Write a SQL query to find all the employees and the manager for each of them along with the employees that do not have manager. Use right outer join. Rewrite the query to use left outer join.

- RIGTH OUTER JOIN

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Employee],
ISNULL(m.FirstName + ' ' + m.LastName, 'No Manager') AS [Manager]
FROM Employees AS m
RIGHT OUTER JOIN Employees AS e
ON e.ManagerID = m.EmployeeID;
GO
```

- LEFT OUTER JOIN

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Employee],
ISNULL(m.FirstName + ' ' + m.LastName, 'No Manager') AS [Manager]
FROM Employees AS e
LEFT OUTER JOIN Employees AS m
ON e.ManagerID = m.EmployeeID;
GO
```

24. Write a SQL query to find the names of all employees from the departments "Sales" and "Finance" whose hire year is between 1995 and 2005.

```
USE TelerikAcademy;

SELECT e.FirstName + ' ' + e.LastName AS [Full Name], d.Name, e.HireDate
FROM Employees AS e
INNER JOIN Departments AS d
ON e.DepartmentID = d.DepartmentID
WHERE (d.Name = 'Sales' OR d.Name = 'Finance')
AND year(e.HireDate) BETWEEN 1995 AND 2005;
GO
```