SQL Intro

1. What is SQL? What is DML? What is DDL? Recite the most important SQL commands.
   SQL is declarative language for query and manipulation of relational data - Structured Query Language.

DML is Data Manipulation Language – used to manipulate the data.

DDL is Data Definition Language – used to design the tables and their relations etc.

SELECT, INSERT, UPDATE and DELETE are the most important DML commands.
CREATE, DROP and ALTER are the most important DDL commands.

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

T-SQL (Transact SQL) is an extension to the standard SQL language. It is the standard language used in MS SQL Server. Supports if statements, loops, exceptions and other constructions used in the high-level procedural programming languages. T-SQL is used for writing stored procedures, functions, triggers, etc.

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

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

```
SELECT * FROM Departments
```

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

```
SELECT Name FROM Departments
```

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

```
SELECT Salary FROM Employees
```

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

```
SELECT FirstName + ' ' + LastName AS FullName FROM Employees
```

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"."

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

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

```
SELECT DISTINCT Salary FROM Employees
```

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

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

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

```
SELECT * FROM Employees
WHERE FirstName LIKE 'SA%'
```

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

```
SELECT * FROM Employees
WHERE LastName LIKE '%ei%'
```

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

```
SELECT Salary FROM Employees
WHERE Salary BETWEEN 20000 AND 30000
```

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

```sql
SELECT FirstName, LastName, Salary FROM Employees
WHERE Salary IN (25000, 14000, 12500, 23600)
```

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

```sql
SELECT FirstName, LastName FROM Employees
WHERE ManagerID IS NULL
```

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

```sql
SELECT FirstName, LastName, Salary FROM Employees
WHERE Salary > 50000
ORDER BY Salary DESC
```

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

```sql
SELECT TOP 5 FirstName, LastName, Salary FROM Employees
ORDER BY Salary DESC
```

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

```sql
SELECT e.FirstName, e.LastName, a.AddressText
FROM Employees e
       JOIN Addresses a
       ON e.AddressID = a.AddressID
```

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

```sql
SELECT e.FirstName, e.LastName, a.AddressText
FROM Employees e, Addresses a
WHERE e.AddressID = a.AddressID
```

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

```
SELECT e.FirstName + ' ' + e.LastName + ' is managed by ' + m.FirstName + ' ' +
m.LastName
FROM Employees e, Employees m
WHERE e.ManagerID = m.EmployeeID
```

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.

```
SELECT e.FirstName, e.LastName, m.FirstName + ' ' + m.LastName as Manager, a.AddressText
FROM Employees e
       JOIN Employees m
       ON e.ManagerID = m.EmployeeID
       JOIN Addresses a
       ON e.AddressID = a.AddressID
```

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

```
SELECT Name
FROM Departments
UNION
SELECT AddressText
FROM Addresses
```

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.

```
SELECT e.FirstName, e.LastName, m.FirstName + ' ' + m.LastName as Manager
FROM Employees m
       RIGHT JOIN Employees e
       ON m.EmployeeID = e.ManagerID

SELECT e.FirstName, e.LastName, m.FirstName + ' ' + m.LastName as Manager
FROM Employees e
       LEFT JOIN Employees m
       ON e.ManagerID = m.EmployeeID
```

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.

```
SELECT e.FirstName, e.LastName, e.HireDate,
       d.Name AS [Department Name]
FROM Employees e
       JOIN Departments d
       ON e.DepartmentID = d.DepartmentID
WHERE (e.HireDate BETWEEN '1995-01-01 00:00:00' AND '2005-01-01 00:00:00')
```

```
AND (d.Name IN ('Sales', 'Finance'))
```