

Intro to SQL

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

What is SQL?

- Structured Query Language
- Declarative language for query and manipulation of relational data

What is DML?

- Data Manipulation Language

What is DDL?

- Data Definition Language

Recite the most important SQL commands.

- SELECT, INSERT, UPDATE, DELETE

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

- T-SQL is an extension to the standard SQL language
- T-SQL is the standard language used in MS SQL Server
- Supports if statements, loops, exceptions
- T-SQL is used for writing stored procedures, functions, triggers, etc.

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 FirstName 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.

```
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.

```
SELECT * 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.

```
SELECT * FROM Employees
WHERE Salary > 50000
ORDER BY Salary DESC
```

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

```
SELECT TOP 5 * 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.

```
SELECT e.FirstName, e.LastName, e.AddressID, d.AddressID
FROM Employees e
INNER JOIN Addresses d
    ON e.AddressID = d.AddressID
```

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

```
SELECT e.FirstName, e.LastName, e.AddressID, d.AddressID
FROM Employees e, Addresses d
WHERE e.AddressID = d.AddressID
```

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

```
SELECT e.FirstName + ' ' + e.LastName AS Employee, d.FirstName + ' ' + d.LastName AS
Manager
FROM Employees e
JOIN Employees d
    ON e.EmployeeID = d.ManagerID
```

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 AS Name, e.EmployeeID, d.ManagerID, a.AddressID
FROM Employees e
JOIN Employees d
    ON e.EmployeeID = d.ManagerID
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 d.Name AS Name
FROM Departments d
```

```
UNION
SELECT t.Name AS Name
FROM Towns t
```

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.

- using RIGHT OUTER JOIN

```
SELECT e.FirstName + ' ' + e.LastName AS Employee, d.FirstName + ' ' + d.LastName AS
Manager
FROM Employees e
RIGHT OUTER JOIN Employees d
    ON e.EmployeeID = d.ManagerID
```

- using LEFT OUTER JOIN

```
SELECT e.FirstName + ' ' + e.LastName AS Employee, d.FirstName + ' ' + d.LastName AS
Manager
FROM Employees d
LEFT OUTER JOIN Employees e
    ON e.EmployeeID = d.ManagerID
```

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 AS 'Employee Name', e.HireDate, d.Name AS
Department, d.DepartmentID
FROM Employees e
JOIN Departments d
    ON (d.DepartmentID = e.DepartmentID
        AND d.Name IN ('Sales', 'Finance')
        AND e.HireDate BETWEEN '1995-01-01' AND '2005-01-01')
```