# Exercises: Advanced SQL

This document defines the class assignments from the ["Databases" Course @ Software University](https://softuni.bg/trainings/1168/Databases-Jun-2015).

## Easy Nested SELECT Statement

Write a SQL query to find the full name of the employee, his manager full name and the JobTitle from Sales department. Use nested select statement.

### Task 1. Select all columns from Employees table.

### Task 2. Join Managers.

### Task 3. Write where statement with nested select.

You should write nested select statement that takes department id of the Sales department.

### Results:

|  |  |  |
| --- | --- | --- |
| **Employee** | **Job Title** | **Manager** |
| Stephen Jiang | North American Sales Manager | Brian Welcker |
| Brian Welcker | Vice President of Sales | Ken Sanchez |
| Michael Blythe | Sales Representative | Stephen Jiang |
| Linda Mitchell | Sales Representative | Stephen Jiang |

## Nested SELECT Statement

Write a SQL query to find the FullName, Salary and Department Name for the top 5 employees ordered by salary in descending order, under the average salary for their department.

### Task 1. Select all columns from Employees.

### Task 2. Join Departments table.

### Task 3. Write where statement with nested select.

Nested select should select the average salary for the employee’s department (using alias).

### Task 4. Order by Salary.

### Task 5. Select top 5 rows.

### Task 6. Select only FirstName, LastName, Salary and DepartmentName columns.

### Results:

|  |  |  |  |
| --- | --- | --- | --- |
| **FirstName** | **LastName** | **Salary** | **Name** |
| Laura | Norman | 60100.00 | Executive |
| Michael | Raheem | 42500.00 | Research and Development |
| Diane | Margheim | 40900.00 | Research and Development |

## Aggregating Data

Display all project with the sum of their employee’s salaries.

### Task 1. Select all columns from Projects.

### Task 2. Join Employees table.

### Task 3. Group by the name of the project.

### Task 4. Select only project name, and the sum of the salaries.

### Task 5. Oder by group name.

### Results:

|  |  |
| --- | --- |
| **Name** | **Employee Salaries** |
| All-Purpose Bike Stand | 157300.00 |
| Bike Wash | 177700.00 |
| Cable Lock | 165200.00 |

## Data Definition Language

Create two tables. **Companies** and **Conferences**. **Companies** have **Name**, **EmployeesCount**, **FoundedIn**. Conferences have **Name**, **Price** (optional), **FreeSeats**, **Venue** and **Organizer** (Company).

Use Data Definition Language (DDL) to create the tables and constraints.

### Task 1. Create table with columns. Set the right data types.

### Task 2. Add primary key constraint. Add Identity.

### Task 3. Add the foreign key constrain between the Companies and Conferences tables.

### Task 4. Alter table Conferences and add TwitterAccount column.

## Transactions

### Task 1. Insert 10 companies in the transaction.

### Task 2. Insert 10 conferences in two transactions from different windows.

Try to lock the table conferences with two windows.

### Task 3. Try to delete some conference and to select all conferences at the same time in two different windows.