Exercises: CRUD

This document defines the **exercise** assignments for the ["Databases Basics - MSSQL" course @ Software University](https://softuni.bg/trainings/4182/ms-sql-september-2023).   
You can check your solutions in the [Judge system](https://judge.softuni.org/Contests/289/CRUD).

## Examine the Databases

Download and get familiar with the **SoftUni**, **Diablo** and **Geography** database schemas and tables. You will use them in the current and the following exercises to write queries.

# Part I – Queries for SoftUni Database

## Find All the Information About Departments

Create a SQL query that finds **all the available information about the Departments.**

### Example

|  |  |  |
| --- | --- | --- |
| **DepartmentID** | **Name** | **ManagerID** |
| 1 | Engineering | 12 |
| 2 | Tool Design | 4 |
| 3 | Sales | 273 |
| … | … | … |

## Find all Department Names

Create a SQL query that finds **all Department names**.

### Example

|  |
| --- |
| **Name** |
| Engineering |
| Tool Design |
| Sales |
| … |

## Find Salary of Each Employee

Create a SQL query that finds the **first name**, **last name a**nd **salary** for each employee.

### Example

|  |  |  |
| --- | --- | --- |
| **FirstName** | **LastName** | **Salary** |
| Guy | Gilbert | 12500.00 |
| Kevin | Brown | 13500.00 |
| Roberto | Tamburello | 43300.00 |
| … | … | … |

## Find Full Name of Each Employee

Create a SQL query that finds the **first**, **middle** and **last name** for each employee.

### Example

|  |  |  |
| --- | --- | --- |
| **FirstName** | **MiddleName** | **LastName** |
| Guy | R | Gilbert |
| Kevin | F | Brown |
| Roberto | NULL | Tamburello |
| … | … | … |

## Find Email Address of Each Employee

Create a SQL query that finds the **email address** of each employee by their **first and last name**. Consider that the email domain is **softuni.bg**. Emails should look like "**John.Doe@softuni.bg**". The **produced column** should be named **"Full Email Address"**.

### Example

|  |
| --- |
| **Full Email Address** |
| Guy.Gilbert@softuni.bg |
| Kevin.Brown@softuni.bg |
| Roberto.Tamburello@softuni.bg |
| … |

## Find All Different Employees' Salaries

Create a SQL query that finds **all different salaries of the employees**. Display the salaries only in one column, named "**Salary**".

### Example

|  |
| --- |
| **Salary** |
| 9000.00 |
| 9300.00 |
| 9500.00 |
| … |

## Find All Information About Employees

Create a SQL query that finds **all information** about the employees whose **job title** is "**Sales Representative**"**.**

### Example

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **First**  **Name** | **Last**  **Name** | **Middle**  **Name** | **Job Title** | **DeptID** | **Mngr**  **ID** | **HireDate** | **Salary** | **AddressID** |
| 275 | Michael | Blythe | G | Sales Representative | 3 | 268 | … | 23100.00 | 60 |
| 276 | Linda | Mitchell | C | Sales Representative | 3 | 268 | … | 23100.00 | 170 |
| 277 | Jillian | Carson | NULL | Sales Representative | 3 | 268 | … | 23100.00 | 61 |
| … | … | … | … | … | … | … | … | … | … |

## Find Names of All Employees by Salary in Range

Create a SQL query to find the **first name**, **last name** and **job title** for all employees whose salary is in a **range** **between** **20000** and **30000**.

### Example

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

## Find Names of All Employees

Create a SQL query that finds the **full name** of all employees whose **salary** is exactly **25000, 14000, 12500 or 23600**. The result should be displayed in a column, named "**Full Name**", which is a combination of the **first**, **middle** and **last** names, separated by a **single space**.

### Example

|  |
| --- |
| **Full Name** |
| Guy R Gilbert |
| Thierry B D'Hers |
| JoLynn M Dobney |

## Find All Employees Without a Manager

Create a SQL query that finds **the first and last names** of those employees who **do not have a manager**.

### Example

|  |  |
| --- | --- |
| **FirstName** | **LastName** |
| Ken | Sanchez |
| Svetlin | Nakov |
| … | … |

## Find All Employees with a Salary More Than 50000

Create a SQL query that finds **the first name**, **last name** and **salary** for employees with **a salary** higher than **50000**. Order the result in decreasing order by salary.

### Example

|  |  |  |
| --- | --- | --- |
| **FirstName** | **LastName** | **Salary** |
| Ken | Sanchez | 125500.00 |
| James | Hamilton | 84100.00 |
| … | … | … |

## Find 5 Best Paid Employees.

Create a SQL query that finds the **first and last names**of the **5 best-paid Employees,** ordered **descending by their salary.**

### Example

|  |  |
| --- | --- |
| **FirstName** | **LastName** |
| Ken | Sanchez |
| James | Hamilton |
| … | … |

## Find All Employees Except Marketing

Create a SQL query that finds the **first**and**last names** of all employees whose **department ID is not 4.**

### Example

|  |  |
| --- | --- |
| **FirstName** | **LastName** |
| Guy | Gilbert |
| Roberto | Tamburello |
| Rob | Walters |

## Sort Employees Table

Create a SQL query that sorts all the records in the **Employees** table by the following criteria:

* By **salary** in **decreasing** order
* Then by the **first name** **alphabetically**
* Then by the **last name descending**
* Then by **middle name alphabetically**

### Example

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **First**  **Name** | **Last**  **Name** | **Middle**  **Name** | **Job Title** | **DeptID** | **Mngr**  **ID** | **HireDate** | **Salary** | **AddressID** |
| 109 | Ken | Sanchez | J | Chief Executive Officer | 16 | NULL | … | 125500.00 | 177 |
| 148 | James | Hamilton | R | Vice President of Production | 7 | 109 | … | 84100.00 | 158 |
| 273 | Brian | Welcker | S | Vice President of Sales | 3 | 109 | … | 72100.00 | 134 |
| … | … | … | … | … | … | … | … | … | … |

## Create View Employees with Salaries

Create a SQL query that creates a view "**V\_EmployeesSalaries"** with **first name**, **last name** and **salary** for each employee.

### Example

|  |  |  |
| --- | --- | --- |
| **FirstName** | **LastName** | **Salary** |
| Guy | Gilbert | 12500.00 |
| Kevin | Brown | 13500.00 |
| … | … | … |

## Create View Employees with Job Titles

Create a SQL query that creates a view "**V\_EmployeeNameJobTitle"**with a **full employee name** and a **job title**. When the middle name is **NULL** replace it with **an empty string ('')**.

### Example

|  |  |
| --- | --- |
| **Full Name** | **Job Title** |
| Guy R Gilbert | Production Technician |
| Kevin F Brown | Marketing Assistant |
| Roberto Tamburello | Engineering Manager |
| … | … |

## Distinct Job Titles

Create a SQL query that finds **all distinct job titles**.

### Example

|  |
| --- |
| **JobTitle** |
| Accountant |
| Accounts Manager |
| Accounts Payable Specialist |
| … |

## Find First 10 Started Projects

Create a SQL query that finds **the first 10 projects which were started**, select **all the information about them** and **order**the result by **starting date**, **then by name**.

### Example

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Description** | **StartDate** | **EndDate** |
| 6 | HL Road Frame | Research, design and development of HL Road … | 1998-05-02 00:00:00 | 2003-06-01 00:00:00 |
| 2 | Cycling Cap | Research, design and development of C… | 2001-06-01 00:00:00 | 2003-06-01 00:00:00 |
| 5 | HL Mountain Frame | Research, design and development of HL M… | 2001-06-01 00:00:00 | 2003-06-01 00:00:00 |
| … | … | … | … | … |

## Last 7 Hired Employees

Create a SQL query that finds **the last 7 hired employees, select** **their first, last name and hire date**. **Order** the result by **hire date** **descending.**

### 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 |
| … | … | … |

## Increase Salaries

Create a SQL query that increases salaries by **12%** for all employees that work in one of the following departments – **Engineering**, **Tool Design**, **Marketing** or **Information Services**. As a result, select and display**only the "Salaries" column** from the **Employees** table. After this, you should restore the database to the original data.

### Example

|  |
| --- |
| **Salary** |
| 12500.00 |
| 15120.00 |
| 48496.00 |
| 33376.00 |
| … |

# Part II – Queries for Geography Database

## All Mountain Peaks

Display all the **mountain peaks** in **alphabetical order**.

### Example

|  |
| --- |
| **PeakName** |
| Aconcagua |
| Banski Suhodol |
| Batashki Snezhnik |
| … |

## Biggest Countries by Population

Find the 30 biggest countries by population, located in **Europe**. Display the "**CountryName"** and "**Population"**. **Order** the results **by population** (from biggest to smallest), **then by country alphabetically**.

### Example

|  |  |
| --- | --- |
| **CountryName** | **Population** |
| Russia | 140702000 |
| Germany | 81802257 |
| France | 64768389 |
| … | … |

## \*Countries and Currency (Euro / Not Euro)

Find all the countries with information about their currency. Display the "**CountryName"**, "**CountryCode"**, and information about its "**Currency"**: either "**Euro**" or "**Not Euro**". Sort the results by country name alphabetically.

**Hint**: Use **CASE** … **WHEN**.

### Example

|  |  |  |
| --- | --- | --- |
| **CountryName** | **CountryCode** | **Currency** |
| Afghanistan | AF | Not Euro |
| Åland | AX | Euro |
| Albania | AL | Not Euro |
| … | … | … |

# Part III – Queries for Diablo Database

## All Diablo Characters

Display all **characters** in **alphabetical order**.

### Example

|  |
| --- |
| **Name** |
| Amazon |
| Assassin |
| Barbarian |
| … |