

# Exercises: Basic CRUD

This document defines the **exercise assignments** for the ["Databases Basics - MySQL" course @ Software University](#).

## Problem 1. Examine the Databases

Download and get familiar with the **softuni**, **diablo** and **geography** database schemas and tables. You will use them in this and the following exercises to write queries.

## Part I – Queries for SoftUni Database

### Problem 2. Find All Information About Departments

Write a SQL query to find **all available information about the Departments**. Submit your query statements as Prepare DB & run queries.

#### Example

department_id	name	manager_id
1	Engineering	12
2	Tool Design	4
3	Sales	273
...	...	...

### Problem 3. Find all Department Names

Write SQL query to find **all Department names**. Submit your query statements as Prepare DB & run queries.

#### Example

name
Engineering
Tool Design
Sales
...

### Problem 4. Find salary of Each Employee

Write SQL query to find the **first name**, **last name** and **salary** of each employee. Submit your query statements as Prepare DB & run queries.

#### Example

first_name	last_name	salary
Guy	Gilbert	12500.00
Kevin	Brown	13500.00
Roberto	Tamburello	43300.00
...	...	...

### Problem 5. Find Full Name of Each Employee

Write SQL query to find the **first**, **middle** and **last name** of each employee. Submit your query statements as Prepare DB & run queries.

## Example

first_name	middle_name	last_name
Guy	R	Gilbert
Kevin	F	Brown
Roberto	NULL	Tamburello
...	...	...

## Problem 6. Find Email Address of Each Employee

Write a SQL query to find the **email address** of each employee. (by his **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**". Submit your query statements as Prepare DB & run queries.

## Example

Full_email_address
Guy.Gilbert@softuni.bg
Kevin.Brown@softuni.bg
Roberto.Tamburello@softuni.bg
...

## Problem 7. Find All Different Employee's Salaries

Write a SQL query to find **all different employee's salaries**. Show only the salaries. Submit your query statements as Prepare DB & run queries.

## Example

salary
9000.00
9300.00
9500.00
...

## Problem 8. Find all Information About Employees

Write a SQL query to find **all information** about the employees whose **job title** is "**Sales Representative**". Submit your query statements as Prepare DB & run queries.

## Example

id	First Name	Last Name	Middle Name	Job Title	Dept ID	Mngr ID	Hire Date	salary	address_id
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
...	...	...	...	...	...	...	...	...	...

## Problem 9. Find Names of All Employees by salary in Range

Write a SQL query to find the **first name**, **last name** and **job title** of all employees whose **salary is in the range [20000, 30000]**. Submit your query statements as Prepare DB & run queries.

### Example

first_name	last_name	JobTitle
Rob	Walters	Senior Tool Designer
Thierry	D'Hers	Tool Designer
JoLynn	Dobney	Production Supervisor
...	...	...

## Problem 10. Find Names of All Employees

Write a SQL query to find the **full name** of all employees whose **salary is 25000, 14000, 12500 or 23600**. Full Name is combination of **first**, **middle** and **last** name (separated with **single space**) and they should be **in one column** called **"Full Name"**. Submit your query statements as Prepare DB & run queries.

### Example

full_name
Guy R Gilbert
Thierry B D'Hers
JoLynn M Dobney

## Problem 11. Find All Employees Without Manager

Write a SQL query to find **first and last names** about those employees that **does not have a manager**. Submit your query statements as Prepare DB & run queries.

### Example

first_name	last_name
Ken	Sanchez
Svetlin	Nakov
...	...

## Problem 12. Find All Employees with salary More Than 50000

Write a SQL query to find **first name**, **last name** and **salary** of those employees who has salary more than 50000. Order them in decreasing order by salary. Submit your query statements as Prepare DB & run queries.

### Example

first_name	last_name	salary
Ken	Sanchez	125500.00
James	Hamilton	84100.00
...	...	...

## Problem 13. Find 5 Best Paid Employees.

Write SQL query to find **first and last names** about **5 best paid Employees** ordered **descending by their salary**. Submit your query statements as Prepare DB & run queries.

## Example

first_name	last_name
Ken	Sanchez
James	Hamilton
...	...

## Problem 14. Find All Employees Except Marketing

Write a SQL query to find the **first** and **last** names of all employees whose **department ID is different from 4**. Submit your query statements as Prepare DB & run queries.

## Example

first_name	last_name
Guy	Gilbert
Roberto	Tamburello
Rob	Walters

## Problem 15. Sort Employees Table

Write a SQL query to sort all records in the Employees table by the following criteria:

- First by **salary** in **decreasing** order
- Then by **first name** **alphabetically**
- Then by **last name** **descending**
- Then by **middle name** **alphabetically**

Submit your query statements as Prepare DB & run queries.

## Example

id	First Name	Last Name	Middle Name	job_title	Dept ID	Mngr ID	Hire Date	salary	address_id
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
...	...	...	...	...	...	...	...	...	...

## Problem 16. Create View Employees with Salaries

Write a SQL query to create a view **v\_employees\_salaries** with **first name**, **last name** and **salary** for each employee. Submit your query statements as Run skeleton, run queries & check DB.

## Example

first_name	last_name	salary
Guy	Gilbert	12500.00
Kevin	Brown	13500.00
...	...	...

## Problem 17. Create View Employees with Job Titles

Write a SQL query to create view **v\_employees\_job\_titles** with **full employee name** and **job title**. When middle name is **NULL** replace it with **empty string (")**. Submit your query statements as Run skeleton, run queries & check DB.

### Example

full_name	job_title
Guy R Gilbert	Production Technician
Kevin F Brown	Marketing Assistant
Roberto Tamburello	Engineering Manager
...	...

## Problem 18. Distinct Job Titles

Write a SQL query to find **all distinct job titles**. Submit your query statements as Prepare DB & run queries.

### Example

Job_title
Accountant
Accounts Manager
Accounts Payable Specialist
...

## Problem 19. Find First 10 Started Projects

Write a SQL query to find **first 10 started projects**. Select **all information about them** and **sort them by start date, then by name**. Submit your query statements as Prepare DB & run queries.

### Example

id	Name	Description	start_date	end_date
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
...	...	...	...	...

## Problem 20. Last 7 Hired Employees

Write a SQL query to find **last 7 hired employees**. Select **their first, last name and their hire date**. Submit your query statements as Prepare DB & run queries.

### Example

first_name	last_name	hire_date
Rachel	Valdez	2005-07-01 00:00:00
Lynn	Tsoflias	2005-07-01 00:00:00
Syed	Abbas	2005-04-15 00:00:00
...	...	...

## Problem 21. Increase Salaries

Write a SQL query to increase salaries of all employees that are in the **Engineering, Tool Design, Marketing** or **Information Services** department by **12%**. Then **select Salaries column** from the **Employees** table. After that exercise restore your database to revert those changes. Submit your query statements as Prepare DB & run queries.

### Example

salary
12500.00
15120.00
48496.00
33376.00
...

## Part II – Queries for Geography Database

### Problem 22. All Mountain Peaks

Display all **mountain peaks** in alphabetical order. Submit your query statements as Prepare DB & run queries.

### Example

peak_name
Aconcagua
Banski Suhodol
Batashki Snezhnik
...

### Problem 23. Biggest Countries by Population

Find the 30 biggest countries by population **from Europe**. Display the country name and population. Sort the results by population (from biggest to smallest), then by country alphabetically. Submit your query statements as Prepare DB & run queries.

### Example

country_name	population
Russia	140702000
Germany	81802257
France	64768389
...	...

### Problem 24. Countries and Currency (Euro / Not Euro)

Find all countries along with information about their currency. Display the country code, country name and information about its currency: either **"Euro"** or **"Not Euro"**. Sort the results by country name alphabetically. Submit your query statements as Prepare DB & run queries.

### Example

country_name	country_code	currency
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Afghanistan	AF	Not Euro
Åland	AX	Euro
Albania	AL	Not Euro
...	...	...

## Part III – Queries for Diablo Database

### Problem 25. All Diablo Characters

Display all **characters** in alphabetical order. Submit your query statements as Prepare DB & run queries.

#### Example

name
Amazon
Assassin
Barbarian
...