

Exercises: Introduction to Hibernate

This document defines the exercise assignments for the [“Spring Data” course @ SoftUni](#).

1. Setup

Use the **provided skeleton** to create **soft_uni** database.

1. Change the **port**, **username** and **password** accordingly to your settings.

```
<?xml version="1.0" encoding="UTF-8"?>
<persistence xmlns="http://java.sun.com/xml/ns/persistence"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://java.sun.com/xml/ns/persistence
    http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd"
  version="2.0">

  <persistence-unit name="soft_uni">
    <properties>
      <property name="hibernate.connection.url"
        value="jdbc:mysql://localhost:3306/soft_uni?createDatabaseIfNotExist=true&useSSL=false"/>
      <property name="hibernate.connection.driver_class" value="com.mysql.jdbc.Driver" />
      <property name="hibernate.hbm2ddl.auto" value="update"/>
      <property name="hibernate.connection.username" value="" />
      <property name="hibernate.connection.password" value="" />
    </properties>
  </persistence-unit>
</persistence>
```

2. Create EntityManagerFactory and run your program.

```
EntityManagerFactory factory =
    Persistence.createEntityManagerFactory( persistenceUnitName: "soft_uni" );
EntityManager em = factory.createEntityManager();
```

3. Fill the database into Workbench by **executing** the provided **.sql** script.

2. Remove Objects

Use the **soft_uni** database. Persist **all towns** from the database. Detach those whose name length is **more than 5 symbols**. Then transform the **names** of all attached towns to **lowercase** and **save them to the database**.

3. Contains Employee

Use the **soft_uni** database. Write a program that checks if a given employee name is **contained in the database**.

Example

| Input | Output |
|---------------|--------|
| Svetlin Nakov | Yes |
| John Doe | No |

4. Employees with Salary Over 50 000

Write a program that gets the first name of all employees who have salary over **50 000**.

Example:

| Output |
|--------|
| Terri |
| Jean |
| Ken |
| ... |

5. Employees from Department

Extract all employees from the **Research and Development** department. Order them by **salary** (in ascending order), then by **id** (in **ascending** order). Print only their **first name**, **last name**, **department name** and **salary**.

Example:

| Output |
|---|
| Diane Margheim from Research and Development - \$40900.00 |
| Gigi Matthew from Research and Development - \$40900.00 |
| Michael Raheem from Research and Development - \$42500.00 |
| Svetlin Nakov from Research and Development - \$48000.00 |
| Martin Kulov from Research and Development - \$48000.00 |
| George Denchev from Research and Development - \$48000.00 |
| Dylan Miller from Research and Development - \$50500.00 |

6. Adding a New Address and Updating Employee

Create a new address with **text** "Vitoshka 15". Set that address to an **employee** with a **last name**, given as an input.

7. Addresses with Employee Count

Find all addresses, **ordered** by the **number of employees** who live there (**descending**).

Take only the **first 10 addresses** and print their **address text**, **town name** and **employee count**.

Example

| Output |
|---|
| 163 Nishava Str, ent A, apt. 1, Sofia - 3 employees |
| 7726 Driftwood Drive, Monroe - 2 employees |
| ... |

8. Get Employee with Project

Get an **employee by his/her id**. Print only his/her **first name**, **last name**, **job title** and **projects** (only their names). The projects should be **ordered by name** (ascending). The output should be printed in the format given in the example.

Example

| Input | Output |
|-------|--|
| 147 | Linda Randall - Production Technician HL Touring Handlebars ML Road Rear Wheel |

| | |
|----|--|
| | Patch kit Touring-1000 |
| 83 | John Evans - Production Technician Half-Finger Gloves LL Mountain Handlebars Racing Socks Women's Tights |

9. Find Latest 10 Projects

Write a program that prints the **last 10 started projects**. Print **their name, description, start and end date** and **sort them by name** lexicographically. For the output, check the format from the example.

Example

| Output |
|--|
| Project name: All-Purpose Bike Stand Project Description: Research, design and development of ... Project Start Date:2005-09-01 00:00:00.0 Project End Date: null |
| Project name: Bike Wash Project Description: Research, design and development of ... Project Start Date:2005-08-01 00:00:00.0 Project End Date: null |
| Project name: HL Touring Frame Project Description: Research, design and development of ... Project Start Date:2005-05-16 16:34:00.0 Project End Date: null |
| ... |

10. Increase Salaries

Write a program that increases the salaries of all employees, who are in the **Engineering, Tool Design, Marketing** or **Information Services** departments by **12%**. Then **print the first name, the last name and the salary** for the employees, whose salary was increased.

Example

| Output |
|--|
| Roberto Tamburello (\$48496.00) Gail Erickson (\$36624.00) Jossef Goldberg (\$36624.00) Terri Duffy (\$71120.00) ... |

11. Remove Towns

Write a program that **deletes a town**, which name is given as an input. The program should **delete all addresses** that are in the given town. Print on the console the **number of addresses** that were **deleted**. Check the example for the output format.

Example

| Input | Output |
|---------|---------------------------------|
| Sofia | 1 address in Sofia deleted |
| Seattle | 44 addresses in Seattle deleted |

12. Find Employees by First Name

Write a program that finds **all employees**, whose **first name starts with a pattern** given as an input from the console. Print their **first and last names**, their **job title** and **salary** in the format given in the example below.

Example

| Input | Output |
|-------|---|
| SA | Sariya Harnpadoungsataya - Marketing Specialist - (\$16128.00) Sandra Reategui Alayo - Production Technician - (\$9500.00) Sairaj Uddin - Scheduling Assistant - (\$16000.00) Samantha Smith - Production Technician - (\$14000.00) Sameer Tejani - Production Technician - (\$11000.00) Sandeep Kaliyath - Production Technician - (\$15000.00) |

13. Employees Maximum Salaries

Write a program that finds the **max salary** for each **department**. Filter the departments, which max salaries **are not in the range** between 30000 and 70000.

Example

| Output |
|--|
| Engineering 71120.00 Sales 72100.00 Marketing 16128.00 Production 84100.00 ... |