

## Exercise Sheet No. 5 Database

### Energy Informatics

Winter 2015

Submission deadline: 02.02.2016, at 11:15 a.m.

#### Classroom Exercises

##### Exercise 1: Software Installation

In database exercises you will work on an Oracle database installed in one of the university's servers. In order to access this database we will use *Oracle SQL Developer* as a graphical interface to Oracle database. It will enable you to connect to Oracle server, post SQL queries to the server and get the results back.

- Download *Oracle SQL Developer* from: <http://tinyurl.com/h5dbsbw>, and extract its content to a desired installation directory in your laptop<sup>1</sup>.
- After the first run of *Oracle SQL Developer*, you need to establish a new database connection: File→New...→General→Connection→Database Connection. Get connection settings from your tutor
- You can find a guidance for using *Oracle SQL Developer* in the online documentation at: <http://tinyurl.com/jkwcewk>

##### Exercise 2: Overview of the database

The following commands give you an overview of the course database. Run them in *Oracle SQL Developer* to explore the *power\_consumption* database:

To get all database tables:

```
select table_name from user_tables;
```

To describe each table: desc city; desc building; desc houshold; desc reading; ...

##### Exercise 3: Let's try SQL!

- Create a new table "Lecture" with the following columns: *LectureID*, *Name*, *MaxStudents*, *level*. Choose suitable data types for the columns.
- Find the suitable column to be set as a primary key
- Delete the created table using the command: *drop table table\_name*;
- Run the SQL queries from slides 17 and 18 from the lecture slides.

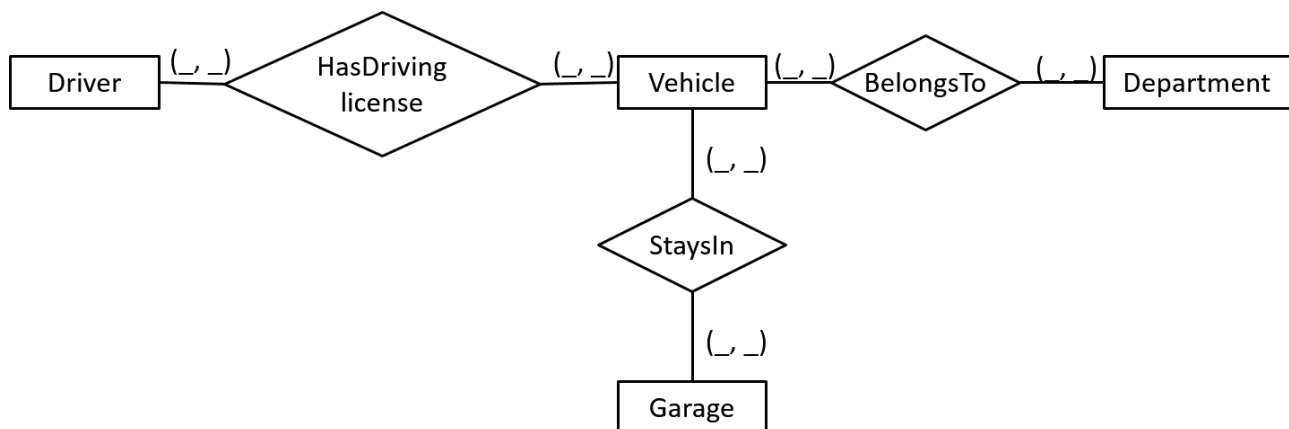
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<sup>1</sup>If you wish to switch to the English interface, edit the file: `sqldeveloper/sqldeveloper/bin/sqldeveloper.conf`, add the following in a new line: `AddVMOption -Duser.language=en`

## Graded Exercises

### Exercise 4: (6 pts)

Given the following ER-Model for managing company's vehicles:



Attributes were removed for simplicity. Consider the following rules (There is no other constraints):

- Each vehicle belongs to one department at most, whereas each department has at least one vehicle.
- Only one vehicle fits in a garage.
- Almost all vehicles have a specific garage. All of the garages are occupied.
- For each vehicle there should be at least three persons with a suitable driving license.

Give the corresponding cardinalities.

### Exercise 5: (4 pts)

Using *power\_consumption* database, write SQL queries that find:

- All fuel types appear in data.
- All readings information (fuel type, reading date, reading value) of cities with population less than 50000.