# Übung Datenbanken und Informationssysteme 1 2024w

**Lecturer:**
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**SQL Part 1** **Submission 14.11.2024, 13:00**

## Technical Guidelines

The course information system is implemented in an Oracle database.

**Oracle SQL Developer**

The client software "Oracle SQL Developer" is currently available for Windows, macOS, and Linux. The "Oracle SQL Developer" (e.g., Windows 64-bit with JDK included) has to be downloaded from the Oracle website and installed on your PC. In Windows, after unzipping the downloaded file, you can immediately start "sqldeveloper.exe" without any further installation procedure. (https://www.oracle.com/tools/downloads/sqldev-downloads.html)

Create a new database connection (green +-symbol at the upper left side of the window) and connect to the database:
Name (connection): choose a name for the connection by your own
Benutzername (user): infosys
Kennwort (password): infosys
Hostname (host): infosys.faw.jku.at
Port: 1521
Service-Name: infosys

After you are successfully connected to the database, you can create and execute SQL statements in the "Query Builder" frame.



## Course Information System

The JKU stores data about courses of the SS 2030 in an information system with the following four relations: course, lecturer, appointment, and room.

CourseId is structured as follows: the first 3 digits correspond to the institute number and the first 4 digits correspond to the department number. The institutes with the number 311, 312, and 321 comprise the entire area of "Computer Science". Course types are VO (Vorlesung / lecture), UE (Übung / exercise), SE (Seminar / seminar), and PR (Praktikum / practical course).

The relation "appointment" is based on the calendar day. Thus, for each appointment a course takes place, there is one entry in the table.

| Relation name | Attribute | Type | Comment |
|---|---|---|---|
| **Course** | courseId | varchar2(6) | e.g., 351011 |
| | title | varchar2(50) | course title |
| | hours | number(2) | weekly hours |
| | type | char(2) | VO, UE, SE, ... |
| **Lecturer** | lecturerId | varchar2(4) | |
| | name | varchar2(50) | |
| **Appointment** | courseId | varchar2(6) | course number |
| | lecturerId | varchar2(4) | |
| | app_date | date | calendar day |
| | start_hour | number(2) | |
| | start_minute | number(2) | |
| | end_hour | number(2) | |
| | end_minute | number(2) | |
| | roomId | varchar2(8) | |
| **Room** | roomId | varchar2(8) | |
| | name | varchar2(30) | room name |
| | capacity | number(4) | number of persons |
| | building | varchar2(20) | building name |

## Exercises

Create and execute the following SQL statements. You have to submit the SQL statement as well as the result set (output) including the number of rows in the result set. Please consider that the layout of the output should be easy to read (one line for one row).

6.1. Create a list of all rooms with a capacity of 100 people in building "Hoersaaltrakt". (3 points)

6.2. Create a list of all lectures (courses of type lecture) with at least 5 weekly hours sorted by weekly hours in descending order. (4 points)

6.3. Create a list of all courses (courseId, lecturer, date) on March 11th, 2030, where the lecturer's first name is "Barbara", without duplicates. (4 points)

6.4. Create a list of all courses (courseId, course title, date, room name, lecturer) with "Informationssysteme" as part of the course title, which are held by Retschitzegger Werner in the room named "T 711". (5 points)

6.5. Create a timetable for Küng Josef on March 14th, 2030 (lecturer, date, start time, end time, room name, course title, and type). Of course, the timetable should be arranged in ascending order by date and start time.
The output format for time should be hh:mm (e.g., "9:15", "10:0", "8:0").
The concatenation operator || allows to concatenate strings, e.g., 'Name is ' || last_name. (6 points)

6.6. Create a list (room name, building, and capacity) of all unreserved rooms (i.e., those in which no courses are held) in the "TNF-Turm" building with a capacity of at least 10 people in descending order by capacity. (6 points)

6.7. Create a timetable with course appointments (date, start time, end time, course title, lecturer) in "HS 10" on June 26th and June 28th, 2030, ending at 10:00 a.m. Of course, the timetable should be arranged in ascending order by date and start time. (6 points)

6.8. Select all lectures (courseId, course title, type, capacity, duration, date) with a minimum duration of 45 minutes and a maximum duration of 90 minutes in rooms with a capacity of 100 to 150 people on May 3rd, 2030. The output should be sorted in descending order by capacity. The appointment duration should be displayed in minutes. (6 points)