

Übung Datenbanken und Informationssysteme 1 2023w



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SQL Part 1

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Technical Guidelines

The course information system is implemented in an Oracle database. You can use two alternative connection types.

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: LVA (course), Person (lecturer), Abhaltung (appointment), and Raum (room).

LVANr 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), PR (Praktikum / practical course).

The relation "Abhaltung" (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	English
LVA (course)	LVANr	varchar2(6)	312704	course number
	Name	varchar2(50)		course title
	Std	number(2)		weekly hours
	Typ	char(2)	VO, UE, SE, ...	type (lecture, ...)
Person (lecturer)	PersNr	varchar2(4)	Personal-Nummer	person id
	Name	varchar2(50)	Name	name
Abhaltung (appointment)	LVANr	varchar2(6)		course number
	PersNr	varchar2(4)		person id
	Tag	date	Kalender-Tag	date (calendar day)
	Von Stunde	number(2)		start hour
	Von Minute	number(2)		start minute
	Bis Stunde	number(2)		end hour
	Bis Minute	number(2)		end minute
	Raum Id	varchar2(8)		room id
Raum (room)	Raum Id	varchar2(8)	Raum-Nummer	room id
	Name	varchar2(30)	Raumbezeichnung	room name
	AnzPers	number(4)		number of persons
	Gebaeude	varchar2(20)		name of building

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 courses (course number, course title, weekly hours, type) of type exercise with 3 weekly hours. (3 points)
- 6.2. Create a list of all rooms in the building "TNF-Turm" that have a capacity of 15 to 35 persons and sort the list in descending order by capacity. (4 points)
- 6.3. Create a list of all courses (course number, lecturer, date) on June 10th, 2030 where the lecturer's first name is "Susanne" without duplicates. (4 points)
- 6.4. Create a list of all courses (course number, course title, type, weekly hours, building) where the course title ends with "Informationssysteme". Consider only courses that take place in the building "Keplergebäude". The list should be in ascending order by weekly hours. (5 points)
- 6.5. Create a list in alphabetical order of all lecturers (lecturer, course title, weekly hours, start time, end time) who teach courses with 2 weekly hours that start late in the afternoon at 15:30 or later. Consider only courses with a course number starting with "311".
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. (5 points)
- 6.6. Create a timetable for April, 2030 (date, start time, end time, course title, lecturer) for lecturers Retschitzegger Werner and Wöß Wolfram, which lists all their course appointments for the time slots starting at 15:30 or later. The timetable should be in ascending order by date and start time. (7 points)
- 6.7. Create a list in alphabetical order (by course title) of all courses (date, course number, course title, type, duration) in room "T 212" on April 2nd and April 15th, 2030 with a minimum duration of 90 minutes. (6 points)
- 6.8. Select the name, building, and room capacity of all non-reserved rooms (i.e., where no courses are held) in the building "TNF-Turm" in descending order by capacity. (5 points)