

Übung Datenbanken und Informationssysteme 1 2022w

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.

1) 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:
 Verbindungsname (connection): choose a name for the connection by your own
 Benutzername (user): infosys
 Kennwort (password): infosys
 Hostname (host): infosys.faw.jku.at
 Port: 1521
 SID: infosys

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

2) Oracle iSQLPlus

iSQLPlus allows to connect to the database by using a web browser. Unfortunately, the iSQLPlus service is not very stable when too many users are connected simultaneously. Thus, the iSQLPlus service is automatically restarted every hour. Normally, when the iSQLPlus service is down, you can still connect to the database using Oracle SQL Developer. If iSQLPlus is not available for a longer time (more than half a day), please contact Prof. Dr. Wolfram Wöß (wolfram.woess@jku.at).

Connection:
<http://infosys.faw.jku.at/isqlplus/>
 Benutzername (user): infosys
 Kennwort (password): infosys
 Connect-Bezeichner: infosys

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).

LVA Nr 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 table "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	Remarks	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
	Gebaude	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 rooms in the building "TNF-Turm" that have a capacity of more than 40 persons. (3 points)
- 6.2. Create a list of all lecturers with first name "Barbara" and order them alphabetically by their last name. (4 points)
- 6.3. Create a list of courses (date, course number, course title, weekly hours) on July 2nd, 2030 with 2 weekly hours in descending order by course title. (4 points)
- 6.4. Create a list of all courses (course number, course title, type, weekly hours) that are held by Retschitzegger Werner without duplicates and ordered by weekly hours. (5 points)
- 6.5. Create a list of all courses (course number, course title, course type, date, start time, end time) ending at 21:00 that are held by Wöß Wolfram. 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. Select the name, building, and room capacity of all non-reserved rooms (i.e., where no courses are held) in the building "Managementzentrum" in descending order by capacity. (5 points)
- 6.7. Create a timetable of course appointments (date, start time, end time, course title, lecturer) in "HS 9" on March 11th and March 13th, 2030 for the time slots starting at 13:45 or later. The timetable should be in ascending order by date and start time. (7 points)
- 6.8. Select all lectures (course number, course title, capacity, duration) with appointments having a maximum duration of 45 minutes in rooms with a capacity of 50-100 persons. The output should be sorted by capacity in descending order without duplicates. The appointment duration should be in minutes. (6 points)