

# Database Systems

## Welcome to Database Systems

Prof. Dr. Agnès Voisard    Muhammed-Ugur Karagülle

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Freie Universität Berlin,  
Institute of Computer Science, Databases and Information Systems Group

Fraunhofer FOKUS

2025







## 1 General Information

## 2 Registration

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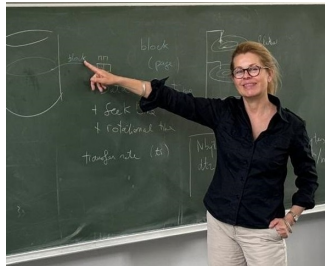


## Welcome to Database Systems!

- ▶ **Course in English**
- ▶ **Tutorials mostly in German**
- ▶ 3+2 SWS, 7 Credit-Points (study regulation from 2014)
- ▶ 3+1 SWS, 6 Credit-Points (study regulation from 2023)

## Today

- ▶ General information
- ▶ Overview of Database Systems



## Lecturer

- ▶ **Prof. Dr. Agnès Voisard**
  - ▶ Freie Universität Berlin
  - ▶ Fraunhofer FOKUS

## Lectures

- ▶ **Tue.: 2 pm - 4 pm**
- ▶ **Thu.: 2 pm - 4 pm**

## Office hours (Room 169)

- ▶ **Wed.: 1.30 PM - 2 PM or 5 PM - 6 PM**
- ▶ Please register in advance with our secretary Tanja Orth  
[Tanja.Orth@fu-berlin.de](mailto:Tanja.Orth@fu-berlin.de)



## Coordinator

- ▶ **Muhammed-Ugur Karagülle**
  - ▶ Freie Universität Berlin
  - ▶ [M.U.K@fu-berlin.de](mailto:M.U.K@fu-berlin.de)

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## For any kind of email related to this course, please:

- ▶ Use your official FU-/ZEDAT email account
- ▶ Add *[DBS]* as a prefix in the subject line
- ▶ Include all relevant recipients using To and Cc appropriately:
  - ▶ *agnes.voisard@fu-berlin.de*  
Prof. Dr. Agnès Voisard – for lecture-related questions
  - ▶ *m.u.k@fu-berlin.de*  
Muhammed-Ugur Karagülle – for questions about assignments, tutorials, and course organization
  - ▶ *tanja.orth@fu-berlin.de*  
Tanja Orth – for administrative issues such as registration, deregistration, certificates, or scheduling

This ensures we can process your inquiry quickly and correctly.



## Tutors

- ▶ **Hendrik** Tom Beschorner  
h.beschorner@fu-berlin.de
- ▶ **Rafael** Bürgisser  
rbuergisser@zedat.fu-berlin.de
- ▶ **Swenja** Wagner  
swenja.wagner@fu-berlin.de

## Relevant Public Holidays in Berlin 2025

- ▶ Monday, April 21 – Easter Monday
- ▶ Thursday, May 1 – Labour Day
- ▶ Thursday, May 8 – Day of Liberation
- ▶ Thursday, May 29 – Ascension Day
- ▶ Monday, June 9 – Pentecost Monday

<https://www.berlin.de/tourismus/infos/1887651-1721039-feiertage-schulferien.html>

- ▶ **Computer Science Students**
- ▶ Bio-Computer Science Students
- ▶ Business Computer Science Students
- ▶ Students with Minor Computer Science
- ▶ *Lehramt* Students

## Once upon a time...

- ▶ Diploma Students
- ▶ Magister Students

## ► Campus Management (CM)

- You must register for passing the course
- Check out is possible until May 2, 2025.  
(Course is then considered to be unattended.)
- <https://lb.ecampus.fu-berlin.de/>

## ► Whiteboard/KVV

- Enroll to the course "Datenbanksysteme S25".
- Register for a tutorial slot.
- If you decide to leave the course, you must check out from the tutorials before May 2, 2025.
- Check if you are registered for the exam(s)
- <https://mycampus.imp.fu-berlin.de/x/AsTUnz>

## Examination Office (Prüfungsbüro)

Please contact your examination office if you have:

- ▶ Issues with course registration or deregistration
- ▶ Requests for recognition of external coursework or credits
- ▶ Study regulation-specific questions (e.g., points, modules, degree requirements)

*Note: We have students from various study programs and study regulations.*

## In general

- ▶ Tutorials take place **every week**, but students participate **bi-weekly in alternating groups A and B**
- ▶ Attendance is **mandatory** for all assigned sessions (6 in total)
- ▶ Submission of the assignment sheets in **teams of 4** via the Whiteboard tool "Assignments"
- ▶ Every assignment sheet must be submitted on time, in PDF format, and show serious engagement with the tasks

## Schedule of Assignments and Tutorials

No.	Ass. Release (Fri)	Ass. Due (Fri)	Group A Tutorials	Group B Tutorials
0	–	–	Apr 21–25 (CW 17)	Apr 28–May 2 (CW 18)
1	Apr 25 (CW 17)	May 2 (CW 18)	May 5–9 (CW 19)	May 12–16 (CW 20)
2	May 9 (CW 19)	May 16 (CW 20)	May 19–23 (CW 21)	May 26–30 (CW 22)
3	May 23 (CW 21)	May 30 (CW 22)	Jun 2–6 (CW 23)	Jun 9–13 (CW 24)
4	Jun 6 (CW 23)	Jun 13 (CW 24)	Jun 16–20 (CW 25)	Jun 23–27 (CW 26)
5	Jun 20 (CW 25)	Jun 27 (CW 26)	Jun 30–Jul 4 (CW 27)	Jul 7–11 (CW 28)

# Tutorials and Assignments - cont'd

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## Tutorials

Beginning already next week!

Section Name <small>▲</small>	Teaching Assistant(s)	Day	Time	Location	Avail.	
<b>Problems session Sections</b>						
- PLANNING - JOIN HERE IF NO MORE SLOT IS AVAILABLE					Unlimited	<a href="#">Join</a>
Übung 01-A	Wagner, Swenja	Mon	2:00 pm, 4:00 pm	T9/051 Seminarraum	15	<a href="#">Join</a>
Übung 01-B	Wagner, Swenja	Mon	2:00 pm, 4:00 pm	T9/051 Seminarraum	15	<a href="#">Join</a>
Übung 02-A	Wagner, Swenja	Mon	4:00 pm, 6:00 pm	A6/SR 025/026 Seminarraum	15	<a href="#">Join</a>
Übung 02-B	Wagner, Swenja	Mon	4:00 pm, 6:00 pm	A6/SR 025/026 Seminarraum	15	<a href="#">Join</a>
Übung 03-A	Wagner, Swenja	Tue	12:00 pm, 2:00 pm	T9/051 Seminarraum	15	<a href="#">Join</a>
Übung 03-B	Wagner, Swenja	Tue	12:00 pm, 2:00 pm	T9/051 Seminarraum	15	<a href="#">Join</a>
Übung 04-A	Bürgisser, Rafael Nicola	Thu	10:00 am, 12:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>
Übung 04-B	Bürgisser, Rafael Nicola	Thu	10:00 am, 12:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>
Übung 05-A in ENGLISH	Bürgisser, Rafael Nicola	Thu	12:00 pm, 2:00 pm	T9/053 Seminarraum	15	<a href="#">Join</a>
Übung 05-B	Bürgisser, Rafael Nicola	Thu	12:00 pm, 2:00 pm	T9/053 Seminarraum	15	<a href="#">Join</a>
Übung 06-A	Beschorner, Hendrik Tom	Fri	2:00 pm, 4:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>
Übung 06-B in ENGLISH	Beschorner, Hendrik Tom	Fri	2:00 pm, 4:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>
Übung 07-A	Beschorner, Hendrik Tom	Fri	4:00 pm, 6:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>
Übung 07-B	Beschorner, Hendrik Tom	Fri	4:00 pm, 6:00 pm	T9/055 Seminarraum	15	<a href="#">Join</a>





## Active participation

- ▶ All 5 assignment sheets must be submitted by the team
- ▶ Each assignment sheet is considered passed if approx. 70% of the tasks are reasonably attempted
- ▶ Each task should be processed in a way that clearly documents the thought process, even if the result is incorrect
- ▶ Failure to submit or complete one assignment sheet below this threshold will result in **failing** the active participation

## Passive participation

- ▶ Participation in all assigned tutorial sessions (bi-weekly group A or B) is mandatory
- ▶ Up to 2 absences are tolerated

## Important notice:

- ▶ The participation model is based on trust and reasonable effort
- ▶ **Misuse of this policy**, e.g., dummy submissions without real work, copying without understanding, or passive team members **may lead to disqualification from the course**
- ▶ In case of doubt, tutors or instructors may ask for explanations or documentation
- ▶ If you encounter problems in your team, please speak up early
- ▶ If your assigned tutorial happens to fall on a public holiday, please coordinate with your tutor in advance to attend a different group or time slot for that week

## Tutorial structure

- ▶ Each tutorial session discusses one assignment sheet
- ▶ You must prepare one solution per task to be presented by your team
- ▶ Tutors moderate, supplement, or present alternatives
- ▶ Tutors **may** provide model solutions afterwards

## Teamwork

- ▶ Build teams of four students within your tutorial group
- ▶ All members are expected to contribute actively
- ▶ Notify tutors early in case of problems in the team

**Important:**  
**Exam grade = course grade**

## First exam

- ▶ Thursday, July 17, 2025  
(2 pm - 4 pm)
- ▶ In presence
- ▶ Valid registration required

## Second exam

- ▶ Tuesday, September 30, 2025 (expected)  
(2 pm - 4 pm)
- ▶ In presence
- ▶ Valid registration required

- ▶ **Be welcome at the lectures by being:**
  - ▶ on time,
  - ▶ prepared for the lectures,
  - ▶ quiet during the lectures (200+ students), and
  - ▶ not eating in the lecture hall
- ▶ **If you do not understand something, ask questions.**
- ▶ **Do not record the lecture, please!**
- ▶ **Do not pop up to our offices, please!**
  - ▶ Ask the coordinator (Ugur Karagülle) ...
  - ▶ Make an appointment, office hours ...

- ▶ **Data modeling**

Database design, conceptually using the relational model

- ▶ **Database use**

Data access using the query language SQL, interactively or using application programming

- ▶ **Implementation aspects of DBS**

Indexing, transactions

- ▶ **Introduction to recent techniques and new issues in data management**

Data warehouses, big data management, ...

## ► Database principles

- Relational databases for various types of applications
- Theoretical background of databases

## ► Database use

- SQL-queries
- Application programming & development

## ► Technical aspects

- Data organization in a DBS
- Principles and techniques of transaction processing
- Elementary synchronizations -  
recovery techniques
- Practical experience (Postgres)

You know ...

- ▶ the team, including the **lecturer**, the **coordinator** and the **tutors** ...
- ▶ ...and **how to contact** them.
- ▶ the **registration** details.
- ▶ the **criteria for transcripts** for the course Database Systems.
- ▶ the **basic rules**.



# Questions?

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# What will come next?

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- 1 Welcome to Database Systems
- 2 Introduction to Database Systems
- 3 Entity Relationship Design Diagram (ERM)
- 4 Relational Model
- 5 Relational Algebra
- 6 Structured Query Language (SQL)
- 7 Relational Database Design - Functional Dependencies
- 8 Relational Database Design - Normalization
- 9 Online Analytical Processing + Embedded SQL
- 10 Data Mining
- 11 Physical Representation - Storage and File Structure
- 12 Physical Representation - Indexing and Hashing
- 13 Transactions
- 14 Concurrency Control Techniques
- 15 Recovery Techniques
- 16 Query Processing and Optimization

