

INTRODUCTION TO RELATIONAL DATABASE SYSTEMS

DATENBANKSYSTEME 1 (INF 3131)

Torsten Grust
Universität Tübingen
Winter 2021/22

WELCOME!

This course will introduce you to the world of **Relational Database Systems**, *the* dominating database technology in use today (since the early 1970s).

- All data in Relational Database Systems takes a **rectangular, tabular shape**:

A	B	C
.	.	.
.	.	.
.	.	.

- Relational Database Systems benefit from this restricted **data model** in a number of ways:
 1. A **data language** to insert into, extract from, and manipulate such data tables is simple
 2. The formal model behind this idea is simple as well
 3. Regular data layout admits a super-efficient implementation (→ Datenbanksysteme 2)

TORSTEN GRUST?

Time Frame	Affiliation/Position
1989–1994	Diploma in Computer Science, TU Clausthal
1994–1999	Promotion (PhD), U Konstanz
2000	<i>Visiting Researcher</i> , IBM (USA)
2000–2004	Habilitation, U Konstanz
2004–2005	Professor Database Systems, TU Clausthal
2005–2008	Professor Database Systems, TU Munich
since 2008	Professor Database Systems, U Tübingen

Torsten.Grust@uni-tuebingen.de

<http://db.inf.uni-tuebingen.de/team/grust>

Twitter: [@Teggy](#) (*Professor, likes database systems, programming languages, and SC Freiburg ッ*)

WSI, Sand 13, B318

ADMINISTRIVIA (1)

LECTURES (INCLUDES 15-MIN BREAK)

Time Slot	Room
Monday, 12:15–14:00	Hörsaal N4, Morgenstelle
Tuesday, 12:15–14:00	Hörsaal N5, Morgenstelle

TUTORIALS

Time Slot	Room
Thursday, 12:15–14:00	Hörsaal N5, Morgenstelle

ADMINISTRIVIA (2)

END-TERM EXAM

- A 90-minute **written exam** on Tuesday, Feb 15 2022, 12:00-14:00
- You may bring a A4 double-sided *cheat sheet*
- Passing earns you **9 ECTS**
(*students of bio informatics only*: drop out just after Christmas and earn 6 ECTS)

WEEKLY ASSIGNMENTS

- We will distribute, collect, and grade **weekly assignments** (Wednesday to Wednesday)
- You will work in teams of two
- Score $\geq \frac{2}{3}$ of the overall points in the assignments to be admitted to the end-term exam and earn exam bonus points

WEEKLY ASSIGNMENTS & TUTORIALS

Organized and run by **Christian Duta** and **Tim Fischer**.

1. Expand on lecture material
2. Develop additional code, run additional examples, ...
3. Discuss solutions to weekly assignments

Assignments and tutorials will start in the second week of the semester once we have collected the first batch of interesting material. First tutorial: Oct 28, 2021.

- Download assignments via `git pull`, upload your solutions via `git push`. See the DB1 Forum.


ADMINISTRIVIA (3)

LECTURE HOMEPAGE + FORUM

<https://db.inf.uni-tuebingen.de/teaching/DB1WS2021-2022.html>

+

<https://forum-db.informatik.uni-tuebingen.de/c/ws2122-db1>

- Download **slides** (PDF – bring a print-out and take notes), sample data, code, ...
- **Contact information**
Just drop by our offices (Sand 13, 2nd floor, rooms B315/B318), send e-mail first if you require specific help/longer attention
- Please visit page in a regular fashion (“... *assignment unsolvable as given...*”, “... *no lecture on...*”, etc.)
-  **Register in the forum!** This is *not* optional (we use it to organize assignments and teams)

TOUCH THE DATA

- Whenever reasonable, we will try to lay our hands on data (and not only talk about it)
- Expect lots of **live interaction with data files and tools** during the course
- We will use the programming language **Python** to perform ad-hoc manipulation of data files and illustrate database system functionality



- Basic Python constructs suffice (mostly nested loops, conditionals, arrays, dictionaries)

TOUCH LOTS OF DATA

- The Relational Database System **PostgreSQL** will be the primary tool in this course



PostgreSQL

postgresql.org, PostgreSQL 13 used in lectures, any version 13.x probably OK

- Straightforward to install and use on a variety of platforms (macOS, Linux, Windows)
- Complete, standards-conformant, efficient, extensible, open to inspection, and generally awesome
- Implements **SQL** (*The Intergalactic Dataspeak*), the main language spoken in this course

QUESTIONS SO FAR?

- *Can I bring my mobile computing device to the lecture?*

Yes, if you use it to run Python or PostgreSQL ヽ

- *Do I need to copy the Python/SQL/... code that you develop during the lecture?*

No, (most) code and data will be available on the course home page

- *Do you value feedback (on course contents as well as form)?*

Most definitely (also: you *will* find bugs in the slides/material).

Please participate in the mid-semester student's evaluation of our courses. **Thank you!**