INTRODUCTION TO RELATIONAL DATABASE SYSTEMS

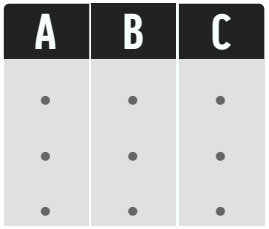
DATENBANKSYSTEME 1 (INF 3131)

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:**



- 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	*Visiting Researcher*, 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 ツ*)
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 $\geqslant \frac{2}{3}$ 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`

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`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

`python.org`, Python 3.8 used in lectures

- 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.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 ツ
- *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!