Welcome to TDDD37 / 732A57 Database Technology


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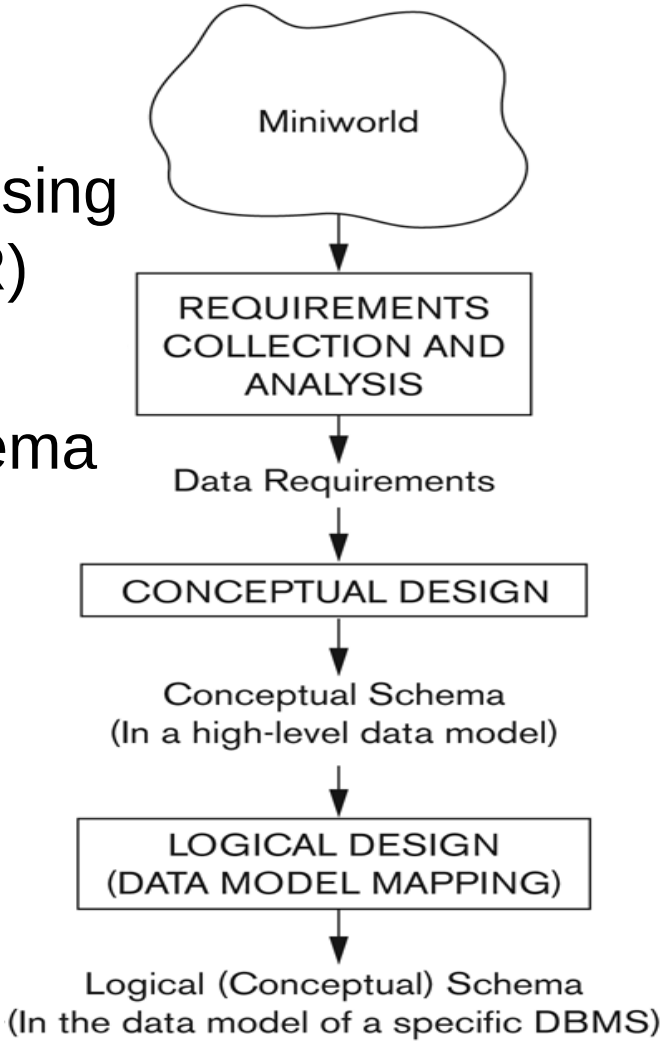
Topics and Intended Learning Outcomes

Course Topics

1. Fundamental concepts
2. Relational databases
3. EER modeling
4. Mapping of EER diagrams to relations
5. SQL
6. Functional dependencies and normalization
7. Stored procedures and triggers
8. Data structures for DBs
9. Introduction to Transaction Processing
10. Concurrency Control
11. Database Recovery
12. Query Processing

After the course you should be able to …

- *Design relational databases* for different types of example domains
  - by first creating a conceptual schema using the Enhanced Entity-Relationship (EER) model and …
  - … then translating this conceptual schema into a corresponding logical schema captured in the relational data model.



- Analyze and improve the quality of given relational database schemas based on the formal measure of *normal forms*.

After the course you should be able to …

- *Employ the SQL language* to query and to modify several example relational databases, as well as to create such a database with a given relational database schema.
- Compare the cost of finding and updating records in database storage files when using different approaches to organize and to index such files.
- *Apply basic techniques* that DBMSs can use to identify and to avoid problems that may occur when multiple users access a database concurrently.
- *Apply recovery algorithms* that DBMSs use to guarantee persistence of data even in the case of system failures.

Examination

Final Exam

- During the exam period after the course
- Dates: see pointer on the course Website

Image source: https://commons.wikimedia.org/wiki/File:ATC_Admission_Exam_(2).JPG

Four Assignments

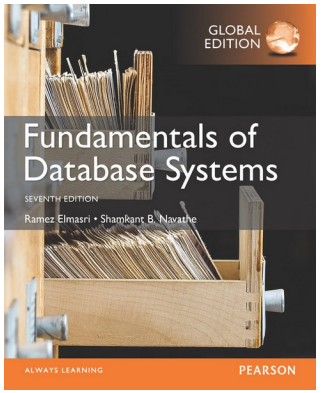
1. Database design and EER modeling
2. SQL
3. Functional dependencies and normalization
4. BrianAir project, *4a*: initial design, *4b*: improved design
   4c: implementation, *4d*: urkund analysis

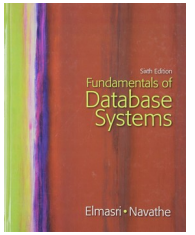
- Deadlines on the course Website
  - *hard deadlines* for assignments 4a and 4b (before assignment 3!)
- To be solved in pairs
  - register with lab partner in Webreg before the end of this week
- Use MySQL server for assignments 2 and 4c
  - need access to MySQL server provided by LiU IT
  - instructions on the course Website

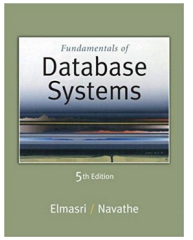
Organization of the Course

Structure of the Course

- Schedule on the course Website
- 12 lecture sessions
  - Flipped-classroom style
- 9 lab sessions
  - First three: focus on assignment #2 (SQL)
  - Remaining six: focus on assignment #4c
    (not all of these six lab sessions will be supervised)
- 1 teaching session
  - Discussion of #4a hand-ins (mandatory!)
- Text book: Elmasri and Navathe. *Fundamentals of Database Systems*, Addison Wesley, 7th edition

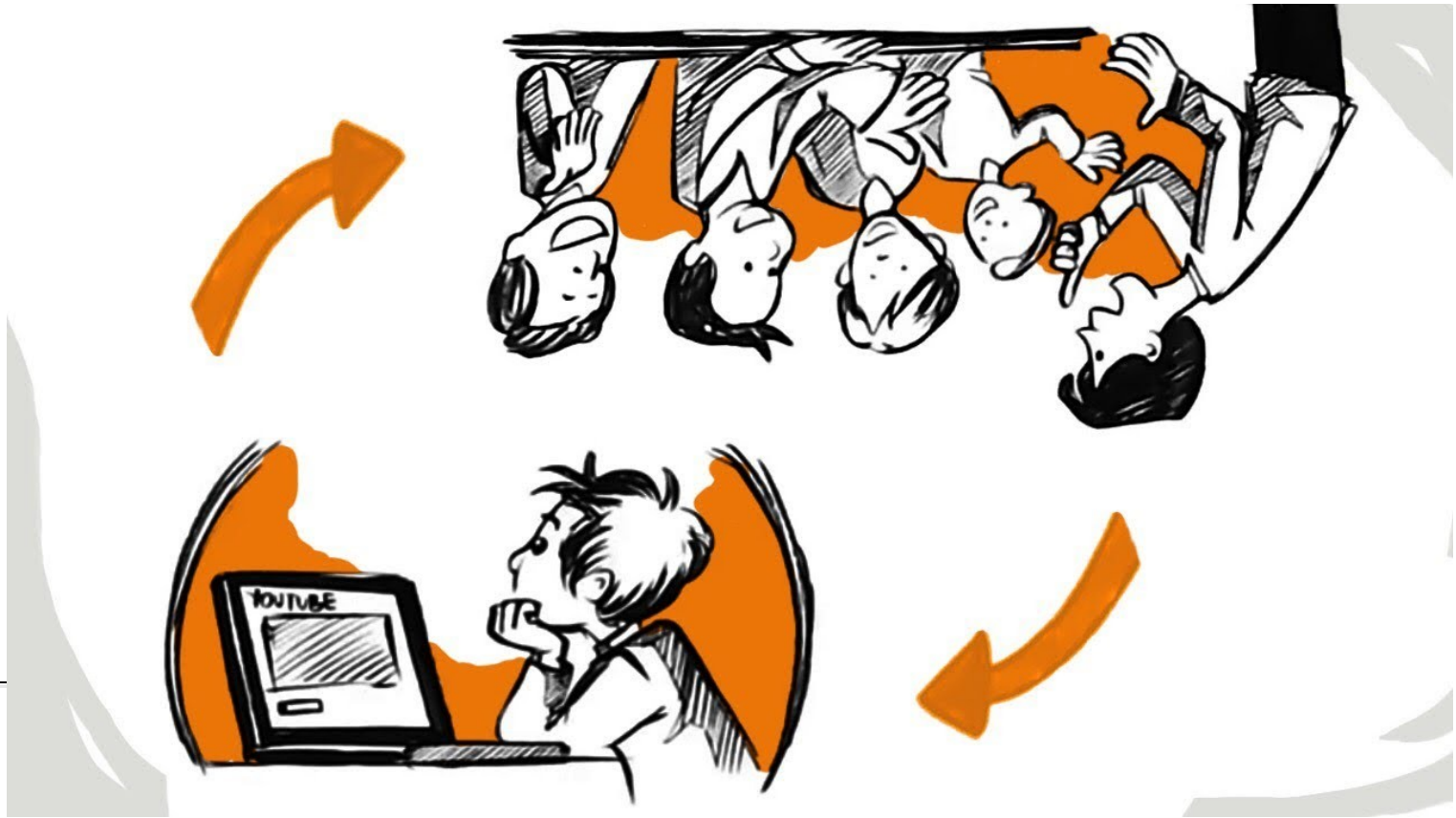






Flipped Classroom-like Model

- Idea:
  - you watch a video lecture *before* the lecture session
  - we use the lecture session to do some quizzes, go through some additional examples, and discuss questions and things that were unclear to you in these video lectures



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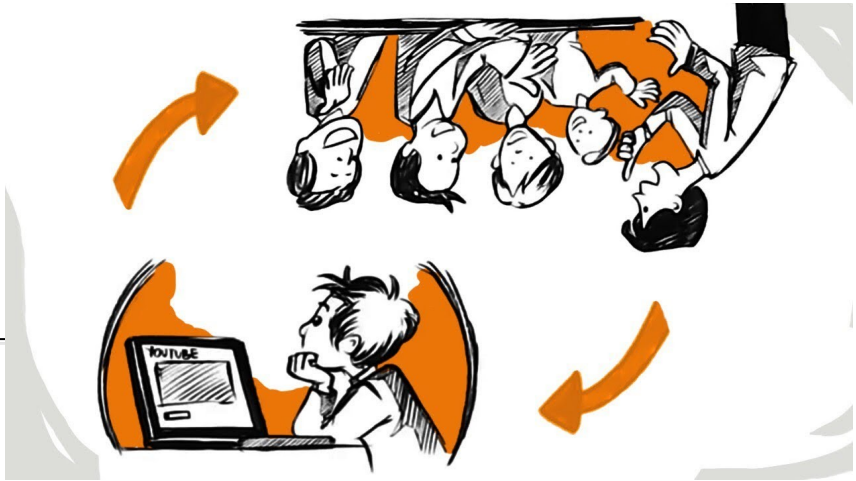
  - we use the lecture session to do some quizzes, go through some additional examples, and discuss questions and things that were unclear to you in these video lectures
- In contrast to traditional lectures
  - more flexibility in terms of when you watch the videos (plus, you can pause, repeat, fast-forward, etc.)
  - role of the lecture sessions: give you ample opportunity to ask questions and to reinforce your learning of the concepts



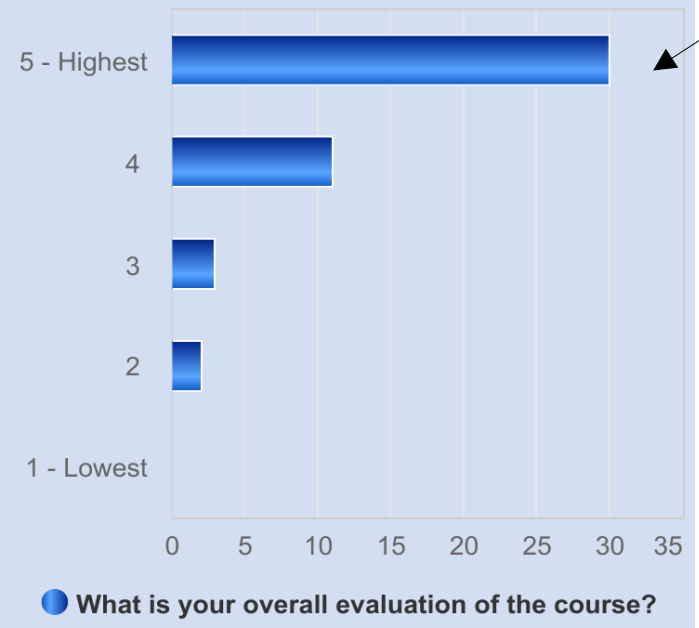
Did you watch the video lecture?

1) Yes, all of it
2) Yes, partially
3) No, sorry
4) Video lecture??

Earlier Versions of the Course

EvalLiUate Evaluations 2021 & 2022

	TDDD37 2021	TDDD37 2022	732A57 2021	732A57 2022
Overall number of students	138	143	19	11
Students who answered	36 (26.1%)	46 (32.2%)	4 (21.1%)	4 (36.4%)
Overall evaluation	4.31 (±0.75)	4.50 (±0.81)	4.50 (±1.00)	5.00 (±0.00)

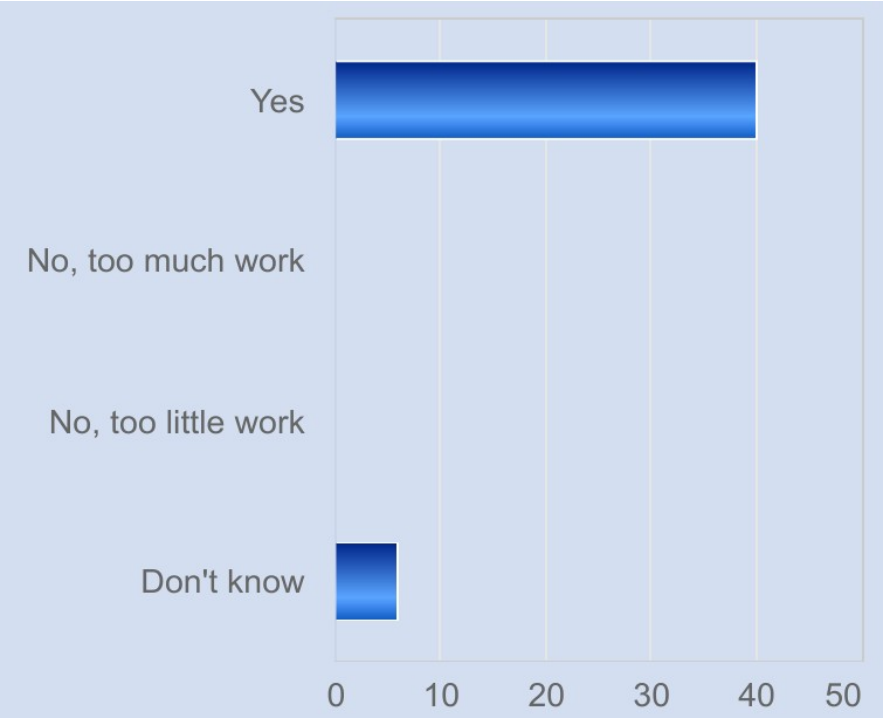


Quotes from Free-Text Fields

- *"The flipped classroom teaching style was a good way to better understand the lecture material. It made it easier to stay on track with the course. The lab series was a good way to further practice what I learned during the teaching sessions. Overall I think this was an excellent course."*
- *"Honestly this was the most pedagogical I've had during my time at Liu. It was easy to understand you, the examples felt relevant and were clearly explained. I really felt like we got to work with the material. I feel like there's a* ***real chance that I will remember things from this course*** *even after it ends, which unfortunately is unusual."*
- *"The flipped classroom was really good and* ***tricked me into actually learning the course*** *while having fun!"*
- *"For me, watching lectures at home is hard for the following reasons:*
  1. It takes more time
  2. I feel I learn less
  3. It is harder to stay in synch with the tempo of teh course
  Therefore, I much prefer attending lectures in-person, and I wish this course offered that."

Workload

The time I worked actively on the course (both timetabled hours and independent study) corresponded to the credit value of the course.

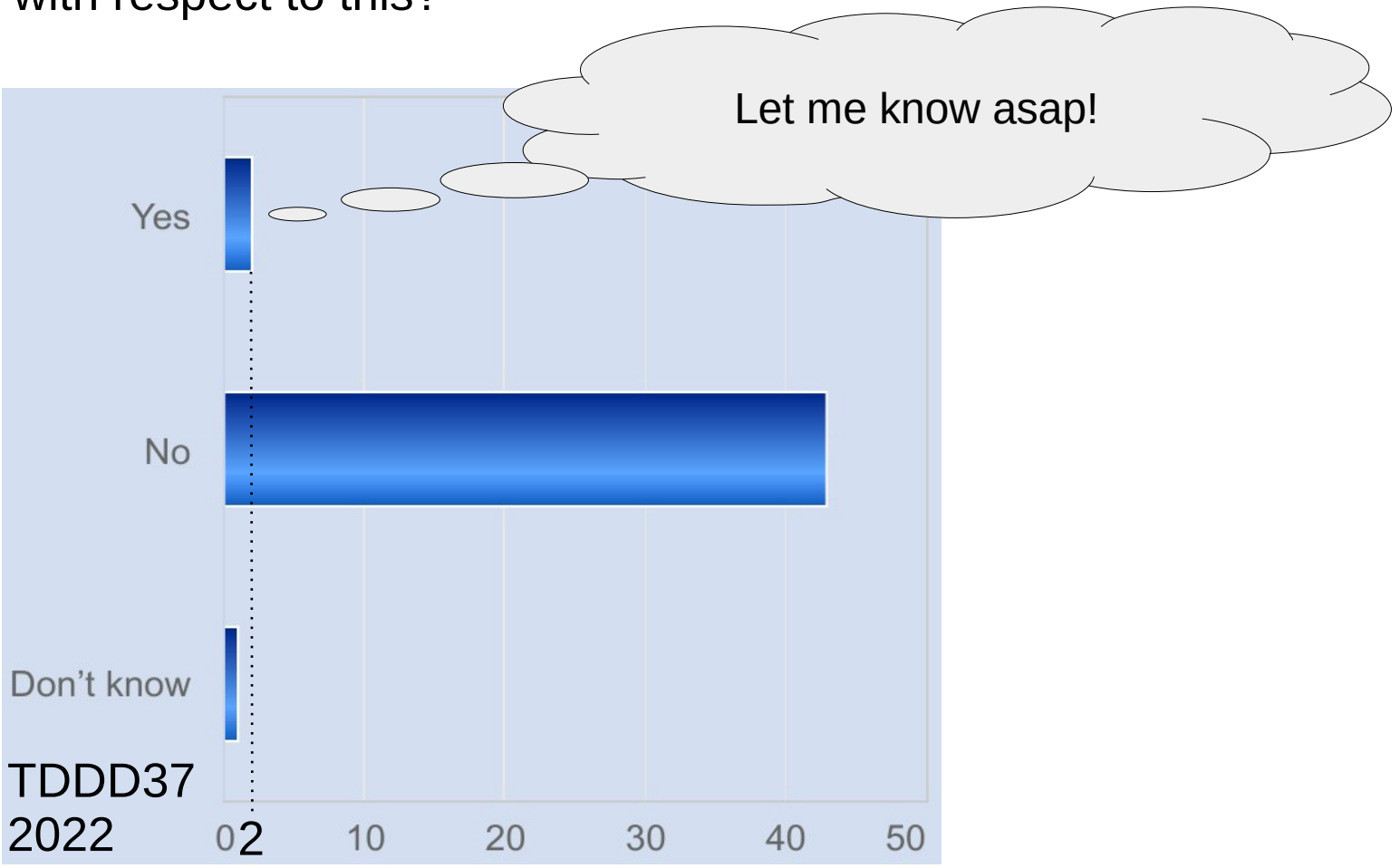


TDDD37 2022

732A57 2022

Equal Opportunities Issues?

LiU works actively to counter all forms of discrimination, harassment, victimisation and exclusion. Have you seen or witnessed any problems during the course with respect to this?



What is different this year?

- Not much
- Tried to streamline the assignment instructions a bit more

- Slightly unusual course schedule:
  - no sessions during the second week (b/c I will be attending a conference)
  - lecture session at 17-19 on the Monday *after* the second week

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