Welcome to TDDD37 / 732A57 Database Technology


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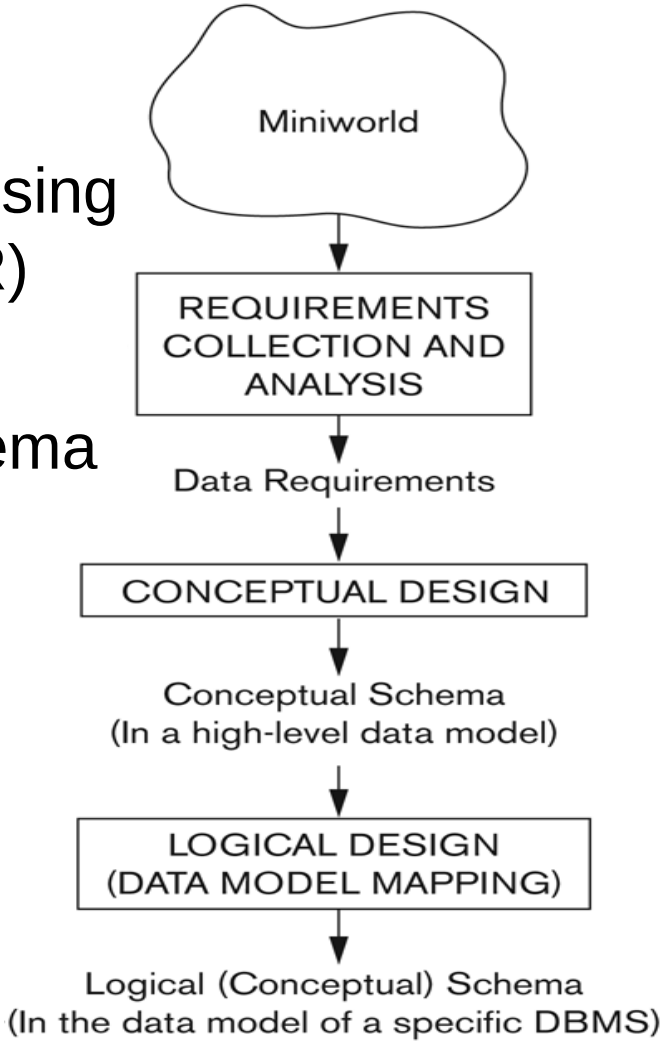
Topics and Intended Learning Outcomes

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

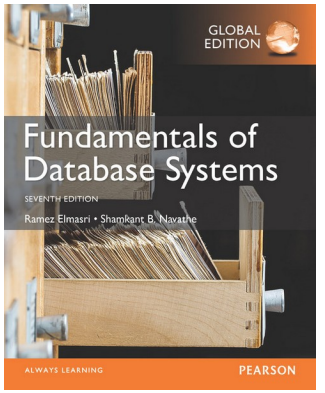
1. Database design and EER modeling
2. SQL
3. Functional dependencies and normalization
4. BrianAir project, *4a*: initial design, *4b*: improved design
   4c: implementation, *4d*: urkund analysis

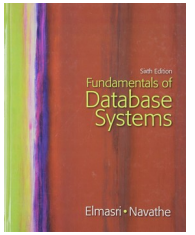
- Deadlines on the course Website
  - *hard deadlines* for assignments 4a and 4b (before assignment 3!)
- To be solved in pairs
  - register with lab partners in Webreg before the end of this week
- Use MySQL server for assignments 2 and 4c
  - need access to MySQL server provided by LiU IT
  - instructions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

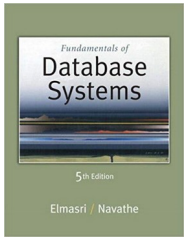
Organization of the Course

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

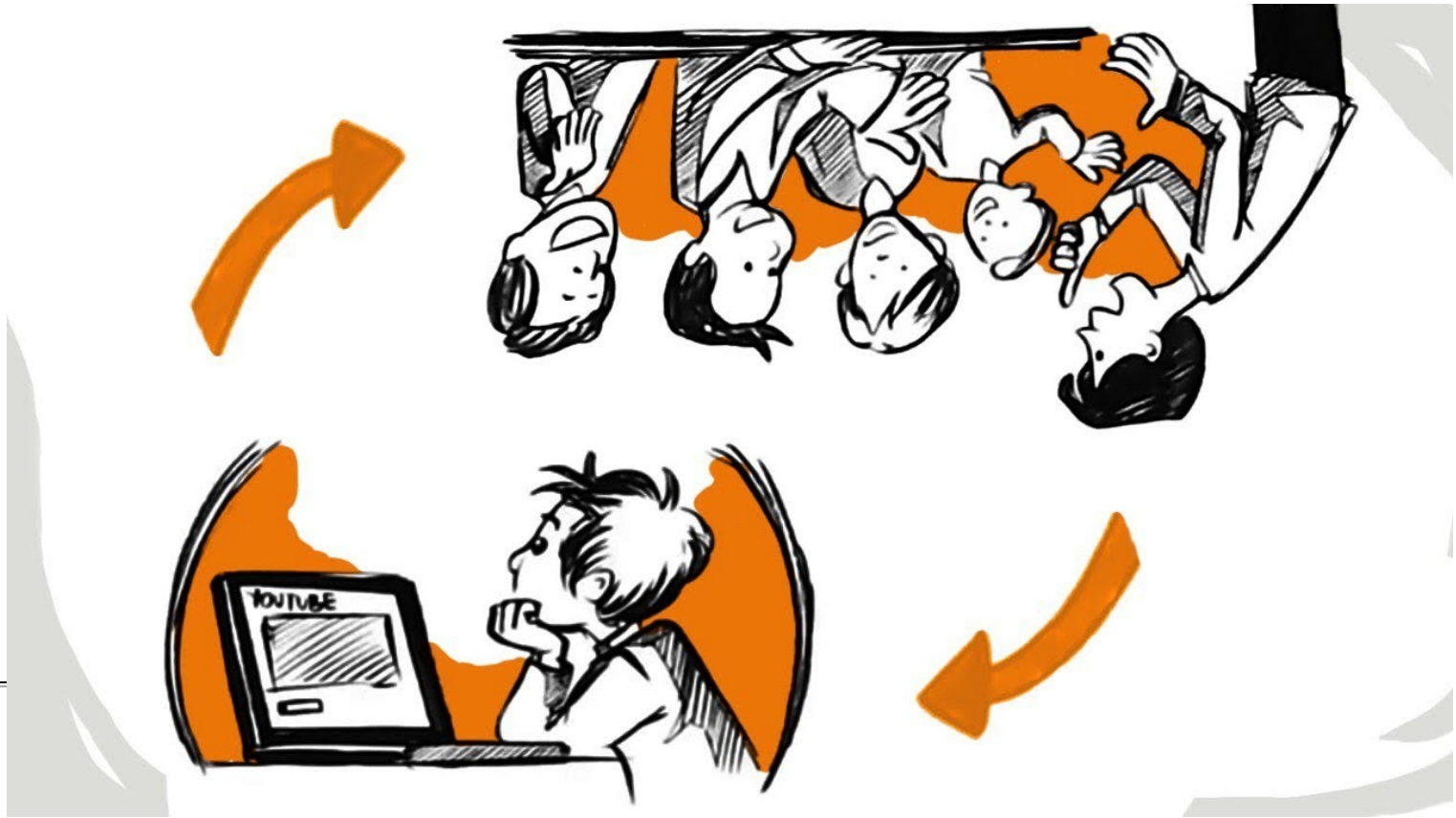






Flipped Classroom-like Model

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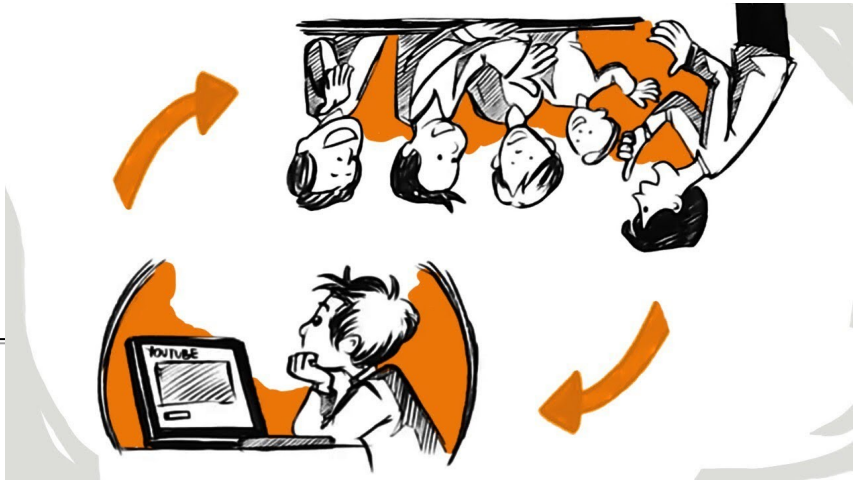
  - we use the lecture session to do some quizzes, go through some additional examples, and discuss questions and things that were unclear to you in these video lectures
- In contrast to traditional lectures
  - more flexibility in terms of when you watch the videos (plus, you can pause, repeat, fast-forward,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



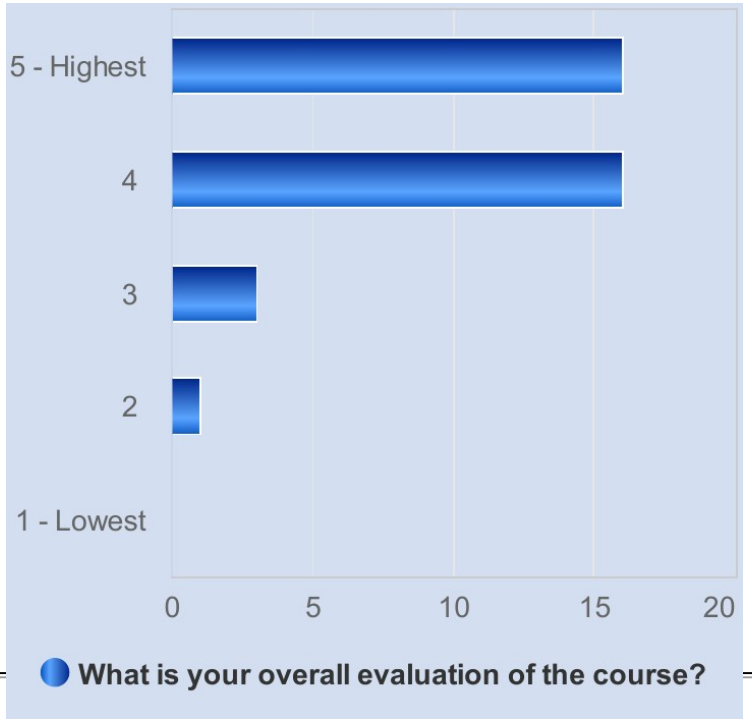
Did you watch the video lecture?

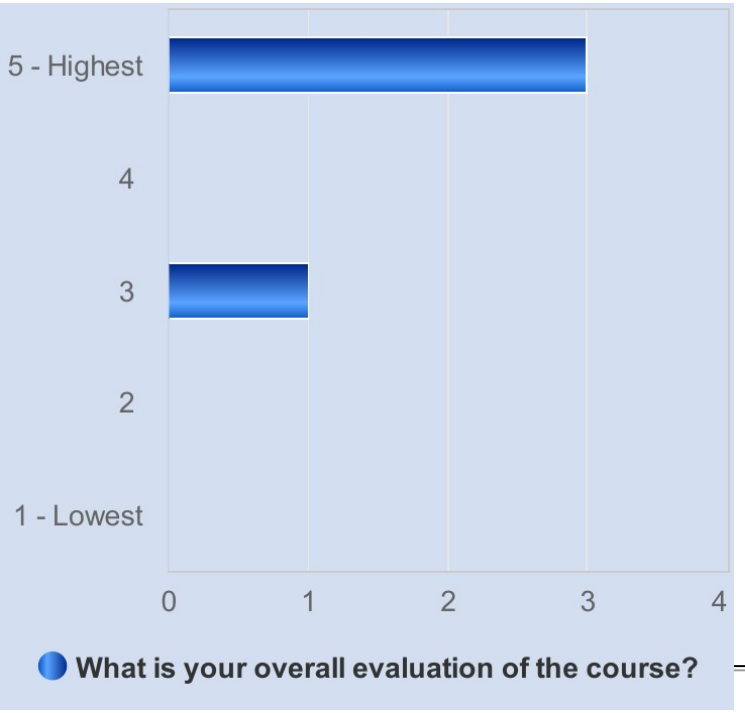
1) Yes, all of it
2) Yes, partially
3) No, sorry
4) Video lecture??

Earlier Versions of the Course

EvalLiUate Evaluations 2021

	TDDD37	732A57
Overall number of students	138	19
Students who answered	36 (26.1%)	4 (21.1%)
Overall evaluation	4.31 (±0.753)	4.50 (±1.00)





Quotes from Free-Text Fields – Praise

- *“The flipped classrooom method is extremely good for learning. Thanks to Olaf for using this method, it really helped my learning process.”*

- *“The quizzes in the lectures were a great help, it tested whether you had actually understood or just thought you did. The videos in advance in combination with tha recorded lecture sessions were also great to help the learning experience.*
  The lab assignments helped to get practical experience of what we learned in the lectures, and personally I think that's where most of the information we got in the course really stuck for me. The lectures introduced the concepts, but the understanding came with the assignments.”

- *“I think the labs worked well, they are always fun and engaging. Labs teach a lot because you need to apply what you learn and therefore youremember it better.”*

Quotes from Free-Text Fields – Critique

- *"The videos to watch before the live lecture could be a bit more concise, since they were mostly recordings of previous live lectures some irrelevant material (such as the quizzes and wait time) were still included."*

- *"An easily accesible, more in-depth information alternative to the lecture slides, the slides are easily accesible but i found that they lacked some info about specific details from time to time."*

- *"Update the text of the lab assignments, especially lab 4 to be more intuitive and unambiguous. There are examples where two different names are used for the same table or concept which makes it confusing as to if it is a separate thing or the same as previously mentioned. There are also many instances where the wording is just very vague and confusing."*

- *"laboration assistants could vary in quality and their help."*

What is different this year?

- Back on campus (yay!)
- Continue with flipped classroom method
  (i.e., not back to traditional lectures)
- All lab assistants this year have experience with the course
- Tried to streamline the assignment instructions a bit more

- Video watching schedule is part of the schedule in TimeEdit
  - see the teaching activities called “Information”
  - attention: no need to watch the videos in exactly these time slots
- First SQL-related lab session (Nov.14) is at 17-19, unfortunately

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