Welcome to TDDD37 / 732A57 Database Technology


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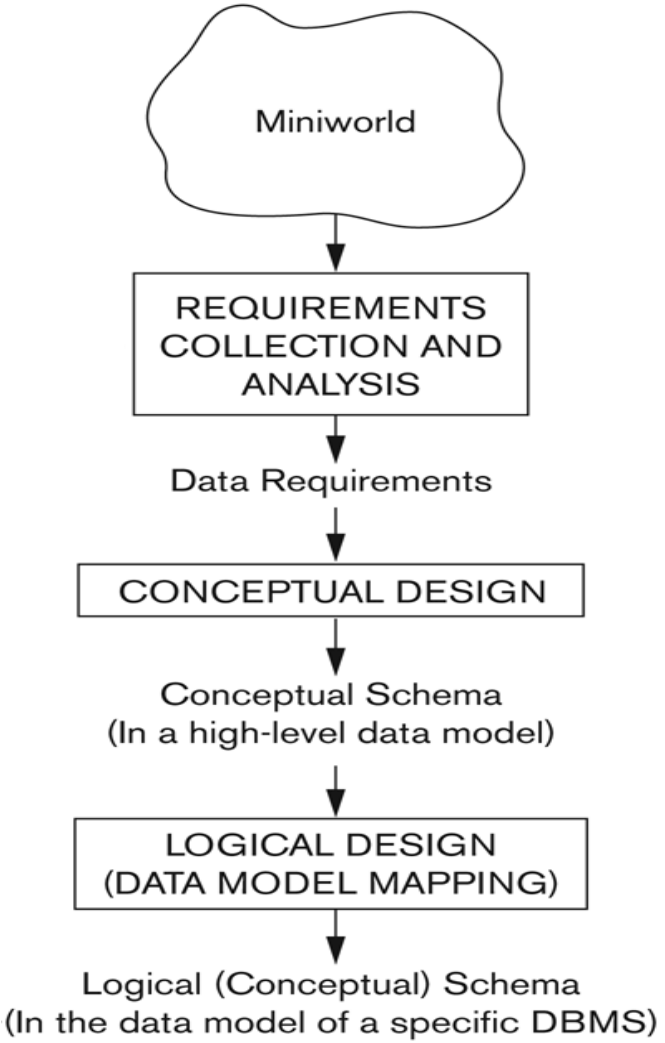
Topics and Intended Learning Outcomes

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

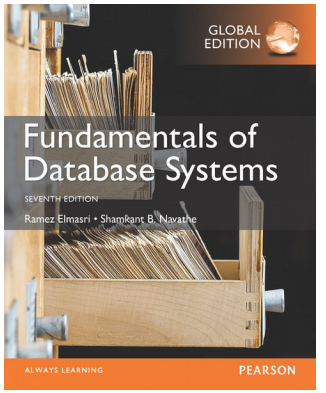
1. Database design and EER modeling
2. SQL
3. Functional dependencies and normalization
4. BrianAir project, *4a*: initial design, *4b*: improved design
   4c: implementation, *4d*: urkund analysis

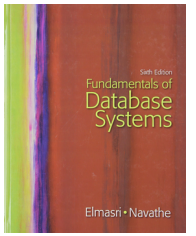
- Deadlines on the course Website
  - *hard deadlines* for assignments 4a and 4b (before assignment 3!)
- To be solved in pairs
  - register with lab partners in Webreg before the end of this week
- Use MySQL server for assignments 1 and 4c
  - need access to MySQL server provided by LiU IT
  - instructions on the course Website

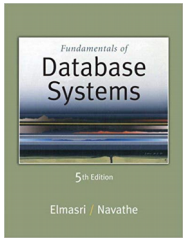
Organization of the Course

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

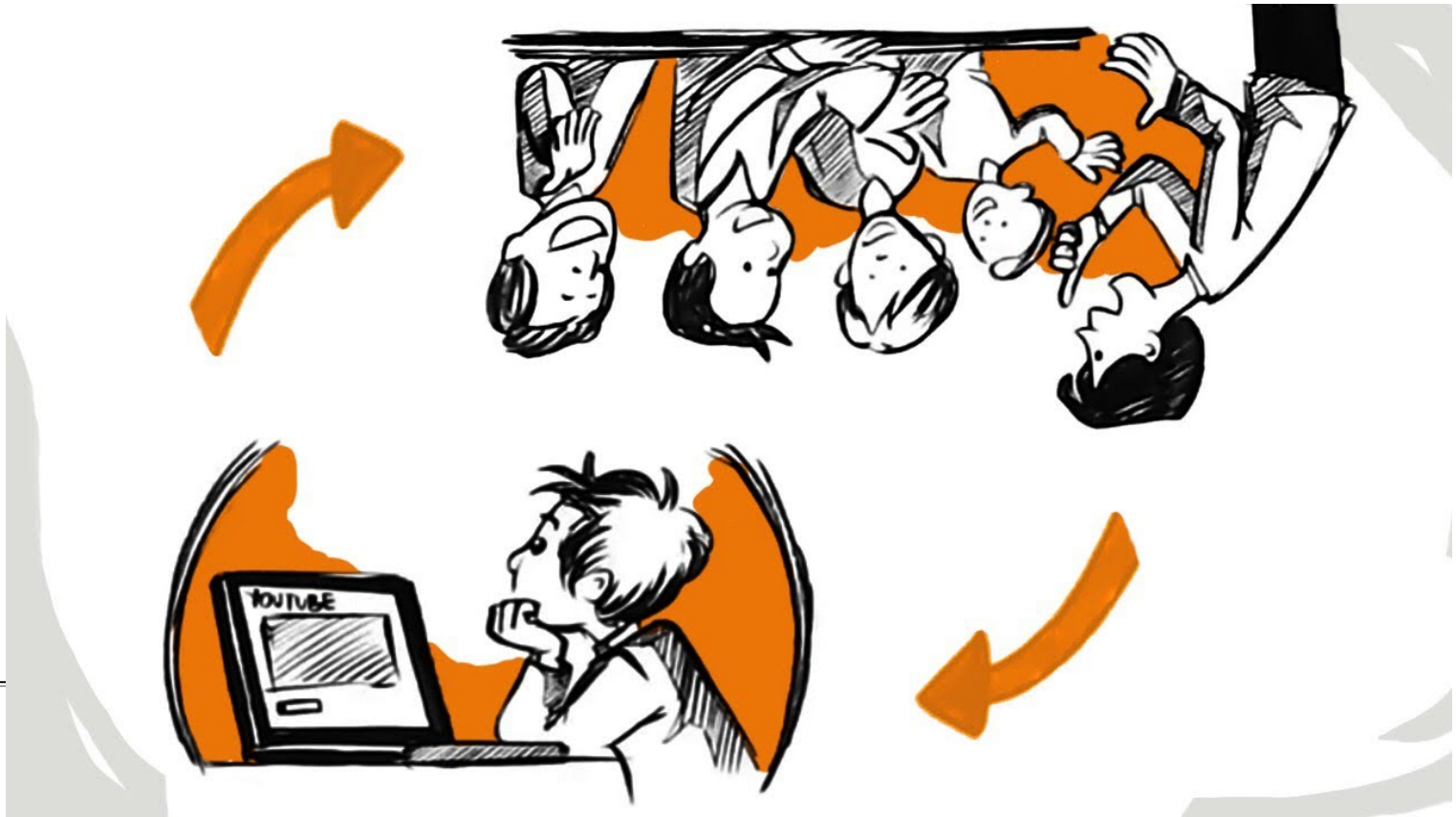






Flipped Classroom-like Model

- 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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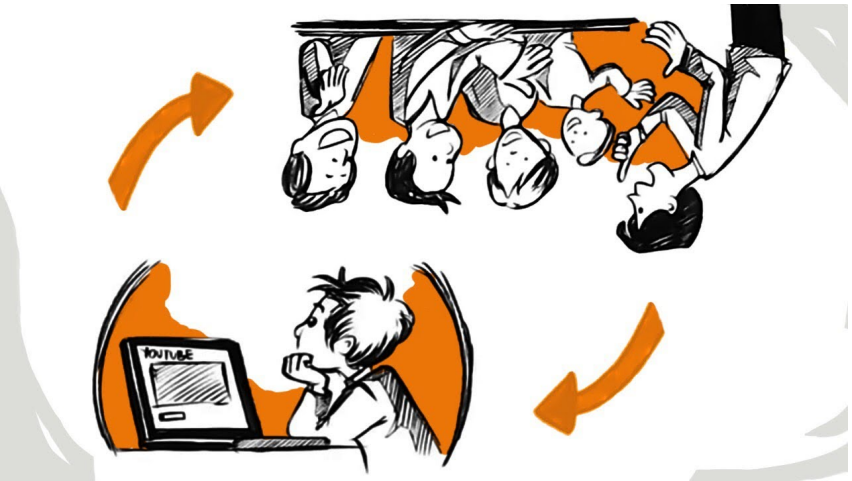
- In contrast to trying to replicate traditional lectures
  - more flexibility in terms of when you watch the videos (plus, you can pause, repeat, fast-forward, etc.)
  - role of the lecture sessions: give you ample opportunity to ask questions and to reinforce your learning of the concepts



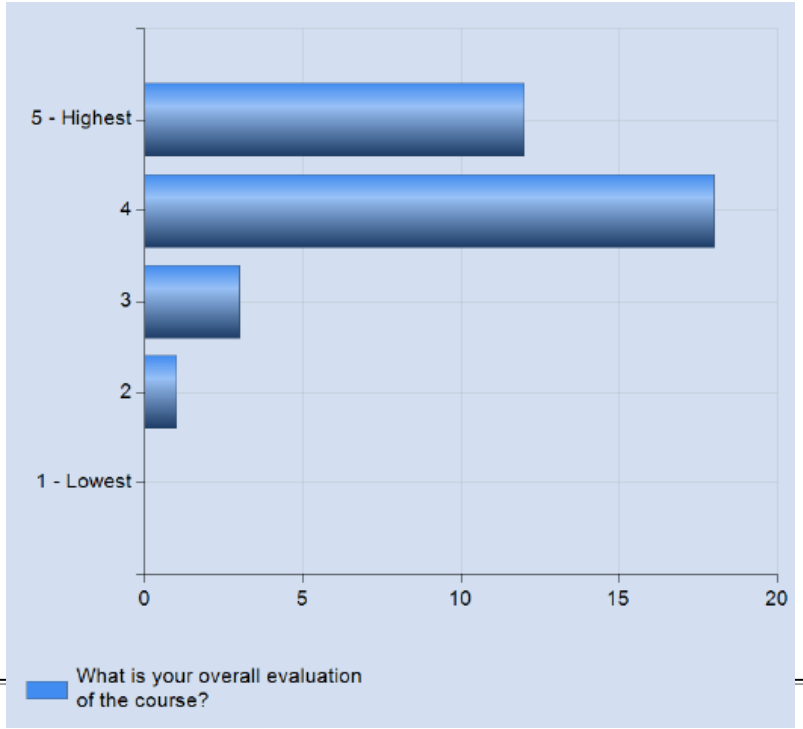
Did you watch the video lecture?

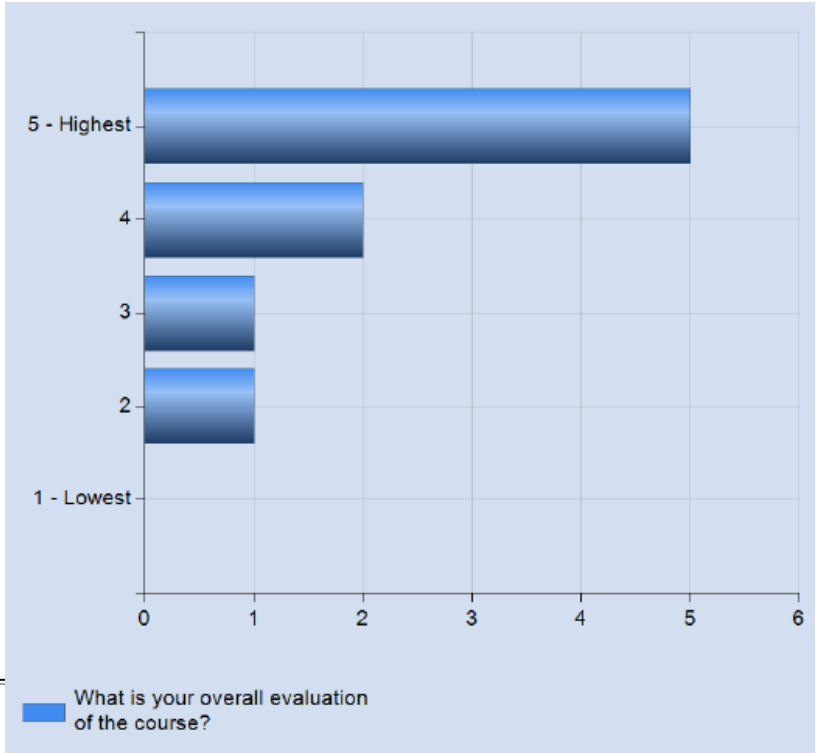
1) Yes, all of it
2) Yes, partially
3) No, sorry
4) Video lecture??

Earlier Versions of the Course

EvalLiUate Evaluations 2020

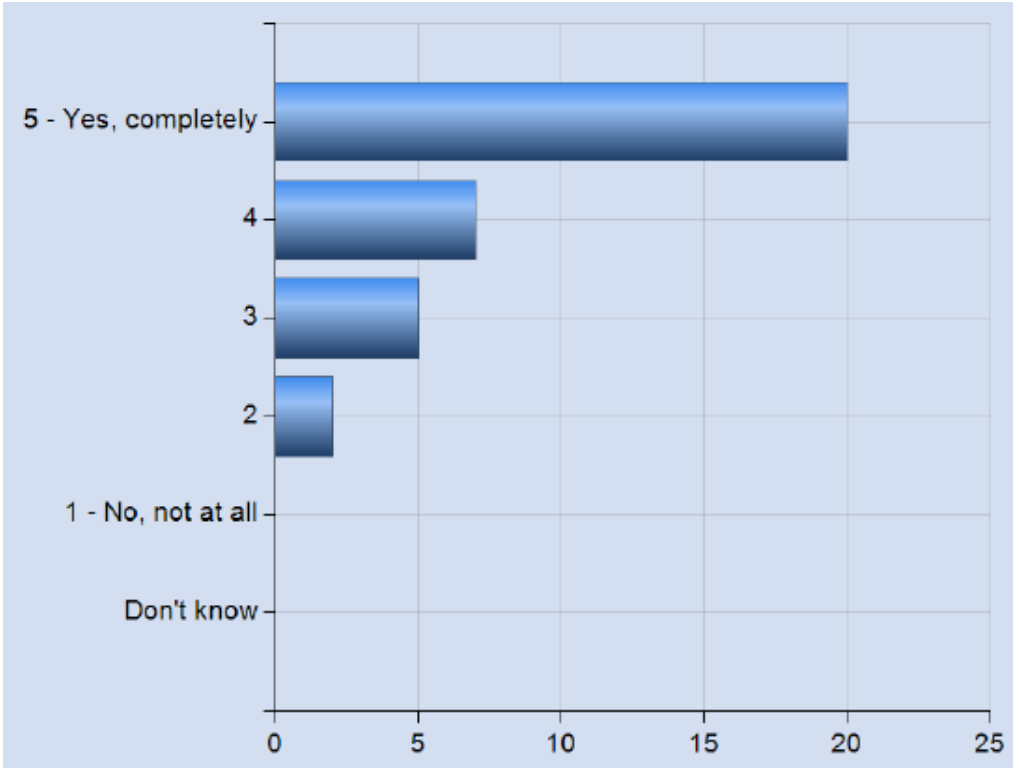
	TDDD37	732A57
Overall number of students	116	36
Students who answered	34 (29.3%)	9 (25.0%)
Overall evaluation	4.21 (±0.73)	4.22 (±1.09)

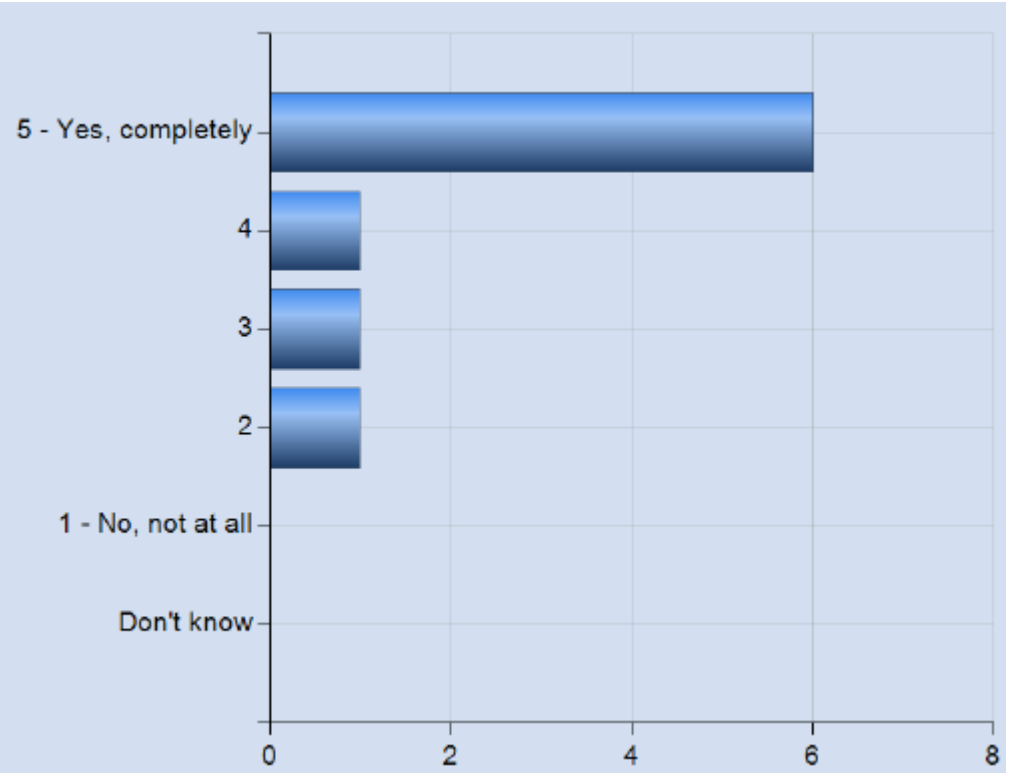




EvalLiUate Evaluations 2020 (cont'd)

Question: The educational methods used in the course supported my learning.





Quotes from Free-Text Fields

- *"I like the reverse classroom style. The interactive element in the lectures helped me focus a lot better"*
- Liked the *"Flipped-classroom style teaching, with the recordings of old lectures in combination with quizzes was great since it's a lot more fun and engaging as opposed to just watching lectures with stale powerpoints for a year."*

- *"The videos we had to watch took a lot of time (videos were so long), so, basically, the time of lectures had doubled, and we didn't have enough time to watch the videos and attend the lectures."*
- *"Sometimes, the time-window was a little small between receiving information and the deadline. For instance, video links were occationally sent one day prior to the corresponding lecture, which lead to planning issues."*

What is different this year?

- Parts of the course are swapped
  - assignments 1 and 2
  - some of the lecture topics towards the end → one less lecture
- Video watching schedule now part of the schedule in TimeEdit
  - see the teaching activities called “Information”
  - attention: no need to watch the videos in exactly these time slots
- Web pages reorganized to make the deadlines more prominent

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