

Welcome to TDDD12 Database Technology



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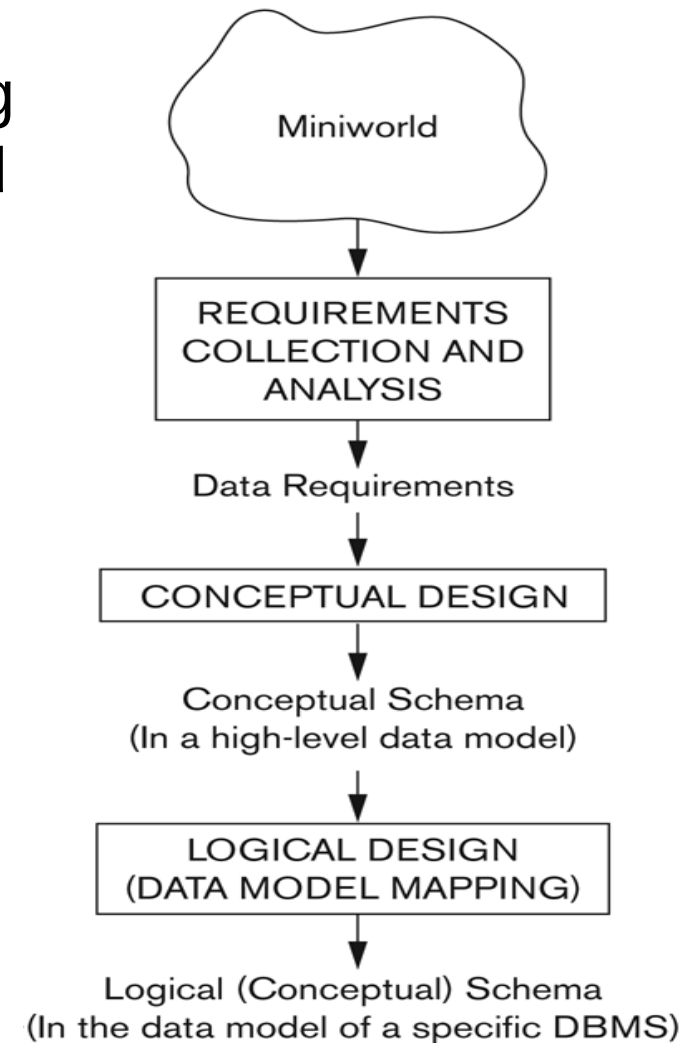
Topics and Intended Learning Outcomes

Course Topics

1. Fundamental concepts
2. Relational databases
3. SQL
4. EER modeling
5. Mapping of EER diagrams to relations
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
- Form of this examination still to be decided



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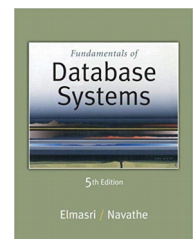
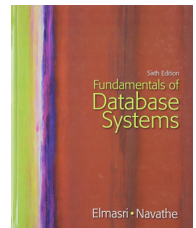
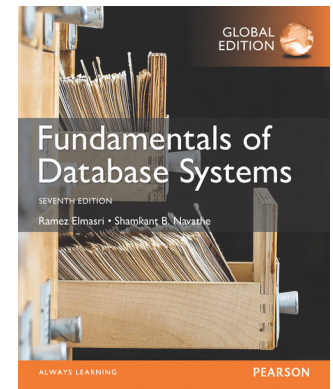
Four Assignments

1. SQL
 2. Database design and EER modeling
 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 or groups of three
 - 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

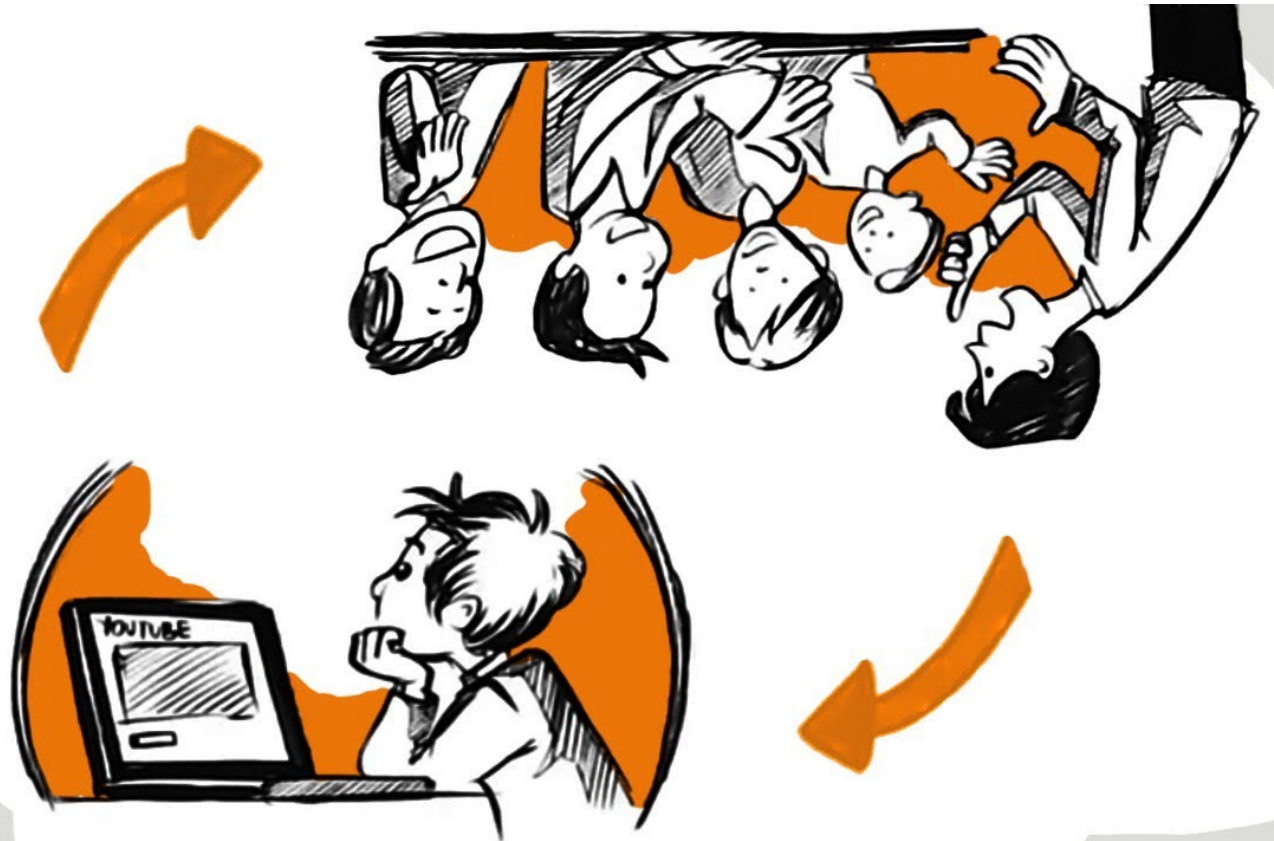
Structure of the Course

- Schedule on the course Website
- 13 lecture sessions
 - Mostly flipped-classroom style
- 9 lab sessions
 - First three: focus on assignment #1
 - 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



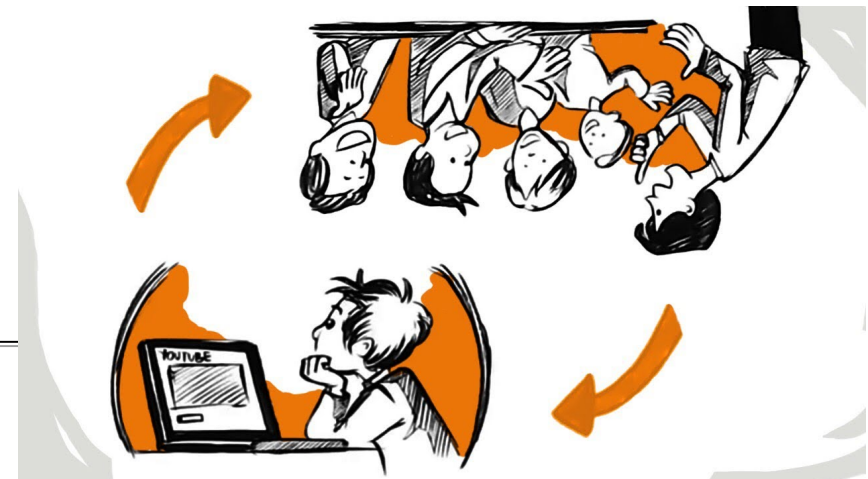
Flipped Classroom-like Model

- 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



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
- 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



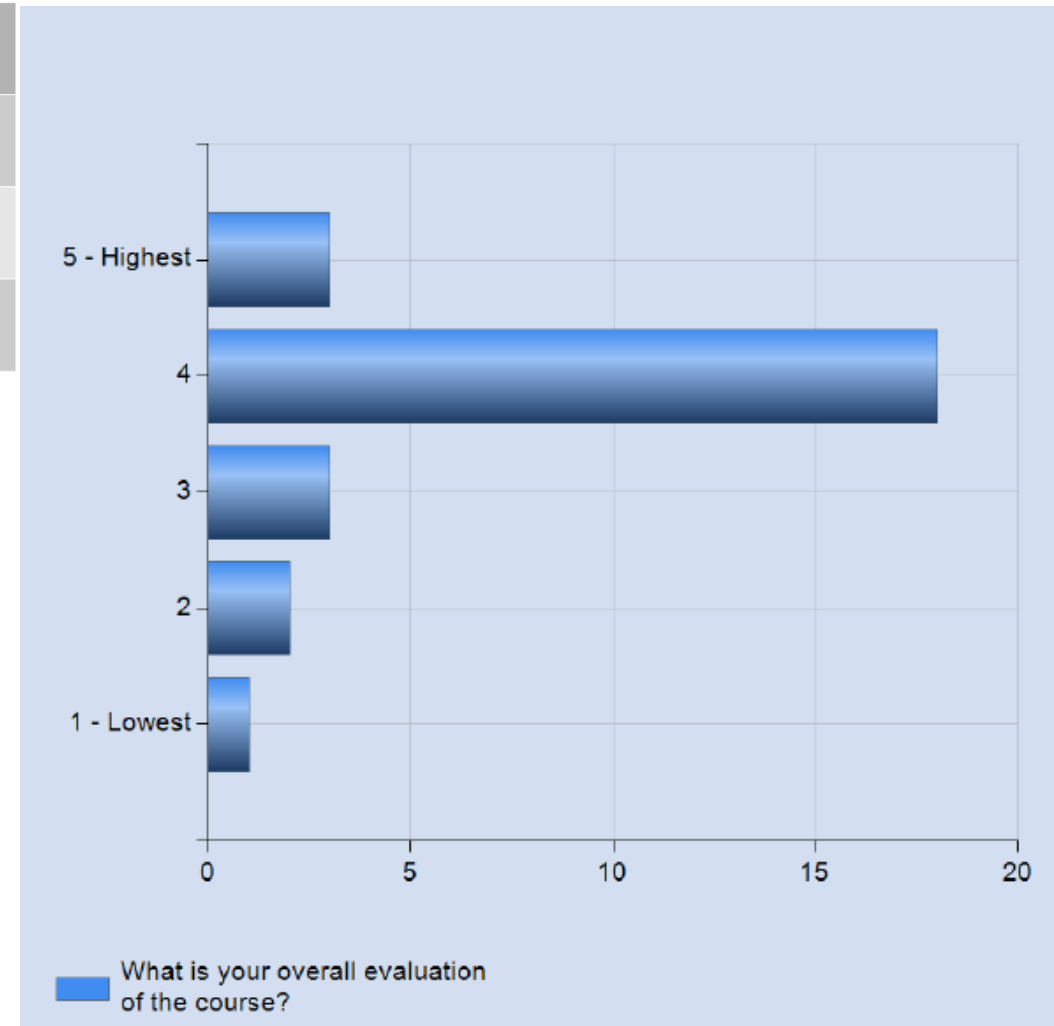
Did you watch the video lecture?

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

Earlier Versions of the Course

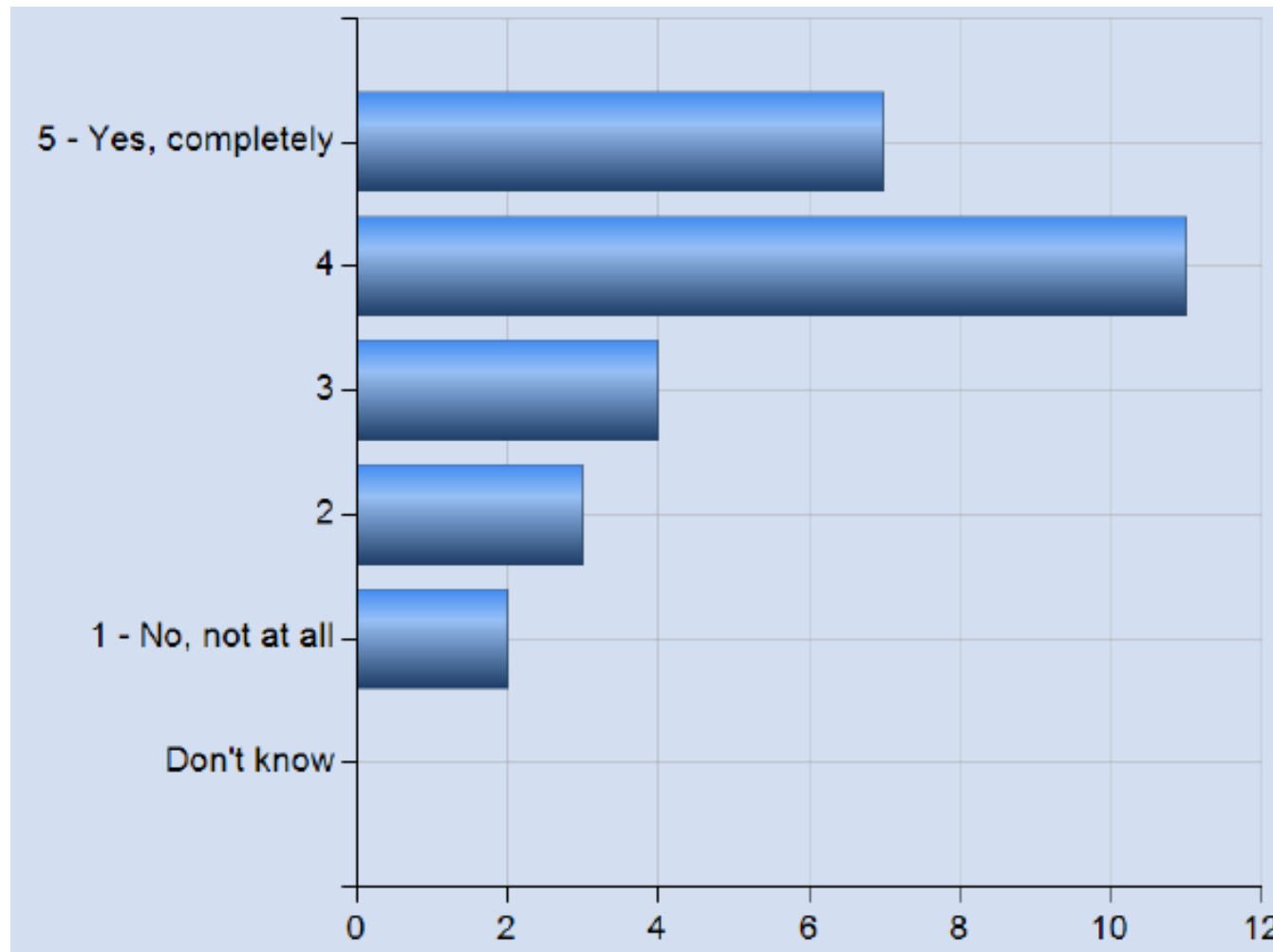
EvalLiUate Evaluations 2020

	TDDD12
Overall number of students	122
Students who answered	27 (22.1%)
Overall evaluation	3.74



EvalLiUate Evaluations 2020 (cont'd)

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



Quotes from Free-Text Fields

- About the course in general:
 - *“[...] it must've been difficult to hold a course on distance without the proper time needed to prepare, but in general I think it was good.”*
 - *“I think Olaf really did an amazing job on adapting the course to distance version. I understand there's little amount of time to do this, since no one could have foreseen this situation.”*
 - *“Lectures were great.”*
 - *“Good labs.”*
 - *“The online format of the lectures were also very appreciated. This is one of the first courses where I have attended every single lecture. [...] The chat function allowed students to formulate their question in a precise way. This lead to less misunderstandings.”*

Quotes from Free-Text Fields

- About the videos used for the flipped-classroom lectures:
 - *“The youtube lectures were terrible in every aspect, the lecturer in these videos was reading from a script and it was no different from listening to an audio book.”*
 - *“I just feel like the videos were hard to watch, the guy in the video was very hard to listen to, he had no approach at all, it was like a text reader or something, I think they are replaceable by the book which was never mentioned although it is true.”*
 - *“I think extra lectures instead of the videos would have been much better as Olafs explanations are very good and understandable. It s still not bad to mention that the videos exist, but I think Olaf could do a much better job than the guy in the video.”*
- Now we use my own recordings of lectures

Quotes from Free-Text Fields

- About the flipped-classroom lecture sessions:
 - *“I think the lecture format of watching a video before hand and then doing quizzes etc. was very good.”*
 - *“Good thing to use flipped classroom in lectures when distance mode.”*
 - *“Perhaps it was a little bit too much repetition with wathcing lectures from other people before the course lecture.”*
 - *“Ditch flipped classroom”*
 - *“I think it's great to watch video lectures before lectures, but I sometimes feel like there might be some content in the videos that's not really talked about in the lecture. But, all in all, really well done.”*
- More experience with the flipped-classroom model now

Quotes from Free-Text Fields

- About recording of lectures:
 - *“Some concept were hard to understand at the time they were introduced (for example, recovery strategies). These concept may appear to be very basic and easy when the lecturer explains them, but if the student later forgets the explanation it could take several hours of detective work just to understand the dynamic of a basic concept. Recorded explanations/lectures/examples provides students with a chance to revisit any explanation which would be a great resource when they revisit difficult concepts.”*
 - *“I feel like we should have been able to record the lessons as it is not so easy to sit at home and listen because we are prone to many external distractions that could happen in the place we live, it was not nice to not have this opportunity although it is totally fine to record them but the excuse was always some weird thing as GDPR as if this was a commercial thing.”*
- All lecture sessions will be recorded and made available

Quotes from Free-Text Fields

- About the labs / the assignments:
 - *“Good labs.” “The labs!!” “It was good with lab sessions so that one could ask questions about the lab.”*
 - *“I felt like lab 2 and 3 was unnecessary due to having to know these things in lab 4. We should start with lab 4 much earlier. Lab 4 was really stressful and we had to work with it during the exam period.”*
 - *“The labs [...] were in a relevant order and each of lab 1 - 3 prepared us for the big project, lab 4. I would not have succeeded with lab 4 without the things I learnt in lab 1 -3.”*
 - *“I wanted (a lot) more extensive labs in MySQL, felt that they did not give as much as I wanted. I feel that I've learned the very basic but considering that it is 6hp it would have been possible to have more time demanding programming to do.”*
- No changes to the assignments per se;
however, first deadlines for assignment 4 are earlier now

Quotes from Free-Text Fields (cont'd)

- About the database server:
 - *“Many problems with mariadb.”*
 - *“More local content. For instance you could support a local downloadable database solution to test and run labs locally.”*
- LiU IT has migrated the DB server to new hardware
- No support for a local database server

Quotes from Free-Text Fields

- About the lab assistants:
 - *“There was a 50% chance that [REDACTED] responded to mails and when he responded, there was a 50% chance that he responded to all the question. He also has a tendency to respond with so few words that the respond was insufficient. So there's something to improve.”*
 - *“The lab assistant did not feel so educated on the topic, and could not answer to hardly any of our questions.”*
 - *“The lab assistant was one of the best I've had. His optimism and enthusiasm made every lab session and lesson fun to attend.”*
- The lab assistant mentioned in the first quote is not working in this course anymore!
- Let me know if you have issues

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