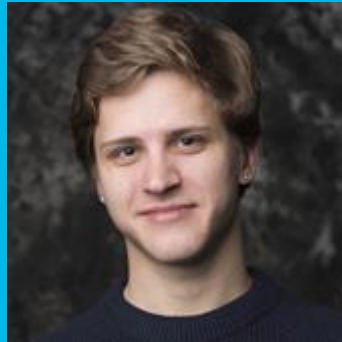


# Welcome to TDDD12 Database Technology



**Olaf  
Hartig**



**Nikita  
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**Eric  
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**Matteus  
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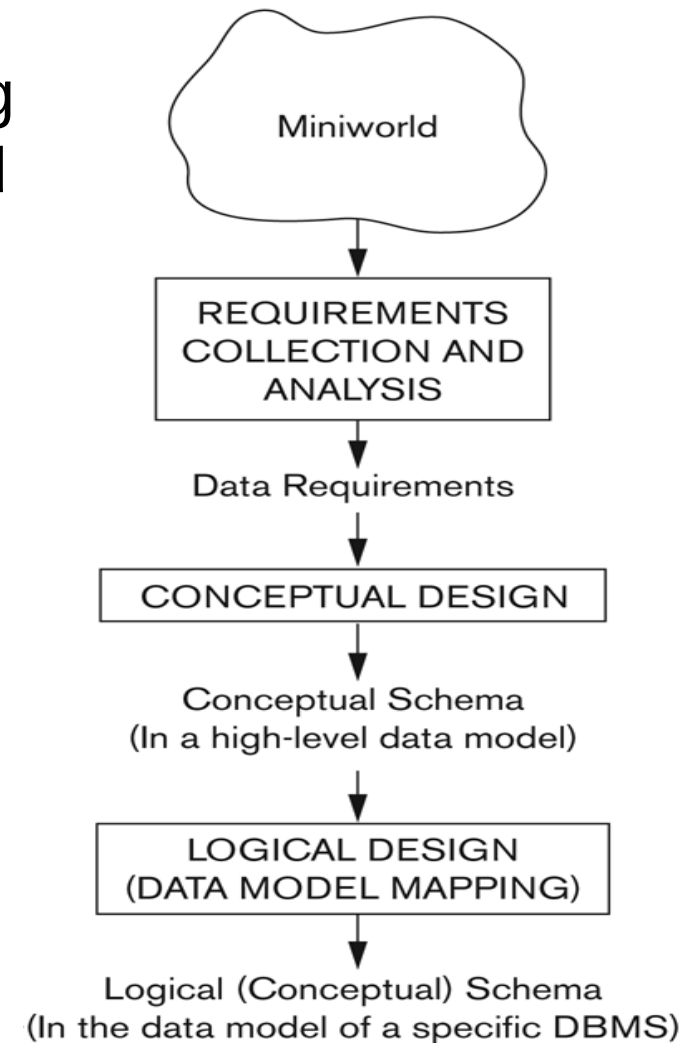
# Topics and Intended Learning Outcomes

# 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 may 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 at the course Website
- Form of this examination still to be decided

# Four Assignments

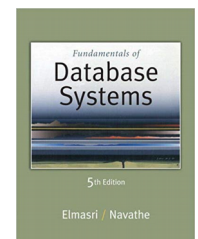
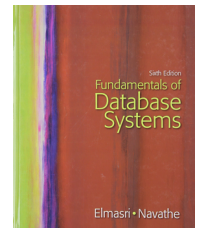
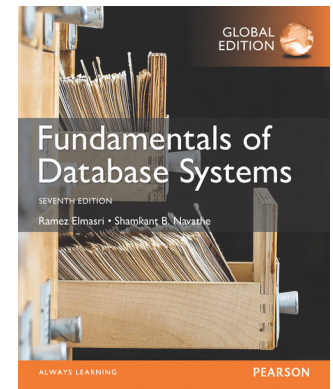
1. SQL
  2. Database design and EER modeling
  3. Functional dependencies and normalization
  4. BrianAir project, *lab4a*: initial design, *lab4b*: improved design  
*lab4c*: implementation, *lab4d*: urkund analysis
- Deadlines on the course Website
    - hard deadlines for lab4a and lab4b
  - To be solved in pairs
    - register with a lab partner in Webreg before the end of this week
  - Use MySQL server for lab1 and lab4c
    - need access to MySQL server provided by LiU IT
    - instructions on the course Website



# Organization of the Course

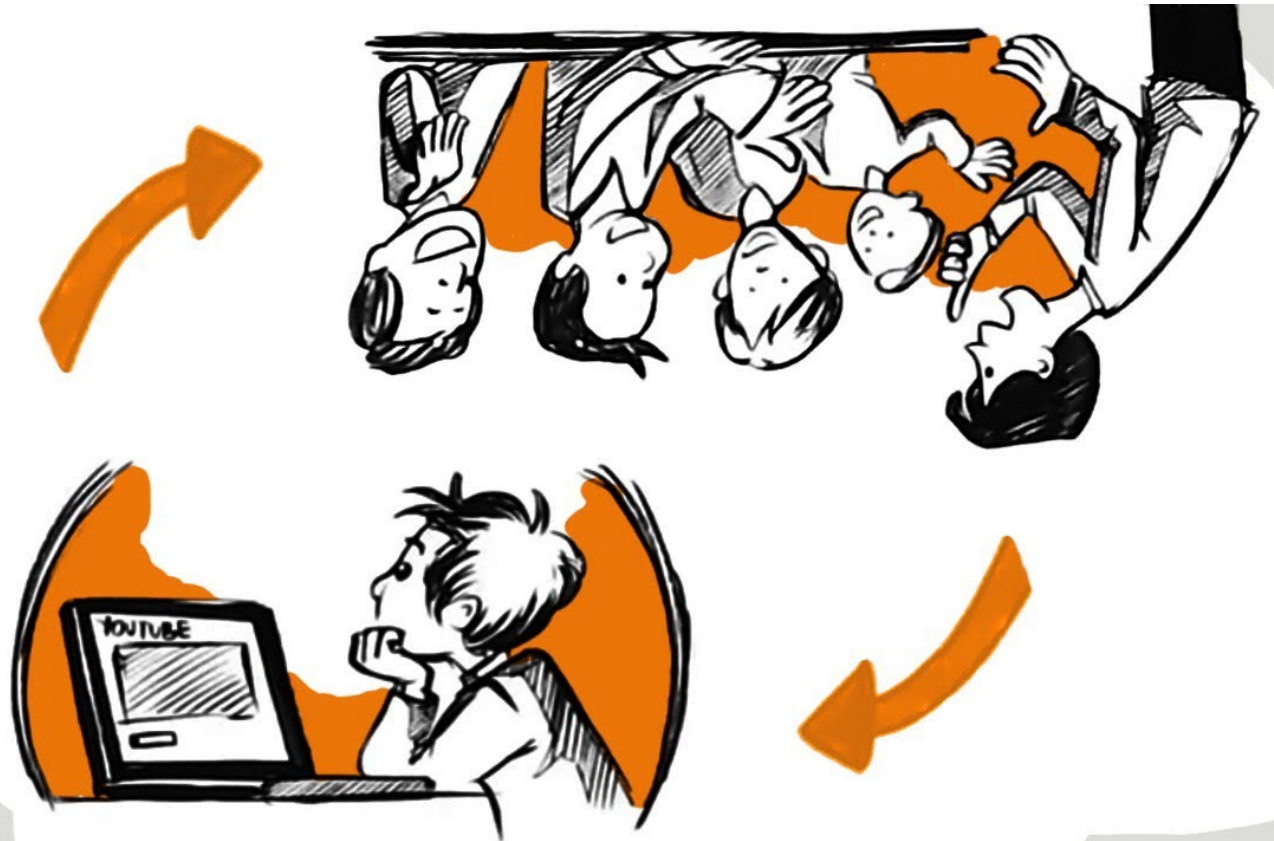
# Structure of the Course

- Schedule see the course Website
- 12 lecture sessions
  - Text book: Elmasri and Navathe. *Fundamentals of Database Systems*, Addison Wesley, 7th edition.
- 9 lab sessions
  - First two: focus on assignment #1
  - Third one: focus on assignment #2
  - Remaining six: focus on assignment #4c  
(only three of these six lab sessions will be supervised)
- 3 teaching sessions
  - First one: Discussion of #4a hand-ins (mandatory!)
  - Second and third: practice with functional dependencies and normalization (related to assignment #3)



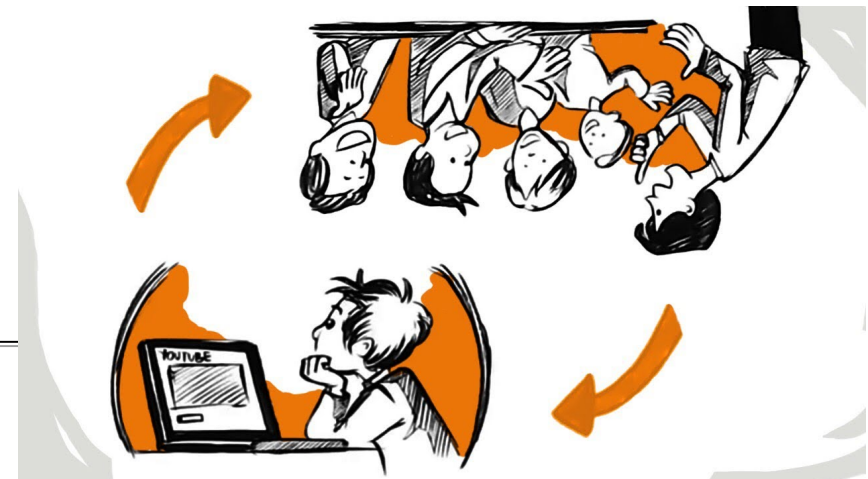
# Flipped Classroom-like Model

- Idea:
  - you watch a video lecture *before* each 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* each 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



# Please bear with us!

- Not everything is guaranteed to run smoothly
- We are trying our best



[www.liu.se](http://www.liu.se)