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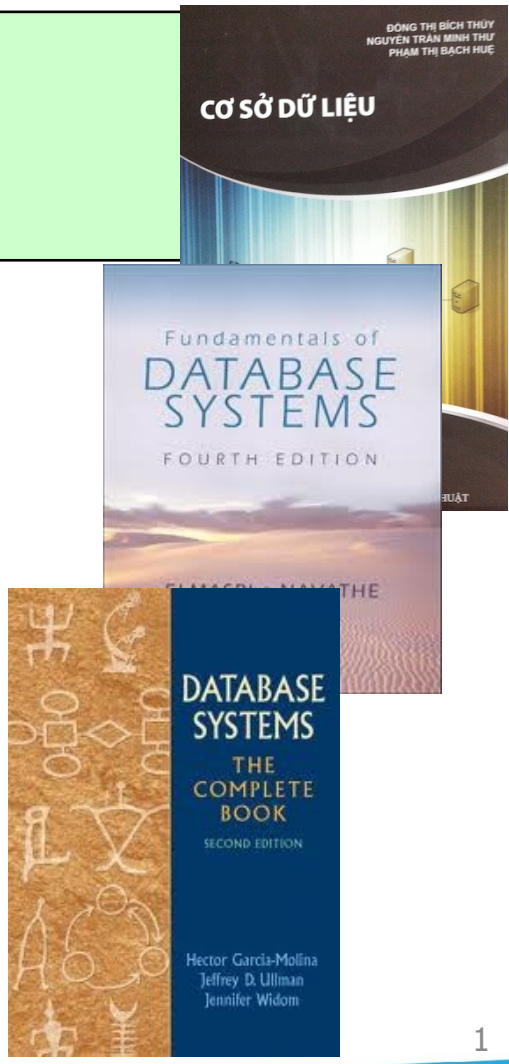
Chapter 0 - Introduction



Instructor:
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Agenda

- Objectives
- Learning outcomes
- Course content
- Evaluation forms and grading scale
- Reference
- Course policies and rules

Objectives

- **Knowledge:**
  - Explain the roles of the database in an organization, basic concepts of database and database systems
  - Data modeling: applying the ER model and relational data model to model data at a basic level
  - Understanding principles of query language of database
  - Understanding how to detect, describe, and declare constraints on data
  - Interpret and evaluate the quality of a database schema
- **Skills:**
  - Design a simple database schema based on requirements
  - Implement a database, use SQL to create and exploit a relational database
  - Practice critical, creative thinking. Use presentation skills, English skills to read technical documents, practice teamwork skills.

Learning Outcomes

1. Understanding the importance of DB in enterprises and other organizations, and describe the **fundamental concepts of DB**
2. Data modelling:
   a. Understand concepts of relational data model build conceptual data model from business cases – **using ER model**
   b. Understand concepts of relational data model – build a relational data schema
   c. Transfer a ER schema to **relational data schema**
3. Query languages: proficient in relational data query languages: Relational Algebra, Relational Calculus, SQL
4. Database implementation:
   a. Using DBMS MS SQL server to deploy a relational database schema and manipulating data using SQL language.
   b. Detect, declare and implement integrity constraints in a relational database schema

Learning Outcomes

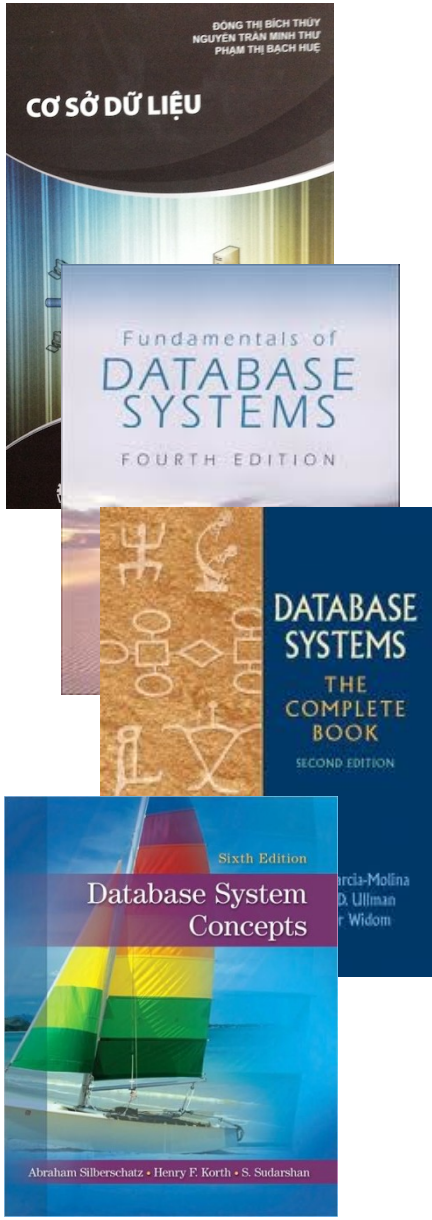
5. Quality control: assess the quality of a relational database schema and normalize the schema
6. Evolution or future directions of database systems

Content

- Chapter 1- Overview of database systems
- Chapter 2- Entity Relationship Model
- Chapter 3- Relational Data Model
- Chapter 4- Relational Algebra
- Chapter 5- SQL
- Chapter 6- Relational Calculus
- Chapter 7- Integrity Constraint
- Chapter 8- Functional Dependencies and Normalization

Reference

- Vietnamese:
  - **Giáo trình Cở sở dữ liệu**, Đồng Thị Bích Thủy, Phạm Thị Bạch Huệ, Nguyễn Trần Minh Thư, Nhà xuất bản Khoa học kỹ thuật, 2010.
- English
  - **Fundamentals of Database Systems**, Ramez Elmasri, Shamkant B. Navathe, Addison Wesley, 7th Edition, 2016.
  - **Database Systems: The Complete Book** ,Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom, Prentice Hall, 2000.
  - **Database system concepts**, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill, 2002.



Learning resource

- Website (Moodle)
  - Notifications, exchange and discussion forum, slides, exercises, assignments, etc.
- Learning resource
  - Slides
  - Theoretical exercises
  - Practical document guides
  - Reference
- Moodle link: https://courses.ctda.hcmus.edu.vn/

Tools and software

- MS SQL Server:
  - 2005
  - **2008**
  - 2012
  - 2016

Requirements/ Rules

- Requirements
  - Use Google Meeting service to online courses if required.
  - Use Facebook group to communicate each others.

- Rules
  - Students are not allowed to miss more than 30% of the total class time (> 3 sessions)
  - Final exam must be >= 4/10 to be passed
  - Two exercise/exams identical from different students => 0 point
  - Do not self-record online lessons if any, all videos will be decided by the teacher whether to be uploaded to the Moodle site
  - Don’t share any videos to others

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Assessments & Scales

- Weekly exercises in class **25%**
  - Design ERD
  - Query language
  - Integrity constraints
  - Functional dependencies and normalization
- Practical exercises **30%**
  - Project or online examination
- Final exam **45%**
  - Multi-choice testing: 50 - 90 questions
  - Writing : 3 – 5 questions
  - Time: ~ 90 minutes