Chapter 00

CTT102 – Introduction to Databases

KHOA CÔNG NGHỆ THÔNG TIN
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

fit@hcmus

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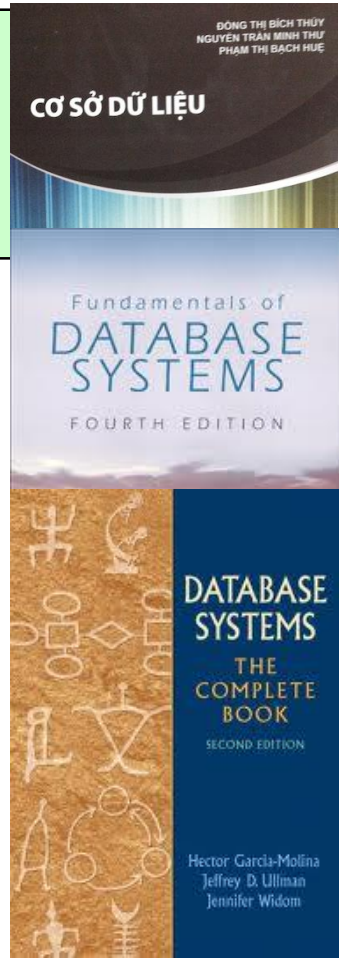
Chapter 0 - Introduction



Instructor:
Dr. Phạm Nguyễn Cương (**pncuong**@fit.hcmus.edu.vn)
Assistants:
MS. Nguyễn Như Anh (**ntnanh**@fit.hcmus.edu.vn)
Dr. Lê Nguyễn Hoài Nam (**lnhnam**@fit.hcmus.edu.vn)

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 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 organisations
2. Describe the fundamental concepts of DB
3. Build conceptual data model from business cases – **using ER model**
4. Understand concepts of relational data model
5. Transfer ER model to **relational data model**
6. Proficient in relational data query languages: Relational Algebra, Relational Calculus, SQL
7. Using DBMS MS SQL server to deploy a relational database schema and manipulating data using SQL language.

Learning Outcomes

8. Detect, declare and implement integrity constraints in a relational database schema
9. Assess the quality of a relational database schema and normalize the schema
10. Evolution or future directions of database systems

Content

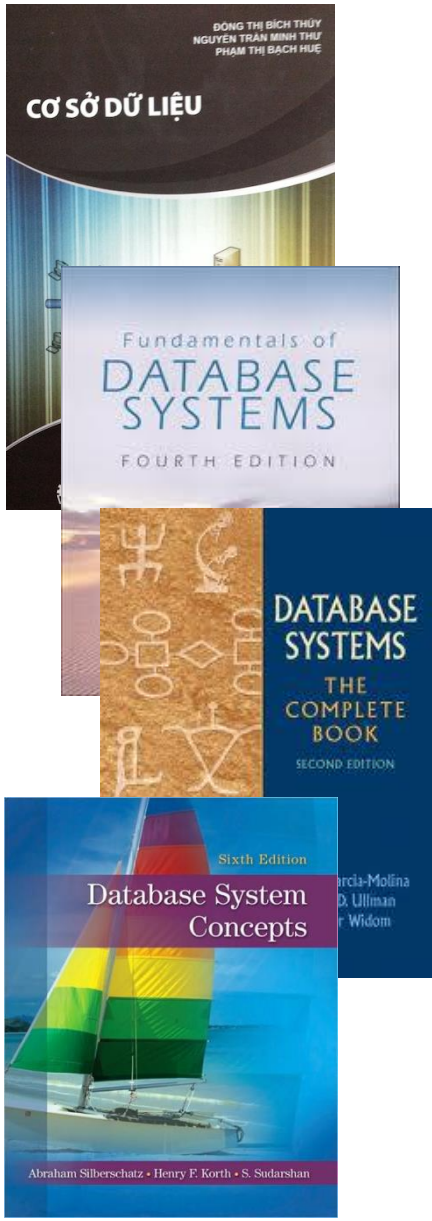
- Chapter 1- Overview of database systems
- Chapter 2- Entity Relationship Model
- Chapter 3- Relational Data Model
- Chapter 4- Relational Algebra
- Chapter 5- SQL
- Chapter 6- Relational Calculus
- Chapter 7- Integrity Constraint
- Chapter 8- Functional Dependencies and Normalization

Evaluations & Scales

- Weekly exercises in class **20%**
  - Design ERD
  - Query language
  - Integrity constraints
  - Functional dependencies and normalization
- Practical exercises **30%**
  - Project or online examination
- Final exam **50%**
  - Multi-choice testing: 50 - 90 questions
  - Writing : 3 – 5 questions
  - Time: ~ 90 minutes

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, 2004.
  - **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, assignements, etc.
- Learning resource
  - Slides
  - Theoretical exercises
  - Practical document guides
  - Reference
- Link tài liệu môn học trên Moodle:
  - https://courses.fit.hcmus.edu.vn/course/view.php?id=2846

Tools and software

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

Requirements/ Rules

- Preparation
  - Download Zoom.us Client and install on your PC for online courses
  - Register using email fit, do not use other email

- Rules
  - Students are not allowed to miss more than 30% of the total class time (3 sessions)
  - Weekly exercises must reach 60% to be counted
  - Final exam must be >= 4/10 to be passed
  - Two exercise/exams identical 0 point
  - Do not self-record online lessons, the videos will be decided by the teacher to be uploaded to the Moodle site
  - Don't make a copy and share the video to others