Principles of Database Systems

Preface

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The Nature of the Course

- Mandatory course for undergraduate student
- 28 credit hours in class + 12 credit hours in lab
- 上课时间:周四、周五下午B203（第11周-第17周）

Goal

- Make You to obtain:
  - Core theoretical knowledge of the DBMS.
  - Practical skills of utilizing DBMS to solve the problems of data storage and DB based application development.

Missions for Skills

- You should:
  - Master SQL (Structured Query Language)
  - Master relational model （关系模型）
  - Master relational algebra （关系代数）
  - Master the methods for designing database
    - Conceptual modeling with E/R model （实体联系模型）
    - Logical modeling with transformation from E/R model to relational model and with relational normalization theory （关系规范化理论）

Missions for Idea

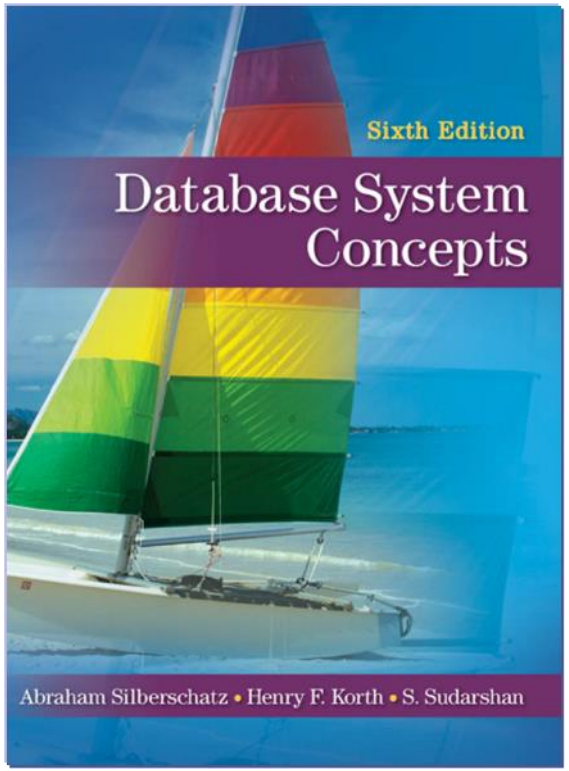
- You should:
  - Grasp basic concepts of database systems
  - Grasp basic relational theory.（关系理论）
  - Grasp the methods for implementing database management system (transaction, concurrency control)（事务，并发控制）

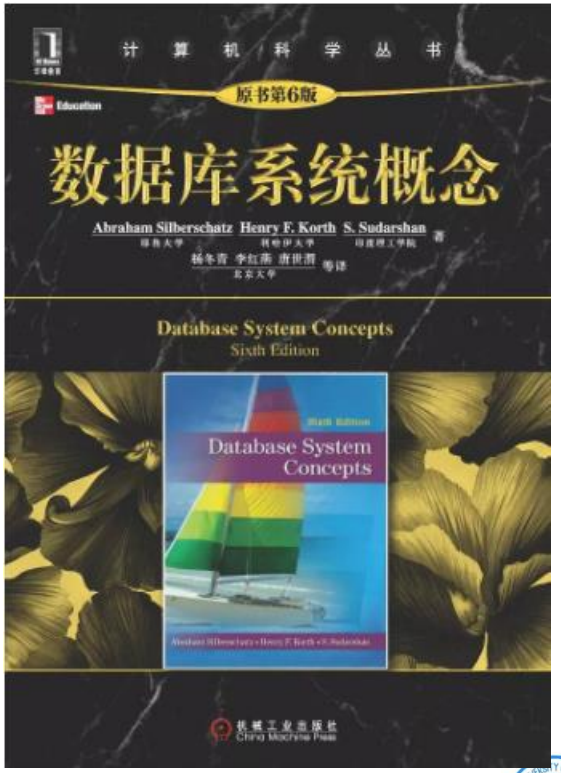
Highlights and Difficulties

- **Master SQL***
- **Master relation data model***
- **Master the methods for designing database schema***
- Some other knowledge, such as concurrency control method, is difficult to grasp too.

Teaching Material

- Used by many top universities worldwide including Stanford, Yale and Cornell.





Software

- SQL server 2017
- https://www.microsoft.com/zh-cn/sql-server/sql-server-downloads

Course Content

- Chapter 1 (1.1~1.5)
  - Introduction
- Chapter 2 (2.1~2.3)
  - Introduction to the Relational Model
- Chapter 3 (3.1~3.10)
  - Introduction to SQL
- Chapter 4 (4.1~4.4)
  - Intermediate SQL
- Chapter 6 (6.1)
  - Formal Relational Query Languages
- Chapter 7 (7.1~7.7)
  - Database Design and the E-R Model
- Chapter 8 (8.1~8.5)
  - Relational Database Design
- Chapter 11 (Partial)
  - Indexing and Hashing
- Chapter 14 (Partial)
  - Transactions
- Chapter 15 (Partial)
  - Concurrency Control

Assessment method

- Total mark: 100
  - 40: Regular grade
    - exams in class
    - exams in lab
    - Class attendance
  - 60: Final exam grade

Questions?