The Principle of Database System (Lecture CS022)

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Course Web Site：
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Lecture Time & Grading

Teaching Time:

Tuesday 8.00AM-9.40AM *Week 1th ~ 8th*

Thursday 10.00AM-11.40AM Week 1th ~ 16th

Final Exam: 17th or 18th week

Place: 东上院107

Grading:

Attendance & Homework: 20%~ 30%

Final Examination: 80%~ 70%

Textbook

A first course in database systems (Third Edition)

Authors: Jeffrey D.Ullman, Jennifer Widom

Stanford University

书名：	数据库系统基础教程（英文版·第3版）
ISBN：	7-111-24733-3
原书名：	A First Course in Database Systems Third Edition
丛书名：	经典原版书库
作者：	Jeffrey D. Ullman;Jennifer Widom
译者：	无
出版日期：	2008-07-26
页数：	565
价格：	￥45.00

机械工业出版社

www.china-pub.com

Other Reference Books

1) **Database System Concepts** by Abraham Silberschatz, et al (机械工业出版社) (Sixth edition) from Yale University

2）**Database System Implementation** (Stanford university）Chinese and English version（机械工业出版社）

3) An introduction to Database System 数据库系统概论 高等教育出版社 (中国人民大学萨师煊，王珊）

Contents of the Courses

Database Modeling and Programming:

- **Relational Database Modeling**

Basic concepts, design theory, high level models (E/R model, UML, ODL)

- **Relational Database Programming**

Relational algebra and Datalog, SQL

- **Semistructured Data Modeling and Programming**

XML, DTD, three query languages for XML

Content 1: Database Modeling

- Relational model of data (chapter 2)
- Design theory for relational model (chapter 3)
- High-level database model (chapter 4)

E/R model, UML, ODL and
E/R, UML, ODL → relational models

Content 2: Relational database programming

- Abstract programming language (chapter 5) : algebra and logic
- The Standard Database Language SQL:

1. DML introduction (chapter 6)
2. Constraints (chapter 7)
3. Views and indexes (chapter 8)
4. SQL in a server environment (chapter 9)
5. Advanced topics in relational databases (chapter 10)

Content 3: Modeling and Programming for semi-structured data

- Semi-structured data model (chapter 11)
- Programming language for XML (chapter 12)

Aim of the course

- **Basic concepts** (what is DBMS? What is Database system?…)
- **Design of database** (how does one build a useful database? What kind of information is stored in database? What is the structure of data?)
- **Database Programming** (how to query and operate on database?)

Application: a student-course management system

- The university has a number of courses in many departments. Each course is taught by a teacher in some specific department.
- A student can **select** a course to take, can **update** his course list, or **query** his grades of the courses he took. A teacher can …

How to implement the system ?

- How to describe students, teachers,… in real world?
- How to structure those data?
- How to select a course to take? delete a course?
- How to query his grades of the courses he took?
- How to make a constraint of a course for no more than 80 students?

We will learn it in this course

Any Questions?