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Spring 2010

CS 405/605: Introduction to Database Management Systems

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CS405/605 spring 2010

Dr. Keke Chen

The office hours are 2-3:30pm TTR

Class meeting time*: 4:10-5:25pm, T Th

Classroom*: Russ 154

Course materials*: Slides and other relevant materials will be available on WebCt, and occasionally hardcopies of handouts will be distributed in class.

Required Textbook: R. Elmasri and S. B. Navathe, Fundamentals of Database Systems, 5th edition, Addison Wesley.

Reference texts:

- * R. Sunderraman, Oracle 9 (or 8) Programming: A Premier, Addison Wesley.
- * Raghu Ramakrishnan, and J. Gehrke, Database Management Systems, McGraw Hill. Any recent edition.
- * Silberschatz, Korth, and Sudarshan, Database System Concepts, McGraw Hill. Any recent edition.
- * J.D. Ullman, and J. Widom, A First Course in Database Systems, Prentice-Hall.

Topics:

1. DBMS concepts and architecture (Chap 1, 2) [1-2 classes]
2. Entity-Relationship model and enhancements (Chap 3, 4) [2 classes]
3. Relational data model and relational algebra (Chap 5, 6) [3 classes]
4. SQL - a relational database language (Chap 8, 9) [3 classes]
5. ER and EER to relational mapping (Chap 7) [1 class]
6. Other relational language- a brief discussion [1 class]
7. Relation storage and file organizations, index structures (Chap 13, 14) [2-3 classes]
8. Functional dependencies and relational design/normalization (Chap 10, 11) [2 classes]
9. Transaction (Chap 17) [1-2 classes]
10. Data security and privacy [1class]

Grading: A:[90,100], B:[80,90), C:[70,80), D:[60,70), F:[0,60)

Midterm 30%, Project 30%, Final 30%, Homeworks 10%.

No late submission will be accepted except for documented medical reasons.

The instructor will curve the grades according to the distribution.

All exams are closed book and closed notes. There will be no make-up exams except for documented medical reasons.

Project: The project is about database design, relational algebra, and SQL programming. You will be given a project specification, with details about the application and the problems. You will design the ER schemas (3%) and the relations schemas (3%) for the application, initialize your database with some given relations, implement the given queries in SQL (8%), and implement some of the given queries in relational algebra (3%). You can use MS-SQL or MySQL to implement your database and to test your SQL queries. The SQL queries must be entirely done by hand (without machine translations) to ensure understandability; they should also follow the SQL standard as discussed in the text.

You need to write a report, which will be used to mark your project. In the report you should include your ER and relational schemas, your SQL codes of the queries, your relational algebra expressions of the queries, and results of test runs of your SQL queries. It is important that this final report be nicely presented; 3% marks will be allocated to the clarity and organization of the report.

Independent work: All project and examination work must be your own. Academic dishonesty will result in a grade of "F". **Tentative Schedule:**

- * 10/13: in class midterm exam.
- * Project specification will be handed out around midterm.
- * 11/10: project will be due at midnight.
- * 5:45-7:45pm, Tuesday, 11/17: Final.

Graduate students: Graduate students may be asked to do more than undergraduate students in the projects and exams.