Introduction to the Course

M. Tamer Özsu

David R. Cheriton School of Computer Science University of Waterloo

CS 348 Introduction to Database Management Fall 2012

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- To study databases from four viewpoints, in particular, those of the database user, the database designer, and the database manager. It teaches the use of a database management system (DBMS) by treating it as a black box, focusing only on its functionality and its interfaces.
- Sub-objectives:
 - 1 To understand the principles of relational database management systems and their languages in particular SQL.
 - 2 To learn the methodology for building applications on top of database management systems – the so called data modeling process.
 - **3** To learn issues related to the management of large-scale DBMSs, such as performance monitoring and tuning, security, and privacy.

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Course Documents

Textbook	 Database Management Systems, 3rd Edition. Raghu Ramakrishnan and Johannes Gehrke, McGraw Hill, 2003.
Others	 Database System Concepts, 6th edition. Avi Silberscahtz, Hank Korth, and S. Sudarshan, McGraw Hill, 2011. Fundamentals of Database Systems, 5th edition. Ramez Elmasri and Sham Navathe, Addison-Wesley, 2006. Database Systems: The Complete Book, 2nd edition. Hector Garcia-Molina, Jeff Ullman, and Jennifer Widom, Prentice-Hall, 2009. See web site for additional resources regarding DB2 and SQL.

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Course Logistics

Web Site	 www.cs.uwaterloo.ca/~tozsu/CS348
Discussion	• We will not use a newsgroup for discussion, but a tool called Piazza. Check the web site for a link to Piazza. You will be included in the course discussion group and you are expected to post questions and responses there. The TAs and I will monitor the discussion.
Evaluation	 Assignments (40%) Four assignments; see the web site for details Drop boxes on third floor MC
	• Midterm exam (20%)
	• Final exam (40%)
	• To pass the course you must pass: the weighted average of the assignments and the weighted average

of the exams.

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Course Content

Why do we use databases?

- Functionality provided by a Database Management System
- Database Models: Relational, Network, OO

How do we use a DBMS?

- Relational model, foundational query languages
- SQL
- Application programming
- Transactions and concurrency

How do we design a database?

- Entity-Relationship (ER) modeling
- Dependencies and constraints
- Redundancy and normal forms

How do we administer a DBMS?

- Security and authorization
- Physical design/tuning

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