Database Systems: Concepts, Design, and Implementation

ISE 382 (4 Units)

USC Viterbi School of Engineering

Fall 2017

Description

Data model for industry applications. Modeling and designing robust databases. Implementing and querying databases with SQL. Innovations in database applications.

Objective

To prepare students to model and build databases. Upon completion of the course, students will be able to:

1. Create relational data models
2. Perform normalization to eliminate anomalies
3. Convert models to functioning databases
4. Use Structured Query Language (SQL) to build and query databases
5. Demonstrate effective use of
    - MySQL DBMS
    - Teradata DBMS
6. Test and validate database implementation with transactions
7. Explain how database transactions are controlled in multiuser environments
8. Describe database security and maintenance
9. Describe the innovations and uses of databases in diverse applications

Prerequisites

None.

Instructor	Listed on Blackboard under Contacts
Teaching Assistant	Listed on Blackboard under Contacts
Office Hours	Listed on Blackboard under Contacts
Lecture	10:00pm – 11:50pm, MW @ KAP158
Discussion	8:00am – 9:20am, Friday @ RTH109 9:30am – 10:50am, Friday @ RTH115

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Course Outline

Note: Schedule subject to change

W	Topic(s)	Assignment
1	Course introduction	*Read*: Ch 1
	The relational model	*Lab*: LP #1
2	Data modeling terms	*Read*: Ch 2
	Data modeling concepts	*Lab*: LP #2 *Do*: HW #1
3	*Labor Day (no class)*	*Read*: Ch 3
	Designing data models	
4	ER diagraming concepts	*Read*: Ch 4
	Case study 1	*Lab*: LP #3 *Do*: HW #2
5	Enhanced ER diagrams	*Read*: Ch 5
	Normalization	*Lab*: LP #4 *Do*: HW #3
6	Normal forms	*Read*: Ch 6
	Case study 2	*Lab*: LP #5
7	**Exam 1**	*Do*: Proj #1
	Database implementation	
8	SQL: select	*Read*: Ch 7
	SQL: subqueries	*Lab*: LP #6
9	SQL: cross joins	*Read*: Ch 8
	SQL: advanced joins	*Lab*: LP #7 *Do*: Proj #2
10	SQL: CRUD	*Lab*: LP #8
	SQL: set operations	
11	Case study 3	*Read*: Ch 9
	ETL	*Lab*: LP#9
12	Multiuser databases	*Read*: Ch 2
	Database applications	*Lab*: LP#10
13	Cloud databases	*Do*: Proj #3
	Business intelligence	