Wright State University

CORE Scholar

Spring 2013

CS 7700: Advanced Database Systems

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CS 7700 Advanced Database Systems
Spring, 2013

Description: Introduction of design concepts, operating principles, current trends, and research issues in database systems.

Prerequisite: CS 4700/6700 (or CS405/605) or equivalent.

Instructor: Dr. Guozhu Dong. Joshi 383.

Phone & Email: (937)-775-5066, guozhu.dong@wright.edu

Class details: 7:40-9:00pm M W, RC154A.

Office hours: 4:30-5:30pm, M W. Use e-mail for short questions, and talk to the instructor in person otherwise.

Text Book: Fundamentals of Database Systems, 6th edition, R. Elmasri and S. B. Navathe, Addison-Wesley.

References: Database Management Systems, R. Ramakrishnan and J. Gehrke. McGraw Hill.

Data Mining: Concepts and Techniques, 3rd edition. J. Han, M. Kamber, and Jian Pei. Morgan Kaufmann.

Topics:
- Query processing and optimization (Chapter 19). This will be accompanied by a brief review of indexing and relational algebra, which are prerequisites of this course.
- Object-oriented and object-relational databases, object extensions to SQL, ODMG object model, ODL, OQL (Chapter 11).
- Transaction processing, concurrency control, recovery (Chapters 21–23).
- Overview of XML (Chapter 12).
- Introduction to database security (Chapter 24)
- Introduction to distributed databases (Chapter 25)
- Active databases and triggers, temporal database concepts, spatial database concepts, introduction to deductive databases (Chapter 26).
- Introduction to data mining concepts (Chapter 28)
- Introduction to data warehousing and OLAP (Chapter 29)
- Other selected topics of interest such as Introduction to information retrieval and Web search (Chapter 27) if time permits.

Grading: Midterm 22%; Final 40%; Home work assignments 8%; Project 30%.

Final grade: A=[90,100], B=[80,90), C=[70,80), D=[60,70), F=[0,60). The instructor may curve the final grades in such a way that they deviate from this standard at his discretion.

There are two options for the project: (a) You write a survey on recent *research* results on a focused *promising* topic that is related to data management and data analysis, or (b) you design and implement (in C++ or Java with embedded SQL and web-based interface) *a usable, fairly sophisticated, DBMS based system* for some application of interest. Your selection will need to be approved by the instructor for its relevance and sophistication. Details will be given in the project spec.

You are expected to adhere to the highest standards of academic integrity. This means that plagiarism in any form is unacceptable. Academic dishonesty will be punished.

Late home works or projects will not be accepted, and no makeup exam will be given, except for reasonable documented medical reasons.

Handouts and slides: Handouts and certain other course materials will be distributed in class. It is your responsibility to collect them. Slides and certain other materials will be available on pilot.

Important dates:
- 2/6: Project selection (students submit a 1-page summary for the plan of the project).
- 3/6 (Wednesday): In class midterm (80 minutes long).
- 4/17: Project due at the start of the last class (before the finals week).
- 4/24: 8:00-10:00, Final.

Important notes: All exams are closed book, except that you can use one sheet of hand written notes for the midterm and two sheets of hand written notes for the final.