Introduction to Database Systems

CS432

Instructor
Jayavel Shanmugasundaram

CS432/433: Introduction to Database Systems

- How does Wal-Mart manage its 200 TB data warehouse?
- What is the database technology behind ebay’s website?
- How do you build an Oracle 9i, IBM DB2 or Microsoft SQL Server database?

- Underlying theme: How do I build a database system?
- CS432 will deal with the underlying concepts
  - No programming assignments
  - Big change from previous years!
- CS433 will be the practicum
  - Build components of “realistic database system” (C++ programming)

CS432 Course Information

- Information is one of the most valuable resources in this information age
- How do we effectively and efficiently manage this information?
  - Relational database management systems
    - Dominant data management paradigm today
  - 6 billion dollar a year industry
  - You will see this in the job market!

Prerequisites

- Courses
  - CS212 (Computers and Programming)
  - CS312 (Structure and Interpretation of Computer Programs)

People

- Instructor
  - Jayavel Shanmugasundaram
- TAs
  - Adina Crainiceanu
  - Adrian Munteanu
  - Warren Wong
  - Lin Zhu
Access to Instructor and TAs

- Office hours
  - Posted on course web site
  - http://www.cs.cornell.edu/courses/cs432
- Course newsgroup
  - Monitored by TAs
  - Reply within 24 hours on weekdays, 48 hours on weekends
- TA mailing list
  - cs432ta@cs.cornell.edu
  - Do not directly email TAs

Course Structure

- Three components
  - Class lectures (5% for class participation)
  - Assignments (40%)
  - Examinations (55%)
- No programming assignments in CS432
  - Big change from previous years!
  - CS433 will have all programming assignments

Class Lectures

- Textbook: “Database Management Systems”
  - By Raghu Ramakrishnan and Johannes Gehrke
  - Required textbook
- Syllabus
  - Defined by class lectures
  - Not defined by textbook

Assignments

- Eight assignments
  - Seven written assignments
  - One SQL assignment
- Each assignment worth 5% of total grade

Assignment Policies

- Assignments have to be done individually
  - No collaboration with others
- Academic integrity violations taken VERY seriously
  - Read Cornell and CS academic integrity policies
  - Available off course web page
  - Need to sign and hand in form
- Course management system used to post assignment grades
Assignment Policies (contd.)

- No late submissions
  - Will receive 0% of grade for late submissions
  - No exceptions (assignments handed out well in advance of deadline)

- Regrade requests
  - Within 7 days after assignments are graded
  - Hard deadline

Course Structure

- Three components
  - Class lectures (0%, but attendance is crucial)
  - Assignments (60%)
  - Examinations (40%)

Exams

- Mid-term exam (20%)
  - 23 October 2003, 7:30-9:30pm
  - Closed book exam

- Final exam (35%)
  - Examination period
  - Closed book exam
  - Cumulative with emphasis on second half

  Do not schedule other events on these days

Relationship to CS433

- CS432 is about concepts underlying databases
  - No programming assignments

- CS433 is the practicum associated with CS432
  - Will actually build a “realistic” database system
  - C++ programming (okay if you know Java)

- Complementary
  - Suggest that you take both
  - Can take CS432 without taking CS433
  - Cannot take CS433 without taking CS432

Is CS432/433 a lot of work?

- It depends!
  - Much of the material in CS432 is probably new to you
  - CS433 has substantial programming assignments

- Then why on earth should I take this course?
  - Intellectual argument
    - Big conceptual ideas
    - Meeting of theory and practice
  - Utilitarian argument
    - Many, many real applications (digital libraries, web, …)
    - Job market!
  - Others have gone through worse
    - CS432/433 were a single course before!

CS530: Architecture of Large-Scale Information Systems

- How do you build e-commerce websites such as amazon.com?

- How do you build a reliable service that scales to millions of users?

- How are Internet transactions processed?

- How do you manage audio, video and XML data?
Underlying theme: How do I build applications on top of a database system?
Will combine coverage of fundamental concepts with “hands-on” experience
Prerequisite: CS432

Three-tier architectures
Edge caches
Distributed transaction management
Web services
Content management
Technologies: .NET, JSPs, ASPs, Servlets, Enterprise Java Beans (EJBs), XML, SOAP

Complete academic integrity form
– Need to hand this in for your course management system account