

Department of Accounting & Law, School of Business

State University of New York at Albany

Acc 682 Analysis & Design of Accounting Databases

Welcome

Welcome

Welcome to Acc 682, and to the world of databases. This course is *not* a requirement for the one-year or two-year M.S. Degrees in the Department, and therefore I assume that you have made a commitment to be an information systems professional. I also assume that you are curious, and passionate in learning about information systems by *DOING*, i.e., by programming, and not hearing or talking about them. If you do continue in the course, I expect you to be *deeply committed* to the field of information systems, *passionate* about learning new things, and *demonstrate such passion and commitment* by setting this course (along with Acc 681 and Acc 522) at the *TOP* of your priorities.

Administrivia

Course Objectives

Catalog Description

An Honest Description

Textbooks/Readings

Requirements

Grading

About Instructor

Tentative Schedule

This course revolves around three themes: Databases (relational, Object-Oriented, and semi-structured), and data in the context of workflow in business processes. The course starts with a discussion of the theoretical foundations of record-oriented structured (relational and object-relational) as well as self-describing semi-structured (text-oriented) databases in the context of accounting systems. You will also learn to learn to extract information from such databases using the query language SQL. This is followed by a study of the representation of accounting workflow in business processes. The course ends with a discussion of data warehouses and their underlying data models.

You also will have an opportunity to document/design the workflow and implement a relational database for a part of the accounting system for a small toy company. I also might assign to some groups real-world database projects depending on the skill-sets of group members. While we will use ORACLE database management system for most class-work, you should play around with MS Access. You also will have an opportunity to learn the basics of XML including XML-Schema, XML namespaces, and the eXtensible Business Reporting Language (XBRL).

You have access to one of the finest stocked (in terms of hardware as well as software) computing facility any where in the Accounting Information Systems Laboratory. We have most major industrial strength databases (Oracle, DB2, and SQLServer) as well as toy database systems such as Microsoft Access and Visual FoxPro. For classroom purposes I shall be using Oracle (and occasionally MS Access), but for homework and group project purposes you are required to use at least one industrial strength database systems.

Use the lab, and enjoy the courses!

Administrivia

Semester: Fall, 2006

Time: W: 5:45 - 8:35 PM

Room: BA 223

Instructor: Andrew J Hurd

Graduate assistants: TBD

Office: BA 365C

Phone: (518) 442-4949

Fax: (707) 897-0601; (518) 442-3944

Office Hours: M: 3:30 - 5:30 PM. or by appointment

Instructor Homepage: <http://www.albany.edu/~ah268485>

Newsgroup: sunya.class.acc682

Announcements Page: TBD

Prerequisites:

This course is intended to be taken concurrently with Acc 681. Therefore *you are expected to be familiar with the unix operating system, the Emacs (or vi) editor, and the Java programming language (or some other higher level language with object-oriented features such as C++/Visual C++), to the extent covered in that course. As a graduate student, it is your responsibility to clear all doubts you may have before it is too late.*

Materials on topics such as data structures, discrete mathematics, or algorithms, to the extent needed and covered by the textbooks, will be covered in the course. You are also expected to have background in accounting at least at the level of Intermediate accounting, and be quite familiar with the fundamentals of internal controls in accounting systems that you learnt in the auditing.

Handouts:

Most future handouts will be postscript and linked to the course webpage. Therefore it is important that you learn to print postscript documents in the Lab, or, if you have computers at home, to download the latest versions of Ghostscript interpreter and Ghostview browser from <http://www.cs.wisc.edu/~ghost/> (or some other site) and install them on your home PC so that you can print them on non-postscript printers. At the time of this writing, the latest versions are

AFPL Ghostscript (<http://www.cs.wisc.edu/~ghost/>)

You also will need to download and install Ghostscript interpreter and the fonts from the same site. If you have difficulties in software downloads or installations at home, please contact me I will try to help.

Class Conduct:

The course consists of lectures, solution of problems, short cases, and discussion of

late-breaking developments in the field. You are expected to do the readings well ahead of the class. Class time is to be used for the clarification of any doubts that you may have. Do not expect to merely listen to the instructor and gain knowledge. Databases is a practical field backed by robust theory. A good understanding of the theory and its use in practice is essential to excel in the field. This is a hands-on course, and you are required to demonstrate competence in the topics covered in order to receive an acceptable grade. *I shall be giving quizzes and occasional homework assignments. I also shall be calling upon some of you to come to the board and solve problems assigned.*

Software:

We will be using a variety of software this semester.

I shall be using Oracle 10g for much of the semester and expect you to do the group project in Oracle 10g, or, if you choose, Microsoft SQLServer or IBM DB2. You will find it very helpful to do some of the design and implementation for homework as well as the project initially on Visual FoxPro. I expect you to be conversant with these software.

Newsgroup and e-mail:

I shall be using the class newsgroup (sunya.class.acc682) extensively for making announcements regarding tests, homework, quizzes, added links to this course homepage, etc. In fact, the newsgroup will be the primary means of communication between us outside of the class. You should post to the newsgroup all your questions and doubts for clarification. Use it as a sort of virtual classroom. You are strongly encouraged to answer queries posted by others, and such responses will count towards class participation points for grading. You should communicate with me via e-mail only for individual problems and questions.

Student Access to the Graduate Information Systems Laboratory

As a graduate student in the Department, you have access to the Arthur Andersen Laboratory. You will need to get from Ms. Lisa Scholz the password to enter the lab. Contact her in BA 365 as soon as possible. Should you have special requirements for software (DBMS servers) or hardware (Windows 2000 Servers) for your projects, let me know, and arrangements will be made. for your access.

You also will need logins to the University unix cluster and the Department's Windows 2000 server. You will need to apply on-line for an account on the unix cluster, and contact Sergey Romanoff or Juri Kondratev regarding login for the Windows 2000 server. You can not use any machine in the lab without these logins.

Course Objectives

The main objectives of the course are:

- To gain an understanding of the object-oriented approach and the Entity-Relational approach to database modeling.
- To gain a basic understanding of the ODL (Object Definition Language), and an in-depth understanding of SQL 2 (via ORACLE's sqlplus) in the context of accounting systems. The emerging standard SQL 3 will also be briefly introduced in the class.
- To gain an understanding of the architecture and working of commercial database management systems (mainly ORACLE, DB2, Informix, and Sqlplus).
- To gain an in-depth understanding of relational database theory in relation to the design of accounting systems.
- To gain an understanding of the Extensible Markup Language (XML) in the context of databases.
- To gain an understanding of representing business processes and their interfaces with databases.

Catalog Description

Basics of relational database theory in the accounting context. Semantic modeling of accounting data including the REA model. Use of CASE tools for the analysis, design & documentation of accounting databases. Languages for retrieval of information from accounting databases. Controls in accounting databases.

An Honest Description

A brief history of database systems - Database Modeling - The Relational Model (including conversion from ODL and E/R diagrams to relational designs) - Database design (including functional dependencies & database normalisation) - Relational Algebra and Structured Query Language (SQL) - Constraints and triggers in SQL (including a very brief discussion of SQL 3) Extensible Markup Language (XML) and databases. Representation of business processes and their interfaces with databases.

Textbooks/Readings

The main textbooks for the course are:

A First Course in Database Systems, 2nd ed., by Jeffrey D. Ullman & Jennifer Widom, (Prentice Hall, 2002). *UW* in the tentative schedule below.

Database Security and Auditing by Afyouni ISBN 0-619-21559-3

AFY in the tentative schedule below.

Recommended book: A guide to Oracle 10g by Morrison, Morrison and Conrad (Thompson Learning, 2006) ISBN: 0-619-21629-8

In addition to the above, I shall be assigning additional resources to be used. They will be mostly the specifications and recommendations of the World Wide Web Consortium (www.w3c.org) or related to research on the representation of business processes freely available on the internet.

Grading

The final course grade is dependent on the following factors:

- ▣ 100 points: Test I (Details will be announced in the class and updated here)
- ▣ 100 points: Test II (Details will be announced in the class and updated here)
- ▣ 200 points: The Accounting Database Project
- ▣ 0 - 50 points: Pop-quizzes, when given
- ▣ 25 points: Class participation & Home-work, when given (max)
- ▣ 425 - 475 points: Total points (max)

The final course grade is strictly relative, based on the total points scored.

The grades, once assigned can not be changed except in case of errors in grading. **It is NOT possible to do extra credit work to improve the grade.**

The Accounting Database Project:

You will analyse and design the part of an accounting database for a toy example. I shall be providing the details of this case shortly after the start of the semester. I shall be requiring frequent interim reports and class presentations on the project. You will make a final oral presentation in the class and also submit a written report on the project.

About Instructor

Andrew J Hurd is currently a *Visiting professor of Accounting and of Management Science & Information Systems* at the State University of New York at Albany. He is also a full Professor at Hudson valley CC. He holds dual Bachelor's degree in Mathematics and Computer Science, a master's degree with a major in The Science of teaching Mathematics. He is currently enrolled in the Ph. D degree in Information Sciences at the State university of New York at Albany. He has worked in Project manager, a software engineer, a network administrator, and a technical lead. In 2005, he was a contributing editor for The first book of ANSI C by Gary Bronson. His current research activities are primarily in the areas of intrusion detection, buffer overflows and reverse engineering of network systems.

TENTATIVE SCHEDULE

September 6, 2006

Theme: Introduction

Topics: History, Architecture, Future.

Read: U&W Ch.1; AFY Ch.1.

September 13, 2006

Theme: Security Architecture, The Entity-Relationship Data Model. The Relational Data Model.

Topics: Facts, Rules ER Diagrams, Database Relational Models

Read: U&W Ch.2, 3; AFY Ch.2.

September 20, 2006

Theme: Other Data Models, Operating System Security Fundamentals

Topics:

Read: U&W Ch.4, 5; AFY Ch.3.

September 27, 2006

Theme: Administration of Users, Relational Algebra.

Topics:

Read: AFY Ch.4,5.

October 4, 2006

Theme: Profiles, Password Policies, Privileges, and Roles, Database Application Security Models

Topics:

Read:

October 11, 2006

TEST

October 18, 2006

Theme:

Topics:

Read:

October 25, 2006

Theme:

Topics:

Read:

November 1, 2006

Theme:

Topics:
Read:

November 8, 2006

Theme:
Topics:
Read:

November 15, 2006

Theme:
Topics:
Read:

November 22, 1998

No class

November 29, 2006

TEST

December 6, 1998

Group Project Presentations

Updated on September 5, 2006 by Andrew J Hurd.