Chaminade University — CIS 420: Database Management System

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Course Description

Physical and logical organization of hierarichal, relational, and destributed database management systems; data modeling, data definition languages; query languages; management of database systems. Prerequisite: CIS 320 (p. 97, *Chaminade University 1999-2000 General Catalog)*

Although the catalog description lists several forms of database organization, this class will concentrate on the design and implementation of relational database, which is the most popular form currently in use. Because of the importance of Web-based databases *today*, a *major* component of the class *will* be the development of Web-based applications. Since available time is limited, management of database systems will not be explicitly treated in the class. The class will be project-oriented, in the sense that at the end of the semester, you are expected to develop a database system and complete a Web application system that manipulates the database. The first part of the class will emphasize theoretical underpinnings of the database design and the review/introduction of tools needed to develop Web-based applications. The last part of the class will concentrate on the implementation of an application system on a Windows NT-based intranet.

Course Objectives

The objectives of this course include the following:

- To learn the fundamental concepts of relational database
- To learn how to design a database system
- To learn the basics of Structured Query Language (SQL) for manipulating database
- To learn how to write and use Active Server. Pages (ASP)
- To become acquainted with ActiveX Data Objects (ADO)
- To learn to apply these concepts and techniques for Web applications

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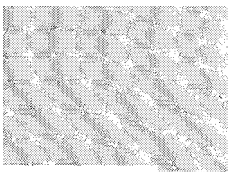
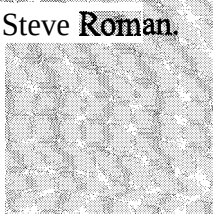


Access Database Design & Programming, 2nd Edition, by Steve Roman. O'Reilly, 1999. ISBN: 1-56592-626-9



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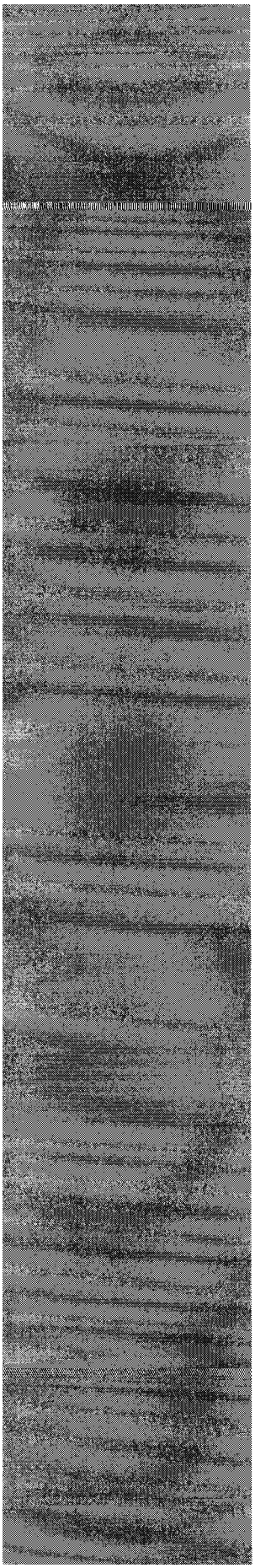
Topics

The following topics will be covered during the semester in varying depths. Some otpics will require *a* thorought coverage because they are new to most of you; e.g., *Entity-Relationship Model.* Other topics *Will* be a review; and will require less amount *of* class: time in the class but perhaps more effort outside the class; e.g., *HTML, Access,* and *Visual* Basic. Still others will be



illustrated with examples, in order to present sufficient amount of explanation to accomplished intended tasks; e.g., ASP and ADO.

- Database Design
  - Relational Database
  - Entity-Relatinoship Model
- Access DBMS
  - Access Query
  - Strucutred Query Language (SQL)
- Visual Basic for Applications (VBA)
- HTML
  - Forms
  - Tables
- Active Server Pages (ASP)
- ActiveX Data Objects (ADO)
- Web Application

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Course Requirements

The following is a summary of what is expected of you for the course. Refer to the section on Grading for further details.

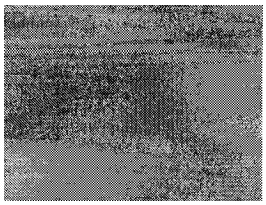
- Readings
- Quizzes on Readings
- Project Assignments
- Class Attendance
- Tests
- Final Exam

In this course you are expected to be more independent than usual, and majority of your efforts will be directed toward readings, (programming) exercises, and projects. We will meet regularly, for lectures, demonstrations, questions and answers, exercises, and tests.

Project Assignments

One main goal for each student is to complete a Web-based database project. The entire project is divided into several assignments, so that you will not be rushed to do everything at once. The assignments correspond to various stages of the project, and the earlier *ones* will cocentrate on supporting topics such as Access, *HTML*, and ASP. Their description, maximum points, and due dates can be found in the schedule page. At an early stage (e.g., 4th week), you should study the tutorial titled Your First Database, which explains the devlopment a **similar database** system.

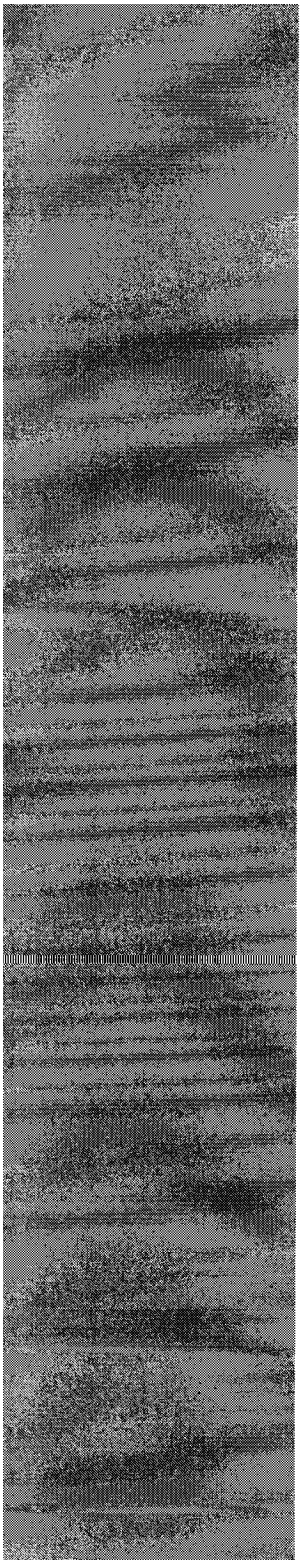
Assignments which are late by 1 to 7 calendar days will incur a penalty of 30%. (E.g., if the maximum credit for a project assignment is 30, then such a late assignment may receive a maxium of 21 points). Assignments which are later than 7 days can receive 30% maximum. If you foresee *a* valid reason that could cause you to turn in your assignments late--e.g., TDY, special



assignment, accidents, etc.--you must get permission for special arrangements *before the programming assignment is due.*

Tests

There will be one midterm test and one final exam. Refer to **the class schedule for their dates.** When you **foresee that you will not be able to make these dates for legitimate reasons, make prior arrangements with the instructor. There will be no make up test for unexcused absences.**



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Grading Guidelines

The determination of the final course grades will be guided by the following distribution of course elements. (Note that these points may vary depending on the number quizzes given.)

Project Assignments	(50 * 4 + 70)	270 pts
Quiz		**100 pts**
Midterm	**80**	40 **pts**
Final Exam	100	120 pts
Total		570 pts

The following guidelines will be used in determining the final grades.

= 90% B: = 80% C: D: = 60% F: < 60

* A **minimum of G completed projects is a necessary condition for a passing grade.**

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Submitting One's Own Work

Each student is expected to write his or her own programs. Although modem programming practices require extensive teamwork, one of the main goals in this class is that each student learns the basic programming skills by individual practice. You must distinguish between consulting your friends and discussing problems with them from copying other people's work. The penalty for copying someone else's program or parts thereof is a grade of F for all parties involved for the first offense; and an F in the course for the second offense.

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Attendance

This course will rely on your initiative much more than ordinarily classes. There are many topics that must be learned in order to be **able your projects, and it will not be possible to cover all details of every** topic in the class. **However, your regular class attendance is expected.**

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Last updated on 1/17/00. Please send comments or questions to rmaruyam@chaminade.edu

CIS 420: Database Management Systems

Class Schedule

(Spring Semester, 2000)

Wk	Date	Topics	Readings Due	Assmts. Due
1	1/18	Database Design		Project Description
	1/20	Access (flat table)		Tutorial: Your First Database
	1/25	Entity-Relationship Model	Ch 1; Ch 2	
	1/27	Access (multiple table)		
	2/1	Implementing E-R Model	Ch 3	
	2/3	Access (multiple table) *g: (public Imaruyama\420\Access\library97.mdb*		
4	2/8	Database Design Principles	Ch 4	Project No. l (Access DB)
	2/10	Access (Relationships)		
5	2/15	Relational Algebra (Set operations)	Ch 5 (p53-66)	
	2/17	Access (Queries)	Ch 5 (p67-84)	
6	2/22	Introduction to Queries (SQL)	Ch 6 (p85-95)	
	2/24	Access (Queries)	Ch 6 (p95-11 7)	
7	2/29	SQL (continued)	Ch 7 SQL Quick Start (Web Tutorial)	Project No. 2 (Access DB)
8	3/2	*Midterm Test*		
	3/7	Visual Basic for Applications	Web Tutorial	
	3/9			
9	3/14	Web Application No. l	Web Tutorial	Project No. 3 (SQL)
	3/16	HTML (Forms, Tables, Menu Opetions)		
10	3/21	Active Server Page	ASP Chain (Web Tutorial)	
	3/23	Include Files	ASP You Can Grasp (Web	

			Tutorial)	
11	*3/27 - 3/31 Spring Recess*			
12	4/4	Web Application No. 2		
	4/6	ActiveX Data Object (ADO)	ADO (Web Tutorial)	
13	4/11		Using Active Data Objects (Web Tutorial)	Project No. 4 (ASP)
	4/13			
14	4/18	Web Application No. 3	Web Tutorial	
	4/20			
15	4/25	Completing Project		
	4/27	" "		
16	5/2	" "		
	5/4	" "		Project No. 5 (Web Application)
17	*5/10*	*Final Exam (Wed., 12:45 p. m. - 2:45 p.m.)*		

Database

Your First Database*	A TUTORIAL to construct Web pages to interact with a DBMS using HTML, ASP, VBScript, SQL, and ACCESS

Language Tutorials

Introduction to ASP*	HOW TO WRITE Active Server Pages using VBScript, for server-side processing of Web pages
An ASP You Can Grasp*	ABC of Active Server Pages from Microsoft, with explanation of basic concepts and lots of links to ASP resources
The ASP Chain*	A QUICK, yet understandable introduction to Active Server Pages, with explanation of basic terms like client-side scripting and server-side scripting
Active Server Pages	MORE detailed tutorial on ASP from the Microsoft Online Library
VBScript	INTRODUCTION to Visual Basic Scripting Edition (VBScript) for Web pages
Using VBScript in MSIE*	SHORT examples illustrating how to embed VBScript code in HTML page
VBScript Language Reference	COMPLETE list of VBScript organized by topics
HTML*	INCLUDES index of HTML concepts, summary of HTML tags, and examples
SQL Statements*	A QUICK introduction to bare-bones SQL statements
SQL Quick Start*	ANOTHER quick guide to creating SQL Scripts and accessing database using VBScript. Covers statements for adding, selecting, updating, and deleting records
Introduction to Structured Query Language	FIRST comprehensive SQL tutorial on the internet, explaining how to use the ANSI-standard version, with many examples
DHTML, HTML, & CSS	LINKS to articles, white papers and tutorials on DHTML topics from MS Q g Web Workshop
PHP/MySQL Tutorial*	EXPLAINS PHP as a scripting language that can manipulate a Web-based database management system by invoking SQL statements. Both PHP and MySQL are free software systems that can run on an Apache Web server on a Unix system. A viable alternative to ASP/SQL on MS's PWS.
Introduction to ActiveX Data	A READABLE introduction to ADO, as a continuation of the author's tutorial on ASP, explaining ASP and

ActiveX Data Objects*	of the author's tutorial on ASP, explaining ASP and COM technologies as equivalent.
Using the ActiveX Data Objects	A fast-paced introduction to ADO, concentrating only on common tasks using Command and RecordSet objects
MS ActiveX Data Objects Programming	TUTORIAL on Microsoft's ADO, a data access model (programming language for interacting with database)
Thau's Advanced Javascript Tutorial*	COVERS cookies, image and object handling, debugging Javascript code, timing event, and other advanced topics

HTML Editors

Arachonphilia	AN EXCELLENT HTML text editor (careware)
EditPad	A GENERAL text editor similar to NotePad but easier to use (postcardware)

Object-Oriented Programming

COM Objects In ASP	EXPLANATION of object-oriented concepts--especially methods and properties--underlying Microsoft COM (Component Object Model) object technology for creating Active Server Pages

Operating System

Linux Vs Windows NT	PROS and cons of Linux and Windows NT, especially in terms of their support for Web applications
Choosing the Right Database System	DISCUSSES pointers for choosing the right Web-based database system, as well as the OS (Linux vs Windows NT), the Apache Web server, and MySQL

Web Servers

Personal Web Server	MICROSOFT'S Personal Web Server (PWS) for Windows 95 which allows you to develop, test, and maintain Web documents (HTML & ASP) on a local server.