MIS 7373
Business Applications of Data Base Management Systems
(Spring 2022)

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Purpose of the Course
This course focuses on data modeling and database design. After an introduction to the concepts of data, metadata, information, and the architecture and components of database systems, the topics covered are divided into four parts. Part I addresses the topic of conceptual data modeling (i.e.; modeling at the highest level of abstraction independent of the limitations of the technology employed to deploy the database system). The Entity-Relationship (ER) modeling grammar will be used as the principal means to model a database application domain. Part II is dedicated to the discussion of the migration (i.e., transformation) of a conceptual data model to its logical counterpart which will take the form of the relational data model. Part III covers the normalization of data as a way to measure the goodness of fit of the relational database design that results from the conceptual and logical data modeling processes. Part IV focuses on database implementation using the relational data model. The focus here is on SQL and its use in (a) defining the structure and creating a database (b) implementing various relational algebra operations, and (c) querying multiple tables.

Textbook
N. S. Umanath and R. W. Scamell, Data Modeling and Database Design, Thomson Course Technology Publishing Company, 2007. Chapters covered in the course will be posted on Blackboard.

Class Handouts
I anticipate that most of the material we discuss in class will consist of the figures and tables contained in the textbook. Thus it is very important that you bring the chapter being discussed in the textbook with you to each class. In addition, there is also some handout material consisting of supplements to the topics that we are discussing in class. This handout material will also be available on Blackboard. It is important that you bring this handout material and the textbook with you to class.

Course Evaluation and Activities (Tentative)

Mid-Term Exam	25%
Final Exam	25%
SQL Experience	20%
Homework Opportunities	20%
Instructor's Evaluation	10%

Exams
Two exams will be given during the course. At the moment, I cannot tell you exactly what will be covered on the mid-term exam scheduled to be given on Thursday, March 10 as this depends on how we are able to progress through the material in textbook. Suffice it to say that the exam will cover conceptual data modeling, transforming a conceptual data model into a relational data model, and functional dependencies. The second exam will take place during the final exam period. While this exam will be of a cumulative nature given the nature of the subject matter of the course, the emphasis will be on relational normal forms relational algebra, and the use of SQL to create the structure of a database, populate a database, and retrieve information from a database.

SQL Experience

SQL (Structured Query Language) is a language designed to be used by technical and nontechnical people on applications that involve creating, querying and updating a relational database. The purpose of the SQL Experience is to illustrate how this powerful language can be used to create the structure of a database, populate a database, and retrieve information from a database. Many database products include a version of SQL. In this course we will work with a version of SQL that is part of Oracle 11g. Oracle 11g runs under Windows 10 or above. It also can be installed under Windows 7. I will provide each member of the class with a link to Oracle 11g along with instructions as to how to install it. During the first week of class we want to get Oracle 11g installed.

Homework Opportunities

There is a Chinese proverb that goes something like this: "I hear; I forget. I see; I forget. I do; I remember." I don't know about you, but I believe this to be a learning strategy that works for me. During the course, if we are not working on SQL, we will most likely be involved in working on some type of homework opportunity. Homework opportunities will involve the preparation of conceptual data models that include the preparation of one or more entity-relationship diagrams, taking an entity-relationship diagram and transforming it into a relational data model, and using the rules of normalization to evaluate data redundancy problems in relational data models. At the end of the course, fifty percent of your final grade on the homework opportunities will be based on the consistency with which you complete them. Thus, someone who turns in their work in correct form but who is consistently late will receive less credit than someone who turns in the homework opportunities on time throughout the semester. I keep track of who turns in what and perhaps as importantly **when** it is turned in. In other words, I am the grader. As I'm quite you each can understand, the consistency with which things are submitted during the course of the semester will have something to do with your grade in the course via the instructor's evaluation just as in the "real world" the consistency with which employees get things done impacts management's evaluation of their overall performance.

Academic Honesty

The University of Houston Academic Honesty Policy is strictly enforced by the C. T. Bauer College of Business. No violations of this policy will be tolerated in this course. A discussion of the policy is included in the University of Houston Student Handbook, http://www.uh.edu/dos/hdbk/acad/achonpol.html. Students are expected to be familiar with this policy.

Accommodations for Students with Disabilities

The C. T. Bauer College of Business would like to help students who have disabilities achieve their highest potential. To this end, in order to receive academic accommodations, students must register with the Center for Students with Disabilities (CSD) (telephone 713-743-5400), and present approved accommodation documentation to their instructors in a timely manner.

Instructor's Evaluation

The instructor's evaluation includes my assessment of the student's effort and progress throughout the semester. In addition, this is a course where class attendance is critical. I do not take role because I don't have to since I am naturally able to notice who is and who is not in class. **It is not an exaggeration at all to say that "if you miss class (for whatever reason), while you may not miss me, I am going to miss you!"** I consider consistent class attendance to be very tangible evidence of effort. Hence discretionary absences (e.g., missing class because you are putting the "the last minute finishing touches" on an assignment due for either this class or another class, studying for a quiz in another class) should be avoided. Similarly, I consider the timely completion of opportunities to be another indicator of progress and effort. And, while this has no impact on the instructor's evaluation, please feel free to participate in class with questions, comments, etc. It will make the class more enjoyable for all of us.

Blackboard Learn

We will use Blackboard Learn for this course. Blackboard Learn is an online course shell that provides a framework and tools for instructors to put course handout material and activities online. As mentioned previously, chapters from the textbook handout material and instructions for the opportunities will be posted in Blackboard Learn.

Registered students are loaded into Blackboard Learn from the PeopleSoft registration system. Starting a few days before classes begin, registered students are loaded automatically into courses based on section numbers provided by instructors. Students who register late should allow at least 1-2 working days for their access to be enabled. Students should use their Cougarnet account to access Blackboard Learn. Please click on the white icon and not the blue one.

Support for students and people like me using Blackboard Learn is available in two ways:

- Online at http://www.uh.edu/BlackboardLearn and "Student Help".
- By sending an email message to support@uh.edu with the student's full name, course name and number, section number, instructor's name and a description of the problem.

Other Comments

First, this is a face-to-face class. It is not hybrid, hyflex, asynchronous online, or synchronous online. It is just like classes were prior to COVID-19. Thus, I assume you are taking this class because you (a) are anxious to return to face-to-face classes, (b) are tired of sitting at home all day and watching videos, and (c) **your schedule makes it possible for you to attend a class that meets on Tuesday and Thursday from 1:00 pm to 2:30 pm for fifteen weeks.** In other words, I assume you will be able to go 30 for 30 (i.e., attend each of our 30 class sessions during the semester). **If all of this is not true for you at the moment, this course is not going to work out for you and you will be better off taking another course instead**.

Second, our face-to-face classes will begin promptly at the top of the hour and thus part of your job is to be in your seat, and ready to begin at this time. Since it has been my experience that the majority of people are able to meet this requirement, those who consistently cannot seem to be able to make it to class on time tend to separate themselves from others in what can be a not so positive way. Of course, missing class entirely constitutes a much more serious problem and thus I much prefer a late arrival over no arrival at all.

Third, I pay particular attention to what I call the double-double. In basketball, a player achieves a double-double when he or she (a) scores 10 or more points and also pulls down 10 or more rebounds, (b) scores 10 or more points and passes out 10 or more assists, etc. Some players are good enough (i.e., Russell Westbrook, James Harden, LeBron James, etc.) to regularly achieve triple-doubles (e.g., score 10 or more points, pass out 10 or more assists, and pull down 10 or more rebounds). As far as this class is concerned, a double-double takes place when a student (a) arrives to class on time and (b) remains in the classroom for the entire 80 minutes without having to step out for a few minutes to call someone or just otherwise take a break. Members of the class who are not to achieve part (b) of the double-double disrupt the class and may not to be given any benefit of the doubt at the end of the semester in terms of the instructor's evaluation.

Fourth, I prefer that we operate as if this class was a committee with me as chair the committee. As a committee member, if you are going to miss class it is your responsibility **on the day of the class** to let me know that you are going to miss class. (e.g., you are sick, someone in your family is sick, you have a job interview, your car broke down, you overslept, etc.). It is not necessary that you even give me a reason. You just need to acknowledge that you have missed the class. If you will do this, I'll be sure the email any handouts and homework opportunities that you may have missed.

A Pretty Good Description of How I Operate

A note on the first page of a recent <u>Houston Chronicle</u> contained a pretty good description of me and how I operate in the way of a short excerpt from the book <u>How Not to Act Old</u> by Pamela Redmond Satran. Four of the five signs given that a person is old describe me:

- You rely on e-mail, instead of Facebook or text messages, and you actually check your voicemail.
- You wear a watch, because, according to Satran, "a naked wrist has become as emblematic of youth as ungray hair and …."
- Lunchtime finds you brown-bagging it at work.
- You tell a cashier, "Wait, I think I have the exact change."

If necessary, I trust that you will not find it all that difficult to adjust to my way of doing things and managing a class.

Tentative Class Schedule

DAY	DATE	TOPICS
Tues.	Jan. 18	Orientation; Concepts of Data, Metadata, Information, Data Management; the Database System Design Life Cycle Reference: Chapter 1
Thurs.	Jan. 20	Foundation Concepts For Conceptual Data Modeling; Units of an Entity-
Tues.	Jan. 25	Relationship Model Reference: Chapter 2
Thurs.	Jan. 27	An Example of an Entity-Relationship Model
Tues.	Feb. 1	Reference: Chapter 3
Thurs.	Feb. 3	
Tues.	Feb. 8	The Relational Data Model and Relational Algebra
Thurs.	Feb. 10	Reference: Chapter 6
Tues.	Feb. 15	
Thurs.	Feb. 17	
Tues.	Feb. 22	Mapping a Conceptual Schema To a Logical Data Model
Thurs.	Feb. 24	Reference: Chapter 6
Tues.	Mar. 1	
Thurs.	Mar, 3	Database Creation Using SQL
Tues..	Mar. 8	Reference: Chapter 10
Thurs.	Mar. 10	Quiz I (Chapters 1-3, 6 and Introductory SQL Material)
Tues.	Mar. 15	No Class - Spring Break
Thurs.	Mar. 17	
Tues.	Mar. 22	Data Retrieval Using SQL
Thurs.	Mar. 24	Reference: Chapters 11 and 12
Tues.,	Mar. 29	
Thurs.	Mar. 31	
Tues.	Apr. 5	
Thurs.	Apr. 7	
Tues.	Apr. 12	Normal Forms
Thurs.	Apr. 14	Reference: Handout Material From Chapters 7-9
Tues.	Apr. 19	
Thurs.	Apr. 21	
Tues.	Apr. 26	
Thurs.	Apr. 28	An Introduction to Database Triggers and Assertions
Thurs.	May 10	Final Exam (2:00 pm – 5:00 pm)