Computer Science 440

Theory & Design of Databases

Spring, 2014

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Office Hours: MWF 1-3 and by appt. Please feel free to "drop in"

Text: Atkins' is the closest to the course structure and a copy (pdf) is on eCampus.   Also there are many good SQL books available. There are a couple of informative references on eCampus. Finally, I would recommend you consult text books as needed through the University e-Library. I personally like Jason Price's SQL books but YMMV.

Grading:

Three Hourly Exams:	45%
Final Examination:	25%
Project:	20%
Homework:	10%

Homework Grading: In an effort to make the homeworks more effective, there will be a "two bites of the apple" policy. There will be about 10 – 12 homework assignments. When assigned there will be a due date – usually two class periods away. Homework is due at the beginning of class. I will try to return the homework in a timely fashion (hopefully by the next class period). You can then ask any questions you want and revise your homework if you wish and resubmit it at the start of the following class period. Your grade will be based on the average of your submissions. Note that because of the class size, I do not give partial credit on questions. Each answer is either correct or it is not. NOTE: If you do not submit a good faith effort by the initial due date, you will NOT be eligible for a second bite.

Grading Policy:

90% -100%	A
80% - 89%	B

70% - 79%	C
60% - 69%	D
< 60%	F

Note: I tend NOT to give partial credit. This is coding. Your answers are either right or they're not. (I do allow some leeway for syntax on tests if you have the correct approach logically). Based on this, the grading policy is not really realistic, and in practice I tend to end up with be a rather generous curve. The homeworks are designed to reinforce the lecture material and the tests are a lot like the homeworks. So in theory everyone ought to do well. Every year there are lots of students who assimilate all the material and those students get A's. I'd love for this class to 100% fall into that category, but experience, human nature and the law of large numbers all tell me I'm dreaming.

Examination Dates:

Exam 1:   Wednesday, Feb 5, 2014

Exam 2:   Wednesday, Mar 5, 2014

Exam 3:   Wednesday, April 16, 2014

Final Exam: 8am to 11am, Monday, April 28, 2014

Note that it is possible that these dates will change. If they do, the revised time will be announced in class. You are responsible for all information provided in class. While I am on that point, I really should take attendance for this course, I just don't have the time. This does not mean that class attendance is not important. It is EXTREMELY important. Furthermore, we cover a lot of material in class and I don't repeat myself, so missing even ONE class can put you deep in the hole and you may not ever recover.

Project:

The actual format of the project will be announced in early February. Due dates to be announced but likely at the end of Dead Week.

Topics: This is a general list of the topics we plan to cover. Note that this is primarily a PROGRAMMING course. We'll use Oracle for most, but not all of the material we will cover in class. It's the most feature complete relational database on the market.

General Introduction

Relational Algebra overview

The Relational Database. Oracle as an Example

SQL

        Data Manipulation Statements

        Data Definition Statements.

        Indexing

        Basic SQL Queries

        Complex SQL Queries. Nested Statements.

Aggregate statements, grouping.

PL-SQL

Object Relational Model

The Entity-relationship model

Normalization

Concurrent Database access

NOSQL Databases

Class Policies

1. There are no makeup exams; absence from an exam must be approved by the instructor prior to the exam. Approved missed examination scores will be replaced with the final examination score. Failure to take two examinations will result in an F for the course. An absence from an examination must be approved by the instructor.

2. Class attendance is critical for success in this course. I don't take attendance but I strongly recommend you try to attend every single class. I move fast and do ZERO review.

3. NO WORKING TOGETHER ON HOMEWORK. Students are required to work alone on the project and homework. **Evidence that the project or homework was not done entirely by the student will be regarded as cheating.** Cheating is bad for both students (the provider and the copier) for different reasons, and its generally bad for the class morale, too. Because of this I have a **ZERO TOLERANCE POLICY.** *Any episode of cheating that I become aware of generally results in F's and expulsion from the class for all participants. So think LONG and HARD before you share your homework with your buddy.*

4. Homework assignments are quite important. They are practice for the tests. I recommend very strongly that you do them all Homework grades can improve your overall grade by a lot and your performance and effort on homeworks is a major consideration when I set the curve at the end of the semester.

5. Project and homework assignments are due at the beginning of class in which they are due. Late submissions are not accepted.

6. The Laboratory Fee is not refundable after the first week of classes. A registration restriction for the succeeding semester will be imposed if the fee is not paid.

7. The final examination must be taken at the scheduled time (no exceptions!).

8. Please do not bring enabled cell phones to class! If you anticipate receiving a critical call during class, please notify the instructor before class.

9. Students may not audit nor may they "sit in for free."

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions to further such a

positive and open environment in this class will be appreciated and given serious consideration.

If you area person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me of the same and make appropriate arrangements with Disability Services (2936700).

Course Objectives:

Students will be exposed to the fundamentals of the object-relational data model as well as the ER design methodology.

Learning Outcomes:

The student will understand the concepts and terminology appropriate to the study of databases.

Assessment: examination

The student will be exposed to fundamental aspects of the Oracle 10g Database Management System.

Assessment: multiple assignments, access to the Oracle DBMS.

The student will understand the process required to develop a database application.

Assessment: Class project

The student will understand the entity-relationship model relative to capturing the information content of an application.

Assessment: examination and assignment