

COSC6340: Database Systems

Instructor: Carlos Ordonez

1 Course information

Schedule: TuTh 10:00-11:30

Google newsgroup: "COSC6340-". Instruction on TA web page.

email: lastname AT cs uh edu (Start subject line with "COSC6340-")

2 Course contents

This is a graduate level course on database systems. The textbook is [1], complemented by [2]. The course will require reading some research papers electronically available.

Topics include the following. Database design: ER model, relational model and algebra, normalization up to 5NF. Internal subsystems of a relational DBMS: secondary storage, buffer management, indexing data structures, query optimizer, concurrency control, transaction processing, recovery. Advanced SQL programming: SPJ queries, aggregations, derived tables, pivoting, OLAP functions, recursive queries, UDFs, stored procedures. Overview of security, cube and data mining techniques.

3 Grading

- 70%: 2 programming projects.
- 30%: Midterm (2/3 of course) exam.

Project 1 will involve creating an SQL query generator in Java to perform analysis of a database; Project 1 will be delivered in one phase, will take 4 weeks and will use the ODBC interface to connect to a relational DBMS. Project 2 will be building a basic relational database system (capable of evaluating simple SPJA queries), will take about 8 weeks and it will be developed in C++ (Borland C++). Programming assignments must be done in pairs (i.e. a team of 2 students); teams will be assigned by instructor. Programs will be carefully tested by TA for correctness and efficiency.

References

- [1] H. Garcia-Molina, J.D. Ullman, and J. Widom. *Database Systems: The Complete Book*. Prentice Hall, 1st edition, 2001.
- [2] J. Han and M. Kamber. *Data Mining: Concepts and Techniques*. Morgan Kaufmann, San Francisco, 1st edition, 2001.