SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (Tentative) COSC386 Database Implementation

Description: This course concentrates on the physical design and implementation of databases. Students will learn vocabulary specific to the database area, DBMS functionality as well as database administration. Students will design, build and manipulate a large database project as well as produce user and system documentation. Students will gain extensive experience in project management and presentation skills as well as an understanding of the algorithms used in database manipulation and performance.

Prerequisites: Data Structures & Algorithm Analysis (COSC220) and Discrete Mathematics (MATH 210), both completed with a grade of C or better.


Topics Weeks

Database Systems 2.0
Introduction of database systems and applications. Overview of MySQL. Data modeling using the ER model. Relational database normalization, constraints and design algorithms.

Data Models and Database Creation 2.0
The relational model, the entity relationship (ER) model and object oriented data models will be examined. Basic and complex queries, forms and reports will be designed. Introduction to PHP and HTML. File structures and hashing techniques (internal, external and linear).

Understanding Database Algorithms 2.0
Algorithms for query processing and optimization will be examined. Students will create programs that will utilize these concepts outside of the database environment in order to fully understand how these concepts work within the database applications. Binary, B-trees and RAID technology will be examined in their relationship to database performance.

Web Database Development 1.0
Web page design concepts for web based query/update user capabilities for the database. Using a web interface to access a database.

Implementation of a Database 5.0
Creating a complete database management system with the requirements given in class. Database administration responsibilities. Concurrency control and locking methods. Students will design, document and create large databases and publish user and system documentation that will utilize industry standards of excellence.

Testing and Optional Topics 2.0
Optional topics include e-commerce, distributed database management systems and datawarehousing.

EVALUATION 50%
Homework, Programs, and Projects 50%
Tests and Final Exam 50%

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