Syllabus: Principles of Database Systems

Course Description:

Topics include database concepts and architecture, data modeling, formal query languages such as relational algebra, commercial query language SQL, database access from application programs and a brief examination of advanced concepts including transactions, distributed databases, security and XML.

Text Book:

Hector Garcia Molina, Jeffrey Ullman, Jeniffer Widom: Database Systems : The Complete Book, Pearson, Prentice Hall.

Contents (subject to Change):

1. Introduction: History and Idea of a Database
2. Relational Database Model
    1. Relational Model of Data and a first view of the Algebraic Query Language
    2. SQL Data Definition Language
    3. SQL Select Statements
3. Design Theory for Relational Databases
4. High Level Database Models
5. Algebraic Query Languages
6. SQL:
    1. Basics
    2. Constraints
    3. Triggers,
    4. Views
    5. Indices
    6. Stored Procedures
    7. Programmatic interaction using Python
        1. MySQL
        2. sqlite,
        3. BerkeleyDB
7. Database Implementation
8. Distributed Relational Databases
9. NoSQL Databases
    1. MongoDB
    2. CoachDB

Software Used

- MySQL (Oracle)
- MySQL workbench
- Python 3.11
- MongoDB

Grading

Weekly Homework (only PDF via D2L)	30%

Biweekly Quizzes``	10%
Midterm Examination	30%
Final Examination	30%

Instructor

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Course Web Page

tschwarz/mscs.mu.edu/Classes