Course Overview

CS 4750
Database Systems
Goals

• Understand fundamental concepts of database systems
  • Database types: relational database, non-relational database
  • Database design: E-R diagrams, normal forms
  • Query languages: SQL, Relational Algebra
  • Database system implementation: data storage, indexing, transaction processing
  • Query processing and cost estimation

• Understand and be able to design and create “good” databases

• Develop a database as a service and implement a software using database interfacing technologies
This Course

• What we will focus / learn
  • Relational database
    • Focus on centralized, brief overview of distributed databases
    • Brief overview of semi-structured NoSQL databases
  • Writing good queries and optimized queries
  • Designing and developing a database that is effective and scalable
  • Making use of a Database Management System (DBMS)
    • Integrating a database into a software

• What we will not focus / learn
  • How to build a DBMS such as Oracle or SQL-database
  • How to write programs
Logistics

Class URL: http://www.cs.virginia.edu/~up3f/cs4750

Textbook: No text required, additional references will be provided


Learning style: Paper-based/hands-on activities;
Lab-style work – bring laptop
Learning Activities

• **Quizzes:** First 10-15 minutes of class, mostly Mondays and some Wednesdays
  - No makeups, 2 lowest grades dropped (keep 10 out of 12)

• **In-class exercises:** Almost every Wednesdays and some Mondays
  - No makeups, 2 lowest grades dropped (keep 10 out of 12)

• **Homework:** Some individual, some allow one partner
  - Due at beginning of class
  - 25% deduction per day for late submission, not accepted after 2 days past the due date

• **Project:** Team of 4 members
  - Design and create a database system; develop a database application; present your project
  - Each milestone due at 11:59pm; no late submission, no extension

• **Final exam:** Comprehensive closed-book/note
This image shows the order and the specific concepts you will implement. It does not show the design or architecture of the system. You may design your system as a web app or non-web app, using any software architectural style(s) of your choice as long as a relational database is integrated into your app.
Discussion Board Use

• This course uses Piazza
  • URL: https://piazza.com/virginia/spring2020/cs4750s20/home
  • You should have gotten an invitation today
  • If not, check your UVA email or check with me

• You are encouraged to join the discussions

• Questions should be posted to an appropriate thread
  • Answered by course staff and your peers
  • General questions and answers available for all to see (public)
  • Grade-specific or homework-specific questions should be made private and tagged all instructors
By default, grades will not be rounded in this course