



COSC 3380

Design of Database Systems

January 17, 2024

COSC 3380-12651 - Design of Database Systems - Spring Semester 2024

Instructor: Dr. Uma Ramamurthy (uramamur@bcm.edu)

Time: Mondays & Wednesdays – 5:30 pm to 7:00 pm

Location: SEC 103

Text Book: Fundamentals of Database Systems, 7th Edition,
by Ramez Elmasri, and Shamkant B. Navathe

Topics to be covered:

- Introduction to Databases

- Relational Data Model

- Structured Query Language (SQL)

- Conceptual Modeling & Database Design

- Database Design Theory and Normalization

- Database Security

- Distributed databases and NOSQL Systems

Important Dates:

Midterm Exam – Wednesday, March 6, 2024, 5:30 pm – 7 pm

Final Exam – Monday, May 6, 2024, 5 pm – 8 pm

Grading:

COSC 3380
Team Project & Presentations – 40%
Midterm exam - 20%
Final exam - 30%
Class Participation – 10%*

Class Participation

- Attendance does not equate to participation
- You are required to ask questions, answer questions and participate in class discussions
- You will be provided a participation grade after the midterm exam for the first half of the semester
- Your total participation score will be given as part of the final grade
- **IMPORTANT:** Start early and participate regularly!

Team Project: **First task**

- Send me an email this week from your CougarNet email address to uramamur@bcm.edu:
- Subject line: 'My programming/Database experience'
- Tell me about your programming background and experience
 - Which programming language(s) you know/have worked in?
 - Have you used databases or built databases?
 - If yes, which ones?

Team Project: **Second task**

- Start your groundwork on how to build a web application
 - Resources document will be posted
 - Use the internet
 - NOT going to build an API
 - A web application
 - With an user interface
 - A data source

Definitions

- **Database**

- A collection of related data
- Known facts that can be recorded
- Some part of the real world about which data are stored in a database
- Logically coherent collection of data with an implicit meaning
- Built for a specific purpose
- Example: a university database -- student demographics, courses, grades and transcripts

Definitions

- **Database Management System**

- Software package used to define, create, use and maintain a database
- Consists of several software modules

- **Database system**

- DBMS software together with the data (in a database)
- Often applications are included

Applications of Database Technology

- Storage and retrieval of traditional numeric and alphanumeric data in an inventory application
- Multimedia applications (YouTube, Spotify)
- Biometric applications (fingerprints, retina scans)
- Wearable applications (FitBit, Apple Watch)
- Geographical Information Systems (GIS) applications (Google Maps)
- Sensor applications (nuclear reactor)
- Big Data applications (Genome sequencing, Weather forecasting)
- Internet of Things (IoT) applications (Smart homes)
- Data Warehouses