11/30:

Goals for course:

Create Entity/Relation models form application descriptions

Build relational models.

Identify redundancies in design and remove them using normalization techniques.

Create databases in an RDBMS and enforce data integrity constraints using SQL.

Write database queries using SQL.

Objectives:

* Knowledge of various database modeling techniques
* Understand the difference between logical and physical modeling
* Understand and implement both data definition and data management queries
* Understand the use of relational algebra and writing queries
* Understand entity relationship models, design, and functional dependencies
* Apply the Boyce-Codd Normalization and Multivalued dependencies
* Differentiate between database constraints and database triggers
* Understand indexes and its applications
* Understand views in relational databases, view modification.

Class policy

* Don’t seek perfection, just get an answer
* Show up early, which should not be too hard, he likes to start as early as possible
* Missed deadline = -100%, unless genuine excuse = -20%
* A, B, C are reasonable. D go to him privately. F don’t come back.

What will I learn?

Course Project

* Project will be defined by group by mid of Jan 2023
* At the end of quarter each group turns in report of project
* 2-3 people per group

Approached to storing data

* File processing
  + Older approach to storing data
  + Each user defines and implements the files needed for a specific software application is free to name data elements
  + Here each application is free to name data elements independently
  + Ancient ‘Boss’ is an example of this.
* Database Approach
  + Self-describing nature of a database system using meta data (data about data)
  + Insulation between programs and data and data abstraction using data modeling
  + Support of multiple views of the data using queries and views (allows you to abstract data about certain things, restricts certain things for certain users.)
  + Sharing data and multi-user transaction processing using access control and concurrency control (concurrency control updates the system so everyone is on the same page at the same time)

What is a database

* Database is commonly used to refer to any of the following
  + Personal address book
  + Colletion of word documents
  + Collection of excel spreadsheets
  + Very large flat file on which you run some statistical analysis funtions
  + Data collected, maintained, and used in airline reservation

What is a system

* System- a group of interacting or interrelating elements that act according to a set of rules to form a unified whole
* Systems model:
  + System comprises multiple views
  + Man-made systems may have views such as concept, analysis, design, implementation, deployment, structure, behavior, input data, and output data views

DBMS

* A general-purpose software system that facilitates the process of defining, constructing, manipulating, and searching databases among various users and applications