

# CSC 453

# Database Technologies

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# Course Overview

- Introduction
- Relational Model-Concepts
- Relational Model-Implementation
- SQL

# Why take this course?

- The digital world runs on data
- Loss, corrupt, compromised, or mismanaged data can cost dearly
- Data management jobs are high in demand

# What is a database?

- A collection of persistent related pieces of information

Course Database

"CID"	"COURSENAME"	"DEPARTMENT"	"COURSENR"
"1020"	"Theory of Computation"	"CSC"	"489"
"1092"	"Cryptography"	"CSC"	"440"
"3201"	"Data Analysis"	"IT"	"223"
"9219"	"Databases Systems"	"CSC"	"355"
"3111"	"Theory of Computation"	"CSC"	"389"
"8772"	"History of Games"	"GAM"	"206"
"2987"	"Topics in Digital Cinema"	"DC"	"270"

# Student database

"LASTNAME"	"FIRSTNAME"	"SID"	"PROGRAM"	"CITY"	"STARTED"
"Gloria"	"Chan"	"12300"	"COMP-SCI"	"Naperville"	"2010"
"Brennigan"	"Marcus"	"90421"	"COMP-GAM"	"Evanston"	"2010"
"Patel"	"Deepa"	"14662"	"COMP-SCI"	"Evanston"	"2013"

# Storage Options in Computers

- CPU Registers-Volatile
- Memory-Volatile
- Hard disk-Persistent
  - Most common to store in files

# Files Vs DBMS

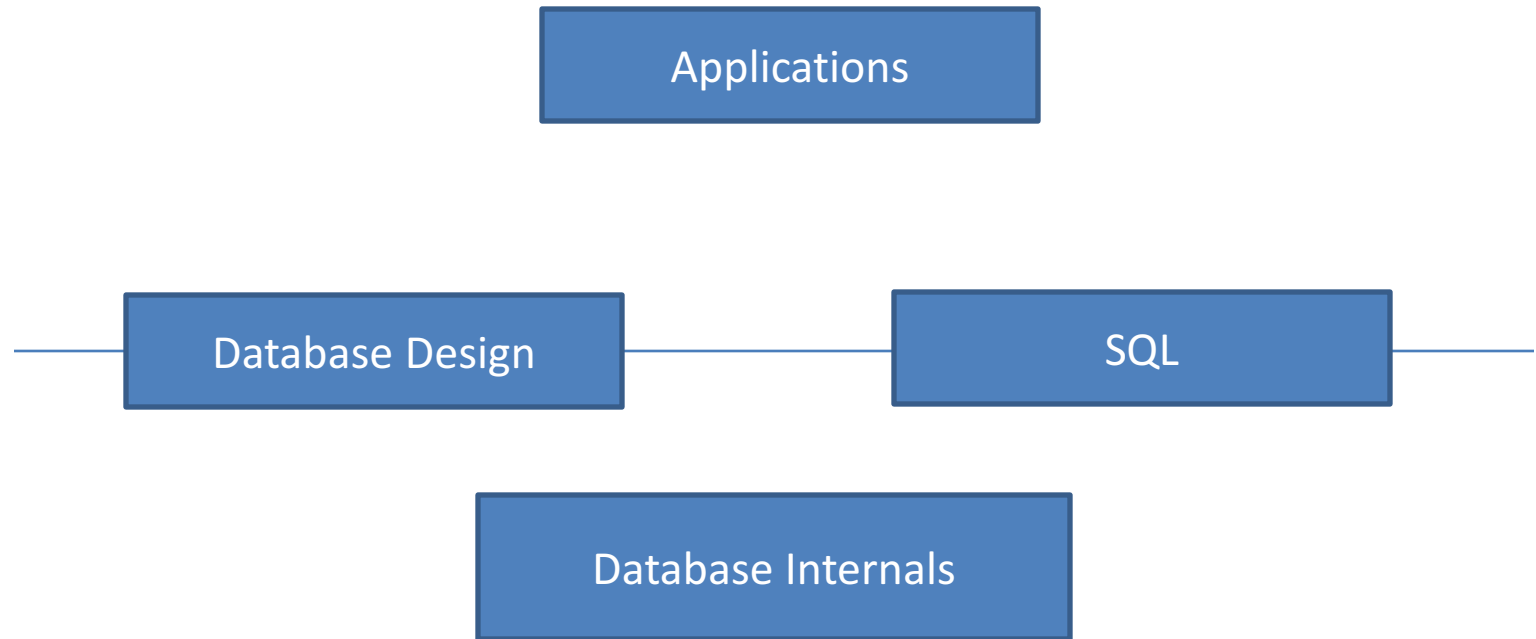
- How to find a particular record?
  - Find all students who joined later than 2013
  - Find all students who live in Chicago
- What if two threads try to write to the same file at the same time?
- How to ensure that the studentid remains same in all files?
- What is data is overwritten?

# Database $\neq$ DBMS

- A DBMS is software that allows applications to store and analyze information in a database.
- A general-purpose DBMS is designed to allow the definition, creation, querying, update, and administration of databases.



# Focus of Course



# Learning Objectives

- Students will learn the fundamentals of database management systems.
  - When to use them
  - How to model data with them
  - How to store and retrieve information
  - How to search quickly for information
  - System internals & key algorithms

# Course Plan

- Syllabus
- Content
  - Slides only supplement the lecture
  - Worksheets are trust-based
- Assessment
- Rules and rights

# Using Oracle SQLDeveloper

- Connect with information on D2L
- Viewing Tables