# CptS 451- Introduction to Database Systems

# Course Overview

**Instructor: Sakire Arslan Ay**

WASHINGTON STATE UNIVERSITY

*World Class. Face to Face.*

WSU
CptS 451

# Sakire Arslan Ay

You can call me Shakira.



Cookie

Snow

WSU
CptS 451

Scholarly Associate Professor,
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M.S. and B.S. programs

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Office Hours: M, W, F : 2:15pm–4:00pm
(in person + Zoom)

Please stop by during my office hours.
– Ideally not just for homework questions (but that's good too)

- Education:
  – Ph.D. in Computer Science – University of Southern California (2010)
  – M.S. in Computer Science – University of Southern California (2004)
  – B.S. in Computer Engineering – Bogazici University – Turkey (1999)

- Research Interests:
  – Large-Scale Geospatial Data Management and Indexing
  – Sensor-Rich Video Annotation and Search

# Course TAs

## CptS 451 Undergraduate Teaching Assistants:

Name: Allison Stansberry
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Office Hours: TBA


Name: Avery Sonner-Zabotel
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Name: Stuart Brown
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# Course Overview

- This course introduces:
  - the fundamental principles of relational databases:
    - the ER approach to database design,
    - the relational model, relational design theory,
    - abstract query language such as relational algebra,
    - programming in SQL.
  - core database implementation issues
    - storage and indexing,
    - query processing,
    - transaction management.
- Other WSU database and data science courses
    - CptS415 – Big Data
    - CptS475 – Introduction to Data Science
    - CptS315 – Data Mining

# Course Information

- The CptS 451 class meets three times a week on Carp 102.

    - All lectures will be recorded (using Panopto) and the links will be posted on the course Canvas site (on the Panopto page).

- All course material will be posted on course Canvas site.

    - The lecture notes will be posted after each lecture.

- For certain topics  we will use a flipped classroom setting,

    - You will watch the pre-recorded lecture videos ahead of time and we will cover additional examples on that topic during the lecture.

- While the lectures and lecture notes are designed to be clear and self-contained, you are required to read the assigned chapters in the course textbook (Gehrke et al.)

# Text Books

- ## Required Textbook:
  - **[DMS]** Database Management Systems (3rd Edition), Raghu Ramakrishnan, Johannes Gehrke, ISBN-10: 0072465638 McGraw-Hill , 2003
    - Also known as the "Cow Book"

- ## Recommended Textbook:
  - **[DS-CB]** Database Systems: The Complete Book (2nd Edition), Hector Garcia-Molina, Jeffrey Ullman, Jennifer Widom,

    ISBN: 0131873253

    Pearson , 2009
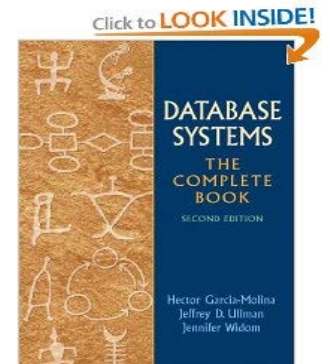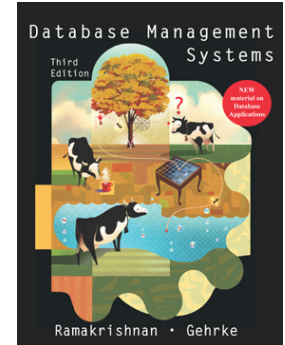
# Database Access

- You will use PostgreSQL database platform for the course project and HWs.

- You are allowed to use only the standard SQL functionality and features. Please check with the instructor if you are planning to use a PostgreSQL specific feature.

- You can download PostgreSQL for free at the link https://www.postgresql.org/download/.

# Homework Assignments

- There will be approximately 6 homework assignments throughout the semester.

- All homeworks will be submitted on Canvas.

- Late penalty is 10% point deduction per day. You can submit up to 5 days late.

- You will be given total 6 HW assignments. Your lowest HW score will be dropped;
  - i.e.,  the top 5 HW scores will be included in grade calculation.

- All homework and exams must be solved and written independently, or you will be penalized for plagiarism.

# Project

- You will develop a target application which runs queries on the Yelp.com data and extracts useful information.
  - You will use a Yelp.com's business review data.
    - https://www.yelp.com/dataset
  - The primary users for this application will be potential customers seeking for businesses that match their search criteria.
  - Using this application the user will search for the businesses from various business categories.

- You may design your application either as a standalone or a web-based application.

- Project description will be available on Canvas.

# Project (cont.)

– You will work on the project in teams of 3 or 4.

- You need instructor's permission if you <u>need to</u> work alone.

– Project Submission:

- The progress of semester-long project will be measured by 3 milestones (see schedule for tentative deadlines).

- Project code shall be submitted on GitHub (one submission per team).

- Each project team will have a private GitHub repository on the "CptS 451 GitHub Education" organization.

- Late penalty is 10% point deduction per day.

# Exams

- Midterms
  - You will be given 2 midterms
  - Midterms will cover all material until the midterm dates.
  - The tentative midterm dates are: **February 16** and **April 6** (see the schedule).

- Final
  - Exam will be comprehensive and cover all of the course material. The majority (70%+) of this exam will focus on the material presented after the mid-term exam.
  - The final exam is on **May 5**, from 4:30pm to 06:00pm

# Academic Integrity

- All homework and exams must be solved and written independently, or you will be penalized for plagiarism.
  - Check out the Academic Integrity statement in the course syllabus.

# Academic Integrity

- You are not allowed to:

    - Write the solutions to HW problems together with a friend and having both of you submit the same (or very similar) solution.

    - Copy a friend's solution and intentionally changing the names, phrases, or the structure in the solution to make it look different.

    - Copy solutions from online sources (e.g., Chegg. Coursehero, GitHub, etc.) – changing variable names doesn't make the  solution yours.

    - Having somebody else answer the HW questions on your behalf.

    - Share solutions or code with your classmates or copying solutions from prior semesters' submissions. It means, you should not turn part of a solution you found on the web, nor should you copy code from an assignment solution (you obtained from a friend) from prior semesters.

    - In SQL assignments working together may extend to figuring out overall strategies for solution, but you may not work together to write the actual code that you submit.

    We will process all programming assignment submissions using Turnitin and Stanford's free plagiarism detection software called MOSS.

# Grading

- **Overall Grading**:
  - Midterm-1            14%
  - Midterm-2            16%
  - Final                   15%
  - Warmup Project      2.5%
  - Project               30%
  - Homeworks         22.5%
  - In class exercises    extra-credit

- The above percentages are subject to change as circumstances dictate.
- You can calculate your letter grade here: https://tinyurl.com/cpts451grade

- **Letter Grades:**

| Letter Grade | A | A- | B+ | B | B- | C+ | C | C- | D+ | D | F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Score | 93% - 100% | 90% - 93% | 86% - 90% | 83% - 86% | 80% - 83% | 76% - 80% | 73% - 76% | 70% - 73% | 66% - 70% | 60% - 66% | 0% - 60% |

# Grading (cont.)

**HW and Project Grading:**

- Weights of the project milestones:
  - Milestone 1 (JSON Parsing, DB Design)                          4%
  - Milestone 2 (Relations, Constraints, SQL DDL,
                    Populate DB, Assertions, Triggers)        12%
  - Milestone 3 (Application to search businesses)        14%

                                                        (TOTAL      30%)


- Each HW assignment is worth 22.5/5 = 4.5%

# Attendance

We won't take attendance, however,

- You will be given some class exercises during some lectures which will count as extra credit (up to 1.5%).
    - You need to be present in class in order get credit for those exercises.
    - The total points for all exercises will be more than 1.5% , therefore if you miss couple classes you can later make up for those points in later lectures.
- Attendance and assignment/project submissions on time is a strong indication that you care about this class and you put effort to learn and succeed.

# Questions?

- Anything I have missed?

- Questions?

- First Day Survey