CMPT 454: Database System II

Fall 2024

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Objectives

- 454 focuses on *building* of DBMS:
    - I/O cost metric and scalability for large data
    - Data storage, organization, and indexing
    - Evaluation of relational operators and SQL queries
    - Transaction management and concurrency control
    - Recovery from system crash
- Essential for developing DBMSs as well as large DB applications (e.g., big data, data science, web application…)

Course Information

- In-person class. Recording from Spring 2023 is available at Canvas/pages

- Main textbook : *Database Management Systems*, Raghu Ramakrishnan/Johannes Gehrke, Third Edition, McGraw-Hill. Answers to odd numbered questions available on internet

- Sfu.canvas/Files: slides/assignments/midterm/quiz

- Grading:
  - Weekly in-class quizzes (15%)
  - 3 assignments (20%)
  - Midterm (30%)
  - Final (35%).

Topics

- Chapter 9: Data storage
- Chapter 10&11: Tree-index and hash index
- Assignment 1 (Sept 24)
- Chapter 12: Overview of query evaluation (self-reading: 12.1-12.3)
- Chapter 13: External sorting
- Chapter 14: Evaluation of relational operators
- Assignment 2 (Oct 15)
- Midterm (Oct 29)
- Chapter 16: Transaction Management
- Chapter 17: Concurrency Control
- Chapter 18: Crash Recovery
- Assignment 3 (Nov 19)
- Final exam, covering all topics above

Office Hours (online only)

- Instructor: Friday 11am-12pm. Zoom link: https://sfu.zoom.us/j/8360430493

- TA:
  - Mengdi Jin <mengdij@sfu.ca> Thursday, 3-4pm, https://sfu.zoom.us/j/83247675066?pwd=dJXaOpoUmrv6gX5zvQhwyYJaYIWWSb.1 (passcode 454454)
  - Wenqing Liu <wla161@sfu.ca> Monday, 10:30-11:30 AM. https://sfu.zoom.us/j/82653585436?pwd=22EVPzy7qJklDAsKCAqe8m1ga8lu3T.1 (passcode 900911)
  - Pranali Khilari <pbk1@sfu.ca> Tuesday 1-2m, https://us04web.zoom.us/j/74286569875?pwd=DL0etToMFn4TtajpQePm42fw6jNZJQ.1 (passcode Q9Grd6)

- Start from the week of Sept 16, 2024.

Marking, Submission, Grading

- Partial marking for minor mistakes, e.g., typos, etc. No mark for major mistakes, e.g., wrong concepts, not using concepts/methods from class, not readable answers, etc.

- Stick to given question description. No mark given when making your own assumption to simplify the question.

- No late submission accepted.

- Graded relative to whole class performance.

Warnings

- Academic honesty policy
  - https://www.sfu.ca/students/academicintegrity/review.html. Zero tolerance for cheating and plagiarism
- Class attendances essential
  - In-person quizzes, Q&A and additional examples in class.
  - *Very different from CMPT354, be careful …*
- 1+3+1 study pattern. Seek help *early*.