CSC443H1 Database System Technology Syllabus

Course Description
Database management systems are the bookkeepers of modern civilization. This course covers the algorithms and data structures that constitute the guts, bones, and arteries of these systems. Much of this course is about understanding the properties of modern hardware devices and designing data structures and access methods that optimize for them. We will also see that there is usually never one "correct" way for storing data: it is a question of managing trade-offs to optimize for what the user is trying to do. This course is important for anyone who intends to work with, tune, extend, or build data management systems.

Piazza
We will be using Piazza as our main discussion board. You are responsible for reading all postings made by me or the TAs. Please use Piazza to ask questions about assignments and course lecture materials so that everyone can benefit.

Prerequisites
Students should have taken courses in Introduction to databases, operating systems, and data structure design and analysis. Hands-on experience with C/C++, Java, or Python is also required.

Contact
Course announcements will arrive through Piazza. Aside from that, this course website is required reading. It contains essential material and will be updated throughout the semester. Please use Piazza whenever possible to ask questions about course material. For personal questions, email me at nivdayan@gmail.com. Please include "csc443" in the subject line along with your full name. If you do not hear back quickly, we are always available during office hours to help.

Reading Material
The course textbook is "Database Management Systems" by Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition. It is available new and used at the UofT bookstore and in the library. We are interested in Parts III to V. While this textbook is classic, it is also dated (20 years old). Therefore, the reading material will also draw from various sources, including research papers and articles, about state-of-the-art advances in the field.

Marking Scheme
There will be a midterm (20%), a final (40%), and a group project (40%) for this course. The midterm date will be October 24.

Academic Integrity
The project hand-ins must be the group's work. It is an academic violation to copy code or experimental results from other groups, whether you copy yourself or let someone else copy. That said, we encourage you to discuss course material widely with your fellow students within and across groups.

Accessibility

The University of Toronto is committed to accessibility. If you require accommodations or have any accessibility concerns, please visit [Accessibility Services](#) as soon as possible.

Final Exam

the final exam will be scheduled by Arts & Science and take place during the examination period.

Group Project

The course involves a major programming assignment that students will do in groups of three. It is up to the students to form groups. The goal of working in groups is to balance the load among the students. Moreover, it is worthwhile to get to know your classmates, as they will be from your network once you graduate. Large-scale programming assignments in the real world are done in groups, so it's worthwhile to get used to this now. The final deadline for the project is December 1. Implementation will be done in C++ or Rust. In case students encounter difficulties with group dynamics, please get in touch with the course instructor to help resolve them. It is allowed to use chatbots like ChatGPT to generate code for the project so long as you document in the project report how you used it and give a few examples.

Office Hours

Office hours with the course instructors will be held immediately after each lecture or tutorial at BA5230 for at least one hour.