Syllabus
CSC230 Database Technologies for Analytics
Professor Leon Tabak
Block 7
March 18, 2019 to April 10, 2019

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1 What we will learn

Together we will learn principles and methods for the design of relational databases. We will learn how to create, update, and query databases using the Structured Query Language (SQL). We will examine alternatives to SQL and the relational model. We will practice collecting, filtering, and formatting data. Our work in the laboratory will introduce us to several popular and powerful software tools. We will develop a familiarity with the origins of computing technologies and the most important questions that define computer science. We will explore predictions for the future of computing.

2 Our meeting times and places

- My office is in Law 206C.
- You may call me in my office at (319) 895-4294.
- You may send me electronic mail at l.tabak@ieee.org.
- I will be in my office and available to meet with you Monday through Friday from 3:00 p.m. until 3:30 p.m.
- We will all meet together in the classroom in the mornings and in the laboratory in the afternoons.

	Where	**When**
Classroom	Law Hall 303	9 a.m. to 11 a.m.
Laboratory	Cole Library 212	1 p.m. to 3 p.m.

3 Textbooks

We will use free, online resources. If you wish to purchase a book, I recommend that you purchase or rent an electronic copy of the following book.

- Learning SQL (Second Edition), Alan Beaulieu, O'Reilly Media, 2009, ISBN 978–0–596-52083-0

3.1 Additional resources

3.1.1 Online articles

- "As we may think," by Vannevar Bush (July 1945 issue of *The Atlantic Monthly*
- "Edgar F. (Ted) Codd," a biographical sketch and link to Codd's Turing Award Lecture on the Web site of the Association for Computing Machinery
- "Michael Stonebraker," a biographical sketch and a link to Stonebraker's Turing Award Lecture on the Web site of the Association for Computing Machinery
- "Why Hadoop is the future of the database," an article by David Metz in the February 25, 2013 issued of *Wired*
- "Michael Stonebraker explains Oracle's obsolesence, Facebook's enormous challenge," by Tiernan Ray on March 30, 2015 at *Barron's*
- "SQL for Web Nerds," by Philip Greenspun

3.1.2 Online courses and tutorials

- Learn SQL, from Codecademy
- Introduction to Relational Databases, from Udacity and taught by Karl Krueger
- Introduction to Databases, from Coursera and taught by Professor Jennifer Widom (Stanford University) in a series of mini-courses
- SQL Tutorial, from W3Schools

4 Etiquette for the Classroom

Please show respect to your classmates, to me, and to the seriousness of our enterprise by exercising the following courtesies:

- Please give your attention to whomever is speaking. You cannot view unrelated pages on the Web and be part of our class' discussion at the same time.
- You learn from your classmates. Be generous in offering help to classmates in the laboratory. Take interest in your classmates' work. Encourage them. Compliment them for work that is well done. Give them a good audience when they stand at the front of the room to present their work. Show these courtesies to all of your classmates.
- Please do not interrupt the class by late entries or early departures. If you anticipate a need to be absent from all or part of one of our meetings, please notify me in advance of your anticipated absence.
- You may listen to music while working in the laboratory so long as you are still able to hear your name when called and you do not disturb neighbors.
- Please refrain from bringing food or drink into the classroom or laboratory. We can make reasonable exceptions for eating that is not noisy and foods that do not have strong smells.

  Acceptable beverages and foods include water, tea, and granola bars. Bringing breakfast to class is not courteous.

  Please clean up crumbs and spills. Please dispose of empty containers and leftovers.
- Please dress as you might for an employer in the software engineering industry. Please keep your shoes on. Wearing hoods, hats, or sunglasses (except when there is a medical reason for shielding the eyes) that hide your face is not courteous.
- Imagine that you are seeking employment. How will you present yourself to your prospective employer?

  Imagine that you are now employed in a software engineering firm. How will you speak to your teammates, the head of your team, and your company's clients?

  Imagine that your grandmother has purchased the company for which you work. She has joined you in the company's conference room to hear and see you walk through the code that you have written for the company (her company).

  Are there some words that you will keep out of your vocabulary during this hour?

5 Policies

Cornell College is committed to providing equal educational opportunities to all students. If you have a documented learning disability and will need any accommodation in this course, you *must* request the accommodation(s) from the instructor of the course and no later than the third day of the term. Additional information about the policies and procedures for accommodation of learning disabilities is available on Cornell College's Web site.

Please also familiarize yourself with the college's statement on academic honesty and its policies for dropping courses.

6 Goals

We will give special attention to three of Cornell College's Educational Priorities and Outcomes:

- Reasoning — Students will evaluate evidence; interpret data; and use logical, mathematical, and statistical problem-solving tools.
- Communication — Students will speak and write clearly, listen and read actively, and engage with others in productive dialogue.
- Ethical behavior — Students will recognize personal, academic, and professional standards and act with integrity.

Mathematics and logic are foundations of computer science. We will gain facility with tools for the interpretation of data.

Success in a rapidly developing technological field requires collaboration. That in turn requires effective and responsible communication.

7 Grades

Written work will be due on each day of the term except for the first day. Electronic copies of your papers will be due at 9 a.m.

Experience presenting work to peers will be a central part of the course. Practice asking your teammates questions during their presentations, critiquing their decisions, and suggesting improvements to their work will also be an important part of your education during this term. We will schedule at least one day in each week of the term for you to present your work.

	Activity	Points
	Daily work	20
	Graded exercise 1 (Friday, 22 March 2019)	20
	Graded exercise 2 (Friday, 29 March 2019)	20
	Graded exercise 3 (Friday, 05 April 2019)	20
+	Graded exercise 4 (Wednesday, 10 April 2019)	20
		100

References

[1] Peter J. Denning. The great principles of computing. *American Scientist*, 98(5):369–372, 2010.
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[3] Kirk L. Kroeker. Weighing Watson's impact. *Communications of the ACM*, 54(7):13–15, 2011.
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[4] Paul McFedries. The data gold rush [technically speaking]. *IEEE Spectrum*, 48(12):26, 2011.
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[5] Paul McFedries. We're all data geeks now. *IEEE Spectrum*, 52(8):29, 2015.
Available online.

[6] Evgeny Morozov. The planning machine. *New Yorker*, 90(31):119–1, 2014.
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[7] Alex "Sandy" Pentland. The data-driven society. *Scientific American*, 309(4):78–83, 2013.
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[8] Alex "Sandy" Pentland. Saving big data from itself. *Scientific American*, 311(2):65 – 67, 2014.
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[9] Daniel A. Reed and Jack Dongarra. Exascale computing and big data. *Communications of the ACM*, 58(7):56–68, 2015.
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[10] Nigel Shadbolt and Tim Berners-Lee. Web science emerges. *Scientific American*, 299(4):76–81, 2008.
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