CPSC 350: Databases and Web Programming

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Class Meetings: MWF: 1:10pm - 2:10pm, Trexler 166 (and Trexler 173)

Office Hours: M: 11am - 12noon; T: 1pm -2pm; Th: 2pm - 3pm; and by appointment

All class meetings until September 7 will be via zoom. All office hours through the semester will be via zoom. The zoom links to the class meetings and office hours are on the Inquire page for the course.

Syllabus

Course Description: In this course we will learn the theory behind relational database systems, and learn to design and create Web-based applications using a database at the back end. Topics include the architecture of a database system, the set-theoretic formalism that forms the theoretical framework for database systems, the query language SQL, normal forms of relations, and issues of data concurrency, security and integrity in the context of multi-user database systems. Through implementing a comprehensive Web-based application, we will learn about designing and creating interfaces for the user to meaningfully interact with the application, and the back-end, i.e., server-side, processing to support the application.

Text: An Introduction to Database Systems, 8th edition by C. J. Date.

Prerequisites: CPSC 250 and MATH 131. Familiarity with Unix/Linux is assumed.

Intended Learning Outcomes

At the end of this course successful students will be able to:

1. understand the relational calculus underlying relational database design,and be able to formulate relational calculus statements to represent appropriate subsets of a given data set;

2. design normalized relational databases for a given data set;

3. use the Structured Query Language (SQL) to create relational databasesand formulate queries to extract appropriate data from a given relational database;

4. use a variety of technologies to design user interfaces to be rendered onWeb browsers; and

5. design and implement a back-end for a Web application. visualisation.

Mechanics

The course will meet in class for 3 hours during the week. There will be weekly quizzes, weekly homework, one midterm exam and a final project (in place of the final exam). The quizzes will be in class. All homeworks and the midterm will be take-home. The midterm will be due by **5pm on Friday, September 25**. The final exam is scheduled for Saturday, November 21, 2020 from 1:00pm to 5:00pm; we will use this time for your final project presentation.

You are required to submit a PDF file, preferably from a LaTeX processed document, for the homeworks, midterm and final. Screenshots, photographs or scans of pages will not be accepted.

Make-ups for quizzes, the midterm and the final will be available only in case of documented medical emergencies.

This course expects you to spend at least 12 hours of work each week inside and outside of class.

Quizzes: Quizzes will be in class every Monday at the beginning of class.

Homework: Homework will be assigned every week, and will be due by 10pm on the Saturday at the end of the week. Unless specified otherwise, all homework assignments must be handed in typed (either in LaTeX or your choice of typesetting software). The course website has a tutorial on LaTeX. Late home works will not be accepted.

Co-curricular Requirement: Besides the quizzes, homeworks and exams, there is a co-curricular requirement. The Mathematics, Computer Science and Physics department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face these disciplines. Each student is required to attend at least three of these sessions, and turn in a short paper describing the contents of the session, and his/her critical reflections about the topic and content. These papers are due in class within a week of the session. A paper submitted beyond a week from the event being discussed in the paper will not be accepted. The MCSP Conversation Series website has the schedule of talks in the series.

Grading

The weights for the various components will be:

Co-curricular	4%
Quizzes	24%
Homeworks	36%
Midterm	16%
Final Project	20%

The final letter grade will be computed according to the following scale:

< 60	60 – 62	63 – 65	66 – 69	70 – 72	73 – 75	76 – 79
F	D-	D	D+	C-	C	C+

	80 – 82	83 – 85	86 – 89	90 – 92	> 92	
	B-	B	B+	A-	A	

Class Attendance and Policies

Regular attendance in class is highly recommended. Regardless of attendance, students are responsible for all material covered or assigned in class.

Cell phones should be kept in your backpacks or pockets (essentially, out of sight), and turned to the silent mode throughout the duration of the class (even when the class meets online). Please do not remove your cell phones until you are outside the classroom/lab. Similarly, during office consultations or consultations in the lab (even when it is not during regular class time), your cell phones should be out of sight and in the silent mode.

If you use an electronic device such as a tablet or a laptop for note-taking or to read the textbook, the content that is open on the screen should be strictly restricted to documents and pages of relevance to the class. For example, you should not have any social media websites open in your browser window, even if it is in a tab that is not currently in focus.

Academic Integrity

Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be strictly the work of the student unless otherwise specified by the instructor. The policies as outlined in the Academic Integrity handbook will be enforced in the course.

Graded programs are subject to the Roanoke College Academic Integrity policies. Copying a program or a portion of a program (even a single line) or reading another person's program to obtain ideas for solving a problem is plagiarism. Other examples of integrity violation include writing code for someone else, using code written by someone else, telling someone else how to solve a problem or having someone tell you how to solve a problem (and using his/her method). These cases apply to any work that is handed in for a grade under the instructor's assumption that the work is your own. Unless specified otherwise by the instructor, discussion among students should be limited to general discussion of concepts and language details, not specific aspects of a solution to the assigned problem.

COVID-19 Related Requirements and Exceptions

Covid-19 Policy: If you have a temperature of $100.4°$ F or higher or other coronavirus symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. Do keep up with all readings, assignments, and deadlines. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms. If Health Services informs you that you should isolate and not attend class for multiple days or weeks, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused.

Since there are more students in class than our assigned classroom (Trexler 166) can safely accommodate, I have set up some computers in Trexler 173. Some students will be in Trexler 166 and the others in Trexler 173. I will be in one of the classrooms, and teaching class via zoom. When classes are meeting in person (starting on September 7), you must be in class in person. The computers in both the rooms are set up with all the necessary software.

1. Please wear a mask at all times when we meet in the classroom in person.

2. Please do not bring any food or drinks into the classroom.

3. Please arrive in the classroom physically distanced and leave the classroomin a single file, physically distanced.

4. Please bring headphones to class so that you can listen to me speakingwithout disturbing anyone else.

5. Please keep yourself muted unless asked to unmute.

6. If you need help during class, please let me know either by raising yourhand, or via the chat window in zoom. I will assign you to a meeting room in zoom, and I can help you in the meeting room.

7. Please make sure you have completed the daily self-health-check questionnaire every day before you come to class.

8. If you feel unwell, please email me to let me know. I will work with youon an individual basis for any extensions to assignments, etc.

9. Once we are meeting in person, I will be in my office as usual. If you feelthat you need to meet with me in person, please let me know. I will set up a meeting time with you (only one student at a time) in my office, and we will meet with masks on and physically distanced.

If the college goes online mid-semester, we will continue meeting synchronously, at our usual class time, via zoom. I will work with you on an individual basis to make sure that you have all the appropriate software, etc. to complete all the assigned work. I will also make every effort to accommodate any logistical or personal difficulties you may have in case we go online; please let me know of your difficulties, and I will work with you on an individual basis to resolve them.

If I need to make modifications to the syllabus during the semester I will make the changes only after discussing them with the class.