BLG317E - DATABASE SYSTEMS
2023 - 2024 FALL (CRN: 12166)

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Recommended Textbooks:

- Database System Concepts – Seventh Edition, McGraw-Hill, by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, ISBN: 9780078022159, 2019.
- Fundamentals of Database Systems, R.Elmasri, S.B.Navathe, 7th ed., Pearson Publishing, 2016.
- Database Systems The Complete Book, H.Garcia-Molina, J.D.Ullman, J.Widom, 2nd ed, Pearson Prentice Hall Publishing, 2009.
- SQL The Complete Reference, J.R.Groff, P.N.Weinberg, A.J.Oppel, 3rd ed., McGraw-Hill Publishing, 2010.
- An Introduction to Database Systems, Chris J. Date, Addison-Wesley, ISBN 0-321-19784-4, 2004.

Weekly Schedule

Week	Date	Lecture	Practice
1	Oct 4	Overview of Database Systems	Software Installation
2	Oct 11	Relational Model, Relational Algebra	Relational Algebra
3	Oct 18	Integrity Constraints, DML Queries	SQL – Integrity Constraints, DML
4	Oct 25	Joins, Nested Subqueries, and Set Operations	SQL – Joins, Subqueries, Set Operations
5	Nov 1	Views, Built-in Functions, Aggregations	SQL – Views, Aggregations
6	Nov 8	Stored Procedures, Cursors, Triggers, App Development	Database API, App Development
7	Nov 15	MIDTERM EXAM	
8	Nov 22	Database Design 1 – ER Diagrams	E/R Diagrams
9	Nov 29	Database Design 2 - Normalization	Normalization
10	Dec 6	Transactions and Concurrency	Concurrency
11	Dec 13	Non-Relational/NoSQL Databases	Key-Value Stores, Document Databases
12	Dec 20	XML Databases, Graph Databases	XML Databases, Graph Databases
13	Dec 27	Project Presentations and Demos	
14	Jan 3	Project Presentations and Demos	

Grading

- Assessment Components:
  - Midterm exam (30%)
  - Term project (30%)
  - Final exam (40%)
- VF Conditions:
  - Students whose grade average of the midterm exam and the project is less than 30/100 will fail with the grade VF and cannot take the final exam.
- Students whose end of term overall average is less than 40/100 will fail.

Term Project

- The term project is to build a web application on top of a database.
- It will be developed as a team of 3-5 students. Students from different sections **cannot** be in the same team.
- The subject of the project will a public data set selected by the students themselves. The same data set may be used by at most two project groups (there will be a shared online list of selected datasets – please check it before you finalize your dataset).
- The technologies that will be used are the Python programming language, the Flask web framework, and a relational database (MySql, PostgreSQL, etc.). The database must be accessed via a dbapi2 compatible driver. **Using object/relational mappers or any abstraction layer over the SQL language is not allowed.**
- The projects will be hosted on GitHub. Each team member should be making **at least one meaningful/reasonable commit** per week to your Github repo starting latest by week 5.

Project Schedule

- *Week 3 (Mon by 10:00)*: Students submit their project proposal forms to the Ninova system. For teams with multiple members, each student must submit a separate form. Please use the proposal template on Ninova.
- *Week 4*: Project proposal review results are announced. Revise your project by Friday 17:00 of the same week, if requested by your TAs. Get started working on your projects.
  - Groups who fail to submit revisions by the end of Week 4 (Friday 17:00) will get 10% deduction on their project grade.
- *Week 9*: Make an appointment with one of your TAs to review your project progress so far during this week. Please make sure that you have reasonable progress to report by this time.
- *Week 13 (Mon 10:00)*: The code source files and the presentation document are submitted to Ninova.
- *Weeks 13-14*: Students give a hands-on demo to the assigned TA and the selected projects are presented to the class.
- *Week 14 (Mon 10:00)*: The report is submitted to the Ninova system.

Project Grading

- Each team member gets an individual demo grade (85%) and a report grade (15%).
- The demo grade is determined by the student's submitted code, their GitHub activity, and their performance at the demo session. The demo session has a strict "no show" policy and absent team members will get 0 for **the whole project grade**.
- The upper boundary for the report grade is 10% above the demo grade.
- The teams that are selected for presentation receive up-to 10% bonus. Team members must attend both the demo and the presentation sessions to get the bonus points.
- Team members who report reasonable progress on their projects as demonstrated in their project review meeting in Week 9 will get up-to 10% bonus.
- Team members who do not make regular and meaningful commits to their project repo will lose up-to 10% of their project grade.
- Please see the detailed project assessment criteria form on Ninova.

Important Notes

- You have to follow the course announcements on Ninova and your grades on Kepler.
- Course related e-mail notifications will be sent to your ITU email account. Please check your emails on a regular basis.
- When sending an e-mail to the instructors or TAs, use your ITU email accounts and always **include your full name and student number** at the end of the message.
- Some announcements may be made in the class without any corresponding record on Ninova. Hence, you are expected to follow the in-class announcements as well. If you miss a class, make sure that you talk to your classmates to see if there were any announcements that you need to know.
- Any form of cheating or plagiarism will not be tolerated. This includes actions such as, but not limited to, submitting the work of others as one's own (even if in part and even with modifications), providing work for others to submit and copy/pasting from other resources (including Internet pages, even if attributed). Serious offenses will be reported to the faculty administration for disciplinary measures.