2021 CSCI-C442 Database Systems (*Jie Wang*)

dbsguide: https://cisjw.sitehost.iu.edu/dbsguide/

#	topic/chapter	task	Content, Text			slides, dbsguide, class materials, videos	work & submission
P1	**Overview**	1	Chapter 1 Introduction			overview.pdf	(S) Practice Chapter 1 (T) Test Chapter 1
P2	**PROJECT 1** Database design & implementation from existing data	2	database types, database management system, current technology, and tools. Install SQLite3			database_types.pdf SQLite3_install_guide.html	(S) Acronym matching (D) Discussion (P2 Database types)
		3	Start the project: Analyze data tables. Redesign tables. Choose a database product			sqlite3-flight-db.pdf (3-104)	
		4	Create database. Create table. Drop database. Drop table. Populate table. Import data			sqlite3-flight-db.pdf (105-160)	(S) screencast
		5	Test FK constraints. Delete objects			sqlite3-flight-db.pdf (161-189)	(S) screencast, and your flight.db file
		6	Query database with SQL I/O functions. Run SQL script			DB Browser for SQLite (DB4S) sqlite3-flight-db.pdf (191-204)	(S) screencast
		7	Upload database to cloud (dbhub.io)				(P) The link to your public flight.db on dbhub.io
P3	**SQL SELECT framework** Chapter 2 SELECT [DISTINCT] <column>, [<function> OVER (partition by <column> order by <column> asc|desc)] FROM <table_left> [JOIN <table_right> ON <criteria>] WHERE <filter rows, what to include> GROUP BY <column(s), collapse rows to groups> HAVING <filter groups on criteria> ORDER BY <column(s)> [asc|desc] LIMIT <integer>|<begin_rownumber, end_rownumber> ; The SQL order of execution is different from its literal order!	8	Set up mysql & mysql workbench How to run SQL in workbench: pp.59-60 Replicate vehicles database (query-vehicles.pdf) Replicate cape_codd database (dbsguide Appendix B)			db-software-install-notes-2021.pdf query-vehicles.pdf	
		9	Case study vehicles table db_vehicles_dump.sql query-vehicles.pdf	pp. 61-75	Lab-1 select from, where, order by, logical operators, comparison operators match strings by search pattern	Run the queries on the slides 29-47 of ch2-slides-1.pdf.	(S) SQL-Lab-1-homework (T) SQL-Lab-1-Quiz-20q10m
		10		pp. 75-82	Lab-2 built-in functions, string functions, arithmetic operators	Run the queries on the slides 48-60 of ch2-slides-1.pdf.	(P) SQL-script-vehicles
		11		pp. 82-86	group-by, count by group, having, where vs. having	groupby.pdf	(T) Test (select-from-where-groupby-having-orderby)
		12	subquery	pp. 87-89	subquery	subquery-student.pdf	
P2	**PROJECT 1** Migrate flights.db from SQLite to MySQL	13					
P4	**SQL JOIN & Set operators** select * from flights f JOIN airports a ON f.origin='ORD' and f.origin = a.faa JOIN airports a ON f.destination = a.faa;	13	Case study animals database SQL-join-animals.pdf		pp.90-105 Join syntax, types of join, join on with where, outer join,	SQL-join-animals.pdf join.pdf	(S) TBD
		14	set operators		pp.102-105 union intersect except	set.pdf	
P5	**EXAM 1**	15	Case study wesay database			dbsguide 5.1.1, 5.1.3	Exam1
P6	**Database Design** **Chapters 3-6** *Entity-relationship model & Relational model* *Data modeling* *Transform data model to relational model*	16	Case study (flight.db) Reverse engineering for database redesign		Relational model & normalization Database design using normalization Reverse engineering for database redesign	Chapters 3, 4 Normalization-slides.pdf	Reverse engineering (T) 4 cat-quizzes (T) Test-chapter3
		17	Data modeling in EER diagram: schemas/Appendix-E.pdf		Data modeling with ER model (crow's foot) Design patterns Highline university case study in Chapter 5	Chapter 5 ch0506-slides-short.pdf	Line-item pattern (T) 2 cat-quizzes
		18	Design a relational model from a form Writer's patrol case questions (schemas/writer-patrol/)		Transform data model to relational model	Chapter 6	(T) 1 cat-quiz
P2	**PROJECT 2** sqlite3-flight-db.pdf (205-)	19	Augment flight.db: Track passengers, visualize the new schema in enhanced ERD. Generate the three reports in the slides. Submit a compressed file including flight.db file, SQL script for the reports, and the augmented schema in enhanced ERD (image).				
P7	**EXAM 2**	20					
P8	**Database Implementation** Chapter 7 VRG database	21	Alter table, update table, delete from				
		22	View, trigger				
P9	**Database Administration** Chapter 9	23	Multi-user management Concurrency control				
P10	**EXAM 3**	24					