

San José State University
Department of Computer Science
Fall Semester 2015
CS 157A – Database Management Systems, Section 4

Course and Contact Information

Instructor:	Ahmed Ezzat
Class Hours:	Tu,Th: 7:30AM – 8:45AM
Office Hours:	Tu,Th: 10:15AM – 10:45AM, MacQuarrie Hall, room 225
Email:	Ahmed.Ezzat@sjsu.edu
Classroom:	DH 351
Grader:	Apurva Dixit Email: Apurva.dixit@sjsu.edu
Prerequisites:	CS 146 (Data Structures and Algorithms) with a grade of C- or better, or instructor's consent. The Department of Computer Science strictly enforces prerequisites. The instructor may drop any student who does not show up for the first two class meetings without providing a valid excuse ahead of time.

Course Description

Introduction to relational database, data model, relational algebra, relational database design, physical RDBMS Model and normalization, Logical RDBMS model. SQL overview, transactions, constraints, triggers, views, indexes and security. Application Programming Interface in Java to access SQL data (JDBC). SQL stored procedure, embedded SQL, dynamic SQL and CLI. OLTP vs. Data Warehouse. SQL vs. NoSQL. Application programming project using commercial database system.

Learning Outcomes Upon Successful Completion of the Course

- Know the algorithms for testing if a decomposition is in a given specific Normal Form (NF). Given a set of Functional Dependencies (FD), Know the algorithms to do a table decomposition into BCNF, 3NF and 4NF.
- Write SQL commands to create database, create table, Insert/Update/Delete/Query rows in a database system.
- Ability to load data into the database.
- Being able to write relational algebra queries and predict what the query will return from a given database instance.
- Write simple transaction using JDBC or similar application programming interface (API).
- Understand the different flavors of SQL engines (OLTP vs Dara Warehouse).
- Understand at high-level the differences between SQL and NoSQL databases.

Required Texts

- Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer D. Widom, "Database Systems: The Complete Book," Prentice-Hall, 2nd Edition, 2009, ISBN-13: 978-0-13-187325-4 [Mandatory].

Recommended texts for self-study

- C. Date, "An Introduction to database Systems," Addison Wesley, 8th Edition, 2003, ISBN-13: 978-0-32-119784-9 [Optional].
- Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems," Addison Wesley, 5th Edition, 2006, ISBN-13: 978-0-32-136957-4 [Optional].

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy [S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>. Note that University policy [F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

All the assignments and related documents must be handed in the classroom on due date. Students will lose 10% of the homework or project grade for each day delay, and after 5 days, homework or projects will not be accepted.

Homework and Project descriptions are available on Canvas

- Homework-1: [Assignment is on Sept. 6, 2015, and is due back on Sept. 29, 2015.](#)
- Homework-2: [Assignment is on Oct. 6, 2015, and is due back on Oct. 20, 2015.](#)
- Homework-3: [Assignment is on Oct. 27, 2015, and is due back on Nov. 10, 2015.](#)

Project: [Assignment is on Nov. 10, 2015, and is due back on Dec. 1, 2015.](#)

Assessments

At the end of the semester, each of you will turn in an assessment of your own performance on your team, and an assessment of each of the other members of your team.

Exams

The midterm and final examinations will be closed book and no notes. There will be no laptops, or any personal digital devices allowed. There will be no make-up exams. If a student misses an exam without a legitimate excuse, a grade of zero will be recorded. If a student missed an exam with a legitimate excuse then the grade for that exam will be prorated.

Grading Policy

Your individual class grade will be weighted as follows:

- Assignments 25% 25 points individual scores
- Project 15% 15 points individual scores
- Midterm 30% 30 points individual scores
- Final exam 30% 30 points individual scores

Each assignment, project, and exam will be scored (given points) but not assigned a letter grade. The mean score will be announced after each exam.

Final individual class letter grades will be assigned based on the class curve (i.e. relative grading). Your final class grade can be adjusted up or down depending on your level and quality of participation on your project team.

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

University Policies

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arise. See [University Policy S90–5](http://www.sjsu.edu/senate/docs/S90-5) at <http://www.sjsu.edu/senate/docs/S90-5.pdf>. More detailed information on a variety of related topics is available in the [SJSU catalog](#), at <http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies section](http://info.sjsu.edu/static/catalog/policies.html) at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](http://www.sjsu.edu/provost/services/academic_calendars) at http://www.sjsu.edu/provost/services/academic_calendars. The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/policy) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy>. Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the [Advising Hub](http://www.sjsu.edu/advising) at <http://www.sjsu.edu/advising>. Information about the latest changes and news is available at the [Advising Hub](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course. "Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material." "Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent."

Academic integrity

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course. "Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material." "Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent."

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf

requires that students with disabilities requesting accommodations must register with the [Accessible Education Center \(AEC\)](http://www.sjsu.edu/aec) at <http://www.sjsu.edu/aec> to establish a record of their disability. In 2013, the Disability Resource Center changed its name to be known as the Accessible Education Center, to incorporate a philosophy of accessible education for students with disabilities. The new name change reflects the broad scope of attention and support to SJSU students with disabilities and the University's continued advocacy and commitment to increasing accessibility and inclusivity on campus.

CS 174, Server-side Web Programming, Section 5, Course Schedule

Tentative course calendar

Week	date	Item
1	August 20 th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
2	August 25 th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
2	August 27 th	Lecture: Relational Algebra (Ch. 2)
3	September 1 st	Lecture: Relational Algebra (Ch. 2)
3	September 3 rd	Lecture: Relational Database Design Overview (Ch. 3)
4	September 8 th	Lecture: Relational Database Design Overview (Ch. 3)
4	September 10 th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
5	September 15 th , 17 th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
6	September 22 nd , 24 th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
7	September 29 th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
7	October 1 st	Lecture: SQL Overview and SELECT (Ch. 6)
8	October 6 th	Lecture: SQL Overview and SELECT (Ch. 6)
8	October 8 th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6)
9	October 13 th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6)
9	October 15 th	Lecture: SQL Group-by, Sub-query, Security (Ch. 7)
10	October 20 th	Lecture: SQL Group-by, Sub-query, Security (Ch. 7)
10	October 22 nd	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
11	October 27 th	Midterm (Closed book)
11	October 29 th	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
12	November 3 rd	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
12	November 5 th	Lecture: JDBC
13	November 10 th	Lecture: JDBC
13	November 12 th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
14	November 17 th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
14	November 19 th	Lecture: Embedded SQL, Dynamic SQL and CLI (Ch. 9)
15	November 24 th	Lecture: OLTP vs. Data Warehouse
15	November 26 th	Holiday: Thanksgiving
16	December 1 st	Lecture: OLTP vs. Data Warehouse

16	December 3 rd	Lecture: SQL vs. NoSQL
17	December 8 th	Class review
17	December 13 th	Final (Closed book)