CS2102 Lecture 0
Course Admin.

CS2102: Database Systems

- **Lecturers**:

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- **Lectures**: Wednesday, 2-4pm @ LT19 (COM2, Level 1)
- **Important Dates**:
  - Midterm Assessment: March 7, 2pm
  - Final Assessment: May 3 (Thursday)
  - Both are closed-book assessments; allowed to have one A4-sized double-sided sheet of notes

CS2102 Teaching Assistants

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Prerequisites for CS2102

- **Advanced Programming** (CS1020/CS1020E/CS2020/CS2030/CS2040/CS2040C)
- **Discrete Mathematics** (CS1231/MA1100)

Learning Objectives

The aim of this module is to introduce the fundamental concepts and techniques necessary for the understanding and practice of design and implementation of database applications and of the management of data with relational database management systems. The module covers practical and theoretical aspects of design with entity-relationship model, theory of functional dependencies and normalisation by decomposition in second, third and Boyce-Codd normal forms. The module covers practical and theoretical aspects of programming with SQL data definition and manipulation sublanguages, relational tuple calculus, relational domain calculus and relational algebra.

Learning Objectives (cont.)

- How to design an entity-relationship data model to capture the data requirements for an application and translate the conceptual data model to a relational database schema
- How to refine a relational database schema using schema decompositions to avoid update anomalies
- How to use SQL to define relational schemas and write SQL queries on the schemas
- How to reason about the correctness of relational queries based on the concepts of formal query languages (relational algebra & calculus)
- How to apply knowledge of relational database systems to develop database appplications

CS2102 Reference Books

- Stephane Bressan & Barbara Catania,
  Introduction to Database Systems,
  McGraw-Hill, Third Edition, 2005.
  (QA76.9 Dat.B 2005)
- Raghu Ramakrishnan & Johannes Gehrke,
  Database Management Systems,
  McGraw-Hill, Third Edition, 2003.
  (QA76.9 Dbm.Ra 2003)

Workload & Assessment

- Number of credits = 4
- Workload per week = 10 hours
  - 2 lecture hours
  - 1 tutorial hour
  - 3 assignment & project hours
  - 4 preparatory work hours
- Module Assessment:

Assessment Component	**%**
Assignments & Tutorial Participation	15
Team Project	15
Midterm Assessment	20
Final Assessment	50

Tutorials

- Location: Seminar Room @ LT19 (COM2, Level 1)
- Duration: 45 minutes
- Start from Week 3
- Monday & Tuesday: 10am, 11am, 12pm, 1pm, 2pm, 3pm

- Only selected tutorial questions will be discussed in class
- Students will be pre-assigned to discuss solutions for selected questions
- Tutorial attendance will be taken
- Tutorial participation will be graded

Assignments

#	Assignment Topic	Due Date
1	File Processing	January 26
2	Entity-Relationship Model	February 15
3	SQL	March 9
4	Schema Refinement	April 13

Project

- **Objective**: Develop a web-based database application
- **Software tools**
  - Bitnami web application development stack
  - PostgreSQL database server
- Project teams of 4 members each
- Team registration using IVLE will be be opened by end of Week 2
- Teams to be formed by the end of Week 3
- If you're unable to form a team or you belong to a team with fewer than 4 members, you may be assigned/reassigned to a random team

Project Deadlines

Due Date	Task
Week 3	Project Team Registration
Week 6	5-min Pre-alpha Demo
Week 7	10-min Alpha Demo (during tutorials)
Week 12	Report & Code Submission
Week 13	20-min Final Demo (during tutorials)

Tentative Schedule

Week	Date	Topic
1	Jan 17	Relational Data Model
2	Jan 24	SQL 1
3	Jan 31	Entity-Relationship Model
4	Feb 7	SQL 2
5	Feb 14	SQL 3
6	Feb 21	Database Application Development
-	Feb 28	Recess Week
7	Mar 7	Midterm Assessment
8	Mar 14	Schema Refinement 1
9	Mar 21	Schema Refinement 2
10	Mar 28	Schema Refinement 3
11	Apr 4	Relational Calculus
12	Apr 11	Relational Algebra
13	Apr 18	Review
14	Apr 25	Reading Week
15	May 3	Final Assessment

Course Policies

- Students are responsible for the following:
  - Attending lectures & tutorials
  - Checking IVLE & emails for course-related announcements & updates
    - For convenience, subscribe to IVLE notifications (Your Name $\rightarrow$ Subscriptions)
- Late assignment/project submissions will not be accepted without prior approval from the lecturer
- For clarifications on lecture material, the best way is to make use of IVLE Discussion Forum. Questions emailed to the lecturer may be posted (anonymously) to IVLE and answered there. You can also email the lecturers to arrange for consultation sessions.

Preventing Plagiarism

`http://www.comp.nus.edu.sg/cug/plagiarism/`

All students share the responsibility for upholding the academic standards and reputation of the University. Academic honesty is a prerequisite condition in the pursuit and acquisition of knowledge. Academic dishonesty is any misrepresentation with the intent to deceive or failure to acknowledge the source or falsification of information or inaccuracy of statements or cheating at examinations/tests or inappropriate use of resources. There are many forms of academic dishonesty and plagiarism is one of them. **Plagiarism is generally defined as the practice of taking someone else's work or ideas and passing them off as one's own** *(The New Oxford Dictionary of English). The University does not condone plagiarism.*

Preventing Plagiarism (cont.)

`http://www.nus.edu.sg/registrar/adminpolicy/acceptance.html`

Students should adopt this rule - **You have the obligation to make clear to the assessor which is your own work, and which is the work of others.** *Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard.*

A student may not knowingly intend to plagiarise, but that should not be used as an excuse for plagiarism. **Students should seek clarification from their instructors or supervisors if they are unsure whether or not they are plagiarising the work of another person.**