Outline

CSCI3170

Introduction to Database Systems

Objective and topics outline

- To study the concepts and principles of database management system (DBMS).
- The first half of the course covers issues related to the design and implementation of relational database applications. Topics include:
  - Data modeling
    - ER model
    - Relational model

- Database languages
  - Relation Algebra
  - SQL
- Relational database design principles
  - Schema Refinement
  - Functional dependencies
  - 3rd normal form
  - Boyce-codd Normal Form
  - Decompositions

- The second half of the course covers issues related to the internal organization of a DBMS. Topics include:
  - File system organization
  - Indexing methods
    - B+ tree,
    - Dynamic hashing
  - Query optimization
  - Transaction processing
    - Concurrency control
    - Recovery mechanisms

Required Background

- The design of the course assumes that you have some basic knowledge about data structures, such as graph, tree and hash index.
- You need to complete a group project using Java under a Linux environment.

Instructors

- Lecturer
  - Prof. Wong Man Hon
    - Office: SHB 915
    - Email: mhwong@cse.cuhk.edu.hk
    - Phone: 3943 8406

- Teaching Assistant
  - AHMAD Nafees
    - Email: nafees@link.cuhk.edu.hk
    - Office: SHB 1005
  - LI Qinyao
    - qyli21@cse.cuhk.edu.hk
    - Office: SHB 1013
  - WANG Yingjia
    - yjwang22@cse.cuhk.edu.hk
    - Office: SHB 921
  - CUI Fan
    - fcui22@cse.cuhk.edu.hk
    - Office: SHB921

References

- Database Management Systems
  Raghu Ramakrishnan, Johannes Gehrke, Mcgraw Hill, 3rd Edition (textbook)
- Database System Concepts
  Abraham Silberschatz, Henry F. Korth, S. Sudarshan., McGraw-Hill, 6th Edition
- Concurrency Control and Recovery in Database Systems
  P.A. Bernstein and V. Hadzilacos and N. Goodman,
  Addison Wesley, Reading, Massachusetts

Project and Homework

- One project assignment. Three students will form a group to complete the project.
- TAs will set up the project accounts for all students and give tutorial on the use of the Database system.
- There will be 3-4 homework assignments

Short Assignment / Classwork

- There will be 5 - 8 short assignments / Classwork.
- The short assignments / Classwork are usually simple and short.
- A pass-fail grading system is used.
  - Perfect answers are not expected.
  - If you have made an effort to write down some answers that are relevant to the questions, you will pass.

Exams and Grading Policy
(Online/Take Home Final Exam)

- Homework: 30%
- Project: 30%
- Short Assignment / Classwork: 10%
- Final Examination: 30%

Passing requirements:
- total mark is above the passing line (usually 45% - 50%),
- the score in final examination is above 35%, and
- the score in project is above 35% .

Exams and Grading Policy
(Final Exam using face-to-face mode)

- Homework: 20%
- Project: 20%
- Short Assignment / Classwork: 10%
- Final Examination: 50%

Passing requirements:
- total mark is above the passing line (usually 45% - 50%),
- the score in final examination is above 35%, and
- the score in project is above 35% .