Wk1_M: Outline

CSCI3170 24T1

Introduction to Database Systems

Presumed Background

- The course design assumes you have basic knowledge about data structures, such as graphs, trees, and hash indexes.
- You need to complete a group project using Java in a Linux environment.

- **Prerequisite**: CSCI2100 or 2520 or ESTR2102.
- For 2nd-year entrants, the prerequisite will be waived.

References

1. *Database Management Systems*

   Raghu Ramakrishnan, Johannes Gehrke, Mcgraw Hill, 3rd Edition (**textbook**)

2. *Database System Concepts*

   Abraham Silberschatz, Henry F. Korth, S. Sudarshan., McGraw-Hill, 6th Edition

3. *Concurrency Control and Recovery in Database Systems*

   P.A. Bernstein and V. Hadzilacos and N. Goodman, Addison Wesley, Reading, Massachusetts

Reference (2)

- Course syllabus and slides largely using or follow from those polished by Prof. WONG Man Hon.

Man Hon WONG (王文漢)

Associate Professor

B.Sc.,M.Phil. (CUHK), Ph.D.(UCSB)

Department of Computer Science
The Chinese University of Hong Kong
Shatin, N.T.
Hong Kong

Email: mhwong@cs.cuhk.hk
Phone: +852-26098406 Fax: +852-26035024

Personnel (1)

- 24T1 Instructor
  - Dr. YU, Michael Ruisi (mryu@cse.cuhk.edu.hk)
  - Consultation Hours: SHB 127, Mon 15:30 – 17:30

- Small note: for consultation, reservation strongly recommended at least the day before please, thank you.

Personnel (2)

- Teaching Assistants
  - TAs will be responsible for the majority of grading of students in their dedicated sections.
  - Emails directed to individual Tas, can be CCed to me.

Name	Email
DING Wenlong	wlding21@cse.cuhk.edu.hk
GAO Jialin	jlgao@cse.cuhk.edu.hk
LIU Yuqi	yqliu24@cse.cuhk.edu.hk
LU Haodong	hdlu24@cse.cuhk.edu.hk
ZHANG Yiyi	yyzhang24@cse.cuhk.edu.hk

Email Contact Policy

- If you don’t want to ask in class, send us an email.

- This would be obvious… you must be mindful to:
  - include name
  - include student ID
  - include the Course Code? (i.e. CSCI3170)
- Any requests for very last minute assistance on assessments will not likely be responded to timely

Course Resources

- Lecture notes, assignments & announcements are all made available through Blackboard
  - Assume No Lecture Recordings
- For help outside of class
  - Blackboard forum usage very encouraged for course related discussions
    - Tutors will visit the forum regularly to answer questions
  - "Pop-up" course consultation session (TAs and myself) subject to majority request and availability of teaching team
  - Consultations with me (?)

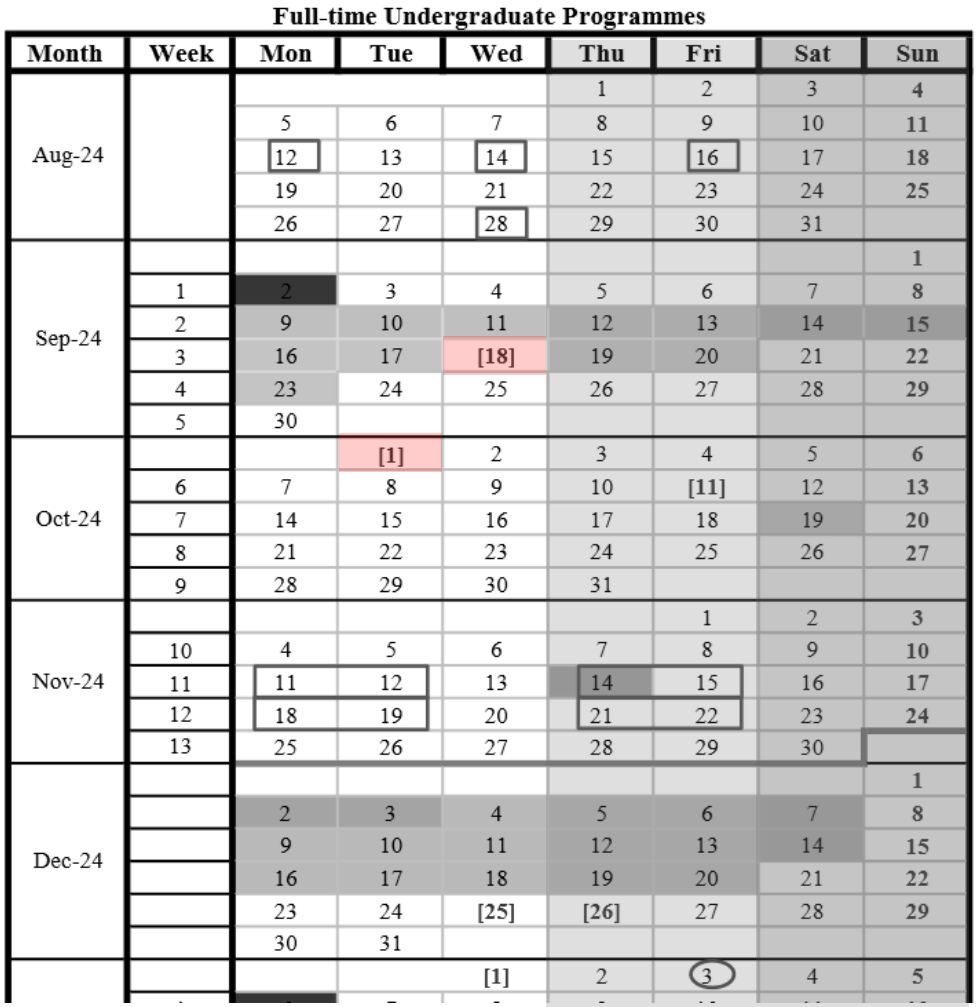
Venue and Time

Room	Time	Venue
LEC/d1/01	M 10:30am – 11:15am	MMW_LT1
LEC/d2/01	W 2:30PM - 4:15PM	MMW_LT1
TUT/01	M 11:30am-12:15pm	MMW_LT1
TUT/02	T 2:30pm – 3:15pm	SC_L5
TUT/03	W 4:30pm – 5:15pm	MMW_LT1

- Note blackboard announcements for any changes
- I anticipate week 7 Wed lecture to be affected, more news later

Known Public Holidays

- Impacts
  1. LEC/d2/01 (x1)
  2. TUT/03 (x1)
  3. TUT/02 (x1)



Full-time Undergraduate Programmes

Month	Week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Aug-24					1	2	3	4
		5	6	7	8	9	10	11
		12	13	14	15	16	17	18
		19	20	21	22	23	24	25
		26	27	28	29	30	31	
Sep-24								1
	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15
	3	16	17	[18]	19	20	21	22
	4	23	24	25	26	27	28	29
	5	30						
Oct-24			[1]	2	3	4	5	6
	6	7	8	9	10	[11]	12	13
	7	14	15	16	17	18	19	20
	8	21	22	23	24	25	26	27
	9	28	29	30	31			
Nov-24						1	2	3
	10	4	5	6	7	8	9	10
	11	11	12	13	14	15	16	17
	12	18	19	20	21	22	23	24
	13	25	26	27	28	29	30	
Dec-24								1
		2	3	4	5	6	7	8
		9	10	11	12	13	14	15
		16	17	18	19	20	21	22
		23	24	[25]	[26]	27	28	29
		30	31					
				[1]	2	3	4	5

Main Assessments

- There is **1** project assignment
  - **Three** students will form a group to complete the project.
  - TAs will set up the project accounts for all students and give tutorials on using the Database system.
- There will be **2 - 3 assignments**

Short Classwork

- There will be **5 - 8 short classwork**.
- Classwork are usually simple and short.
- A pass-fail grading system is used.
  - Perfect answers not expected
  - You will pass if you have tried to write down some answers relevant to the questions

- Classwork questions:
  - Sample answers also provided
  - To be released on course website at every interval

Exams and Grading Policy

Short Classwork (5-8)	12%
Homework (2-3):	18%
Project (1):	20%
Final Exam (1):	50%

Passing requirements:

- The total mark above passing line (usually 45% - 50%),
- The score in final exam above 35%, and
- The score in project above 35%.

Expectations

- In accordance with the University's "Policy on External Referencing to Hong Kong Qualifications Framework" approved by the Senate
  - 1-unit course would include one classroom contact hour and 2-2.75 student self-study hours
  - Times that by 3 for a 3-unit course, plus two to three hours of assessment.

- https://www.cuhk.edu.hk/clear/qm/A5-1.pdf

Academic Honesty

- **NO PLAGIARISM 嚴禁抄功課** 
  - No copying from others
  - No "*lending*" your work to others

- Interesting toolkit on software similarity
  - http://theory.stanford.edu/~aiken/moss/ (for your eyes only)

- Every plagiarizing case will be reported to the Faculty.
  http://www.cuhk.edu.hk/policy/academichonesty (CUHK)
  https://www.erg.cuhk.edu.hk/erg/AcademicHonesty (ERG)

Academic Honesty

In relation to the group project

- “All members of the group should be asked to sign the declaration, each of whom is responsible and liable to disciplinary actions, irrespective of whether he/she has signed the declaration and whether he/she has contributed, directly or indirectly, to the problematic contents.”

Academic Honesty

- What is plagiarism? An over-simplified guide
  - Did you copy someone's work?
  - Did you copy a part of someone's work?
  - Did you not do the work yourself?
  - Did you release your work to a third party?
  - I gave my work to someone?
  - [NEW] I used AI on my assessment?

CUHK AI Policies

1. All use of AI tools is prohibited in assignments and assessment tasks (Applies to us)
2. Use of some AI tools is allowed or
3. Use of AI tools is allowed with explicit acknowledgement and proper citation
4. Use of some AI tools is allowed with no acknowledgement

- You may refer to the CUHK Library website on AI in Education
  - https://libguides.lib.cuhk.edu.hk/c.php?g=917899&p=6975970

Approach 1 Details (CSCI3170)

- For assignments and assessment tasks that count towards the final course grades:
  - "students are **not** allowed to submit work which is produced with the collaboration of or supported by the use of any generative AI tools (e.g. ChatGPT)*."
  - "Any breach of the regulations will be considered an act of academic dishonesty and will be handled according to the University's Procedures for Handling Cases of Academic Dishonesty."

- In case of queries, students should seek advice from the course teacher.

Special Considerations

If you ever want special considerations, tell me

- On deadline extension
  - You MUST inform me at least 24 hours BEFORE the specified deadline
- On sick leave
  - You MUST inform me BEFORE class begins
  - You MUST provide a medical certificate within 7 days

Special Considerations

- **DO NOT** go to the exam If you are not well enough to do so. I will consider your attendance **proof that you were OK** at the time of the exam. Go to the Doctor and apply for special consideration.

Learning Summary/Approach

You'll mostly be fine in our exam if you…

- Follow lecture materials
- Attempt all the practice exercise questions with solutions
- Understand the theoretical component
- Make the most of the prac. component in the tutorials

Class Etiquette

- For everyone's convenience, remain reasonably quiet in class for your peers. Thx in advance
- I will also sometimes release a survey at the end of the class to facilitate peer learning. This is for my reference only.

- I'll aim to end on time by the :15
- I'll wait 5 minutes prior to start of lecture
- You'll get at least 10 minutes of break in-between classes

Checkpoint A

- Questions?
- One Question from the course:
  - *Is there anyone here not enrolled into the course and are facing difficulties?*

Pathways from CSCI3170

- In CSCI3170, we introduce the foundations & technology of databases
  - skills: how to build database-backed applications
  - theory: how you know for sure that what you built was good
- *"This course introduces the concepts and principles of database management systems. Subjects include: basic concepts, system structures, data models, database languages (SQL in particular), relational database normalization, file systems, indexing, query processing, concurrency control and recovery schemes."*

Did you find that familiar?

- It's from the **up-to-date** course outline

CU_CURR501 THE CHINESE UNIVERSITY OF HONG KONG May 10, 2023
Page 1 of 4 **Print Course Catalog Details** 14:18:36 PM

Academic Org: Dept of Computer Sci & Engg – Subject: Computer Science

Course: CSCI3170 **Course ID:** 002589 **Eff Date:** 2022-07-01 **Crse Status: Active** **Apprv. Status:** Approved [Course Rev]
Introduction to Database Systems **數據庫系統導論**

This course introduces the concepts and principles of database management systems. Subjects include: basic concepts, system structures, data models, database languages (SQL in particular), relational database normalization, file systems, indexing, query processing, concurrency control and recovery schemes.

本科介紹數據庫管理系統的概念及原理。主題包括：基本概念、系統結構、數據模型、數據庫語言（尤其 SQL）、相關數據庫的規範化、文件系統、索引、詢問處理、並行控制及復原方案。

Objective and topics outline (1)

The **first half** of the course covers issues related to the design and implementation of relational database applications.

- Topics include:
  1. Data modeling
  2. Database languages
  3. Relational database design principles
     I. Schema Refinement
     II. Decompositions

Objective and topics outline (2)

The **second half** of the course covers issues related to the internal organization of a DBMS.

- Topics include:
  1. File system organization
  2. Indexing methods
  3. Query optimization
  4. Transaction processing

From Course Catalog (2)

COURSE OUTCOMES

The students will be able to

1. use an E-R diagram to model a database;
2. translate an E-R diagram into a relational model;
3. fine tune a relational schema based on the principles of relational database normalization;
4. implement queries by using database languages (SQL in particular);
5. understand file organizations and index structures of a DBMS;
6. understand the ideas of query processing and query optimization;
7. understand the principles of concurrency control and recovery schemes;

Pathways from CSCI3170 (2)

After CSCI3170, you can go on to study ...

- how to build relational DBMSs
  - (write your own PostgreSQL or Oracle)
- techniques for data mining
  - (discovering patterns in DB)
- web data compression and search
  - (dealing with a large amount of Web data)
- information retrieval, web search (dealing with text data)
- service-oriented computing, which relies on DB background

From Course Catalog (3)

- Feedback for Evaluation

1. Course evaluation questionaire;
2. Results of assignments;
3. Results of exams;

- Required Readings

1. Database Management Systems, by Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill (3rd edition), 2003
2. Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan. , McGraw-Hill, 2002.
3. Concurrency Control and Recovery in Database Systems, P.A. Bernstein and V. Hadzilacos and N. Goodman, Addison Wesley, Reading, Massachusetts, 1987.

From Course Catalog (4)

- Some minor inconsistencies in this part, we refer to the slides above for the assessment type and grading criteria.

THE CHINESE UNIVERSITY OF HONG KONG
Print Course Catalog Details

Assessment Type:	Essay test or exam	: 70%
	Others	: 30%

Checkpoint B

- 15 min break