Database Systems
資料庫系統

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Lectures: Tue, Thu 14:45-16:00

工學院A館001教室

Webpage: http://www.cs.ccu.edu.tw/~damon/html/dbms.html

- **Course Works** 課業倉儲

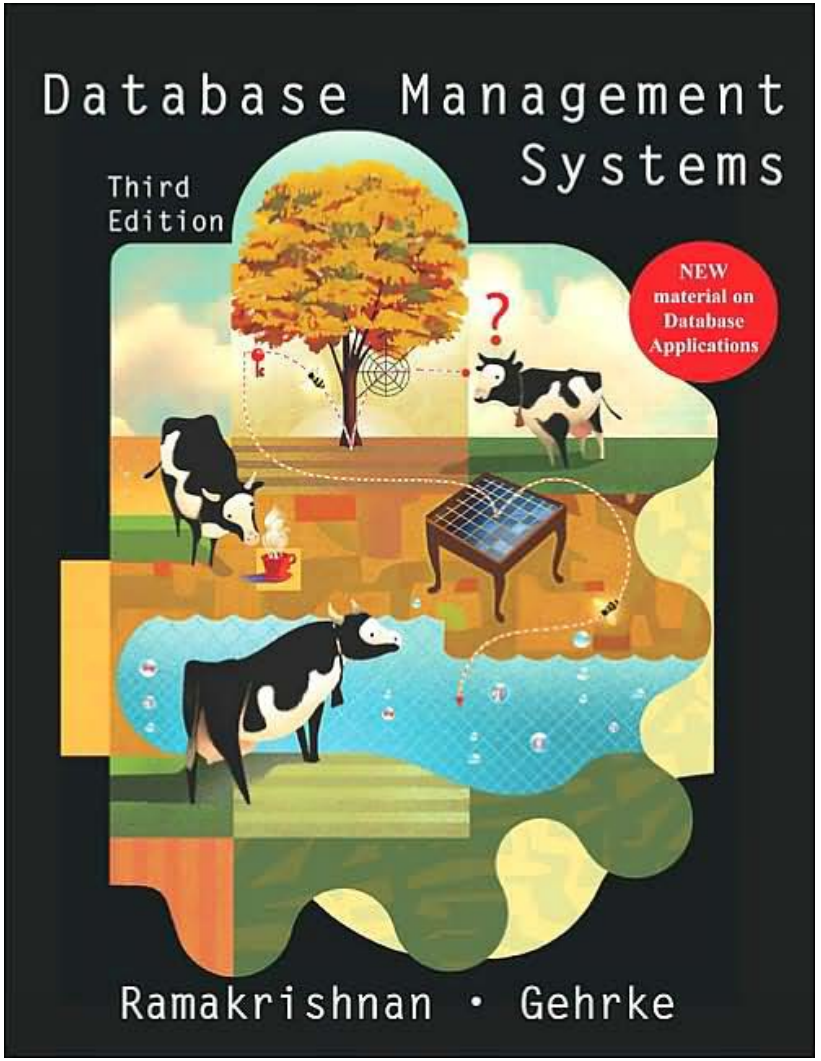
http://www.cs.ccu.edu.tw/~damon/secure/course-wk.html

- **Discussion Board** 課程討論區

http://140.123.101.97/login.htm

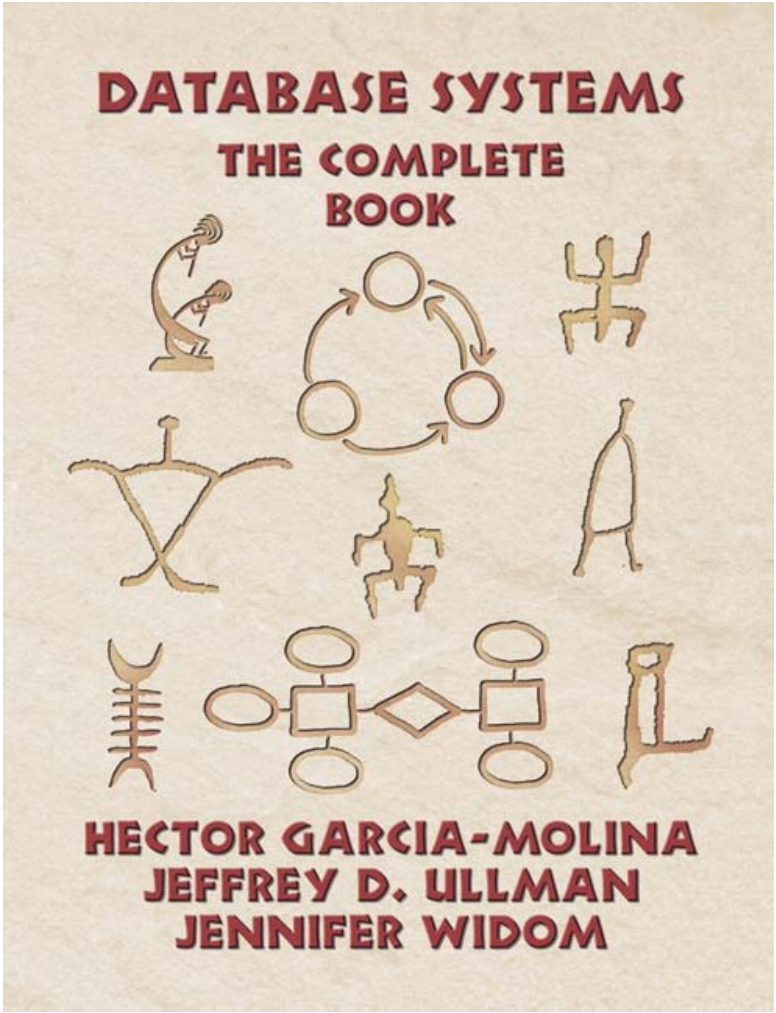
Required Textbook

Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, McGraw-Hill, ISBN: 0-07-123057-2. (the Cow book)



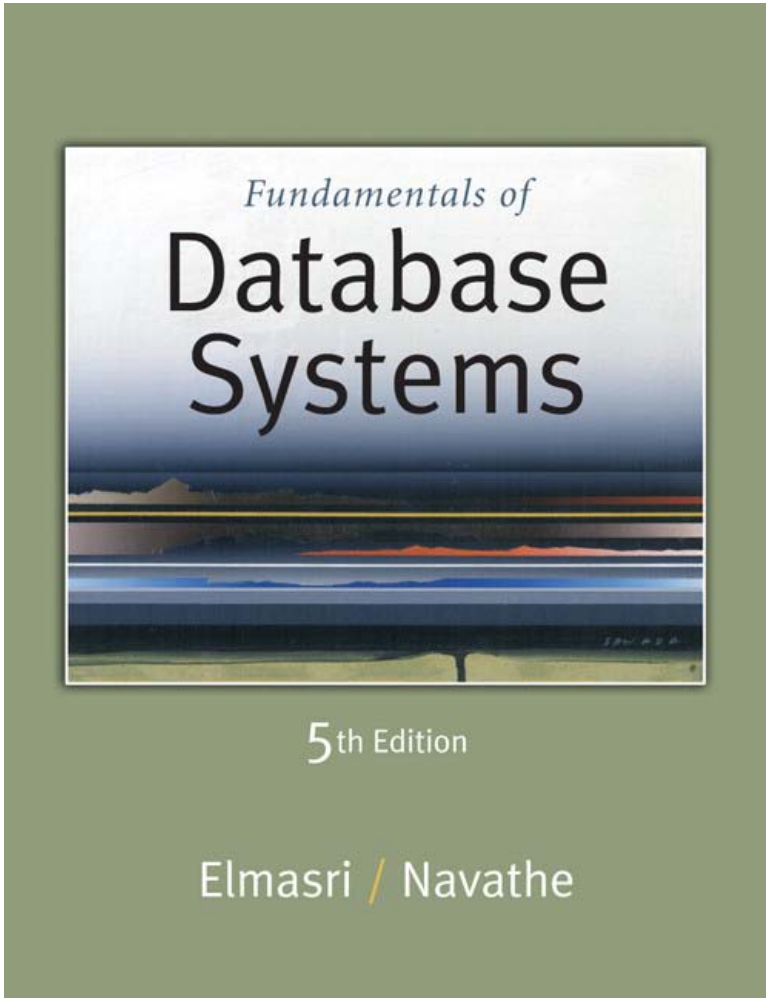
Reference Text

Database Systems: The Complete Book,
Hector Garcia-Molina, Jeffrey Ullman, and Jennifer Widom,
Prentice Hall,
ISBN: 0-13-098043-9.



Other Reference

Fundamentals of Database Systems,
Ramez Elmasri and Shamkant Navathe,
5th Edition,
Addison Wesley,
ISBN: 0-32-136957-2.



Recommended

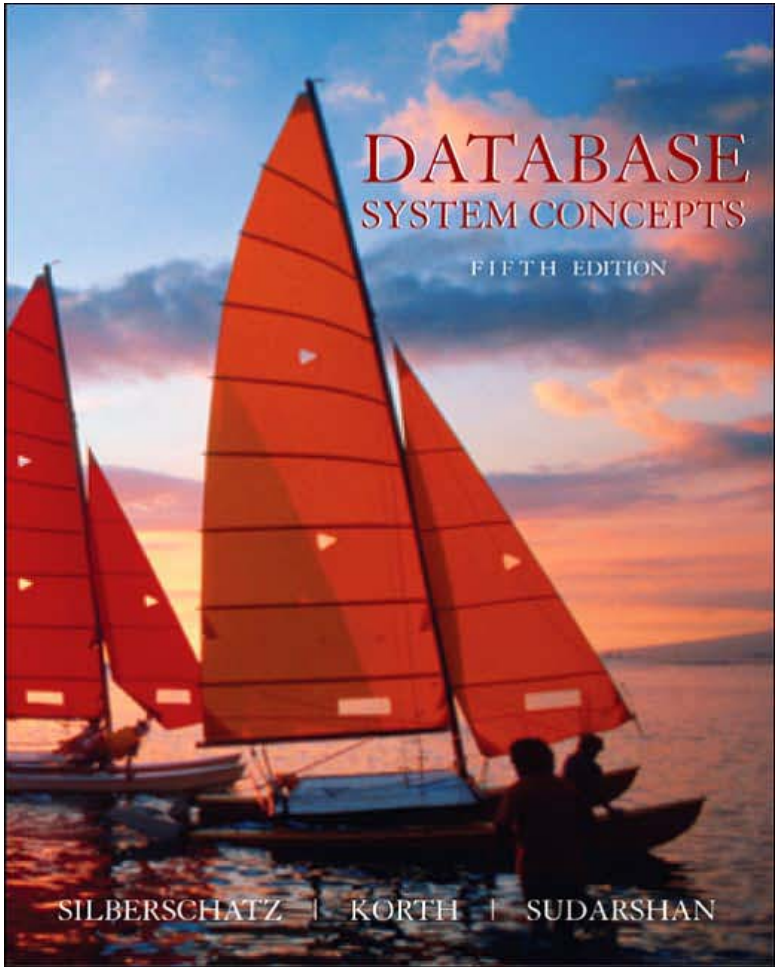
Database System Concepts,

Abraham Silberschatz, Henry Korth, and S. Sudarshan,

5th Edition,

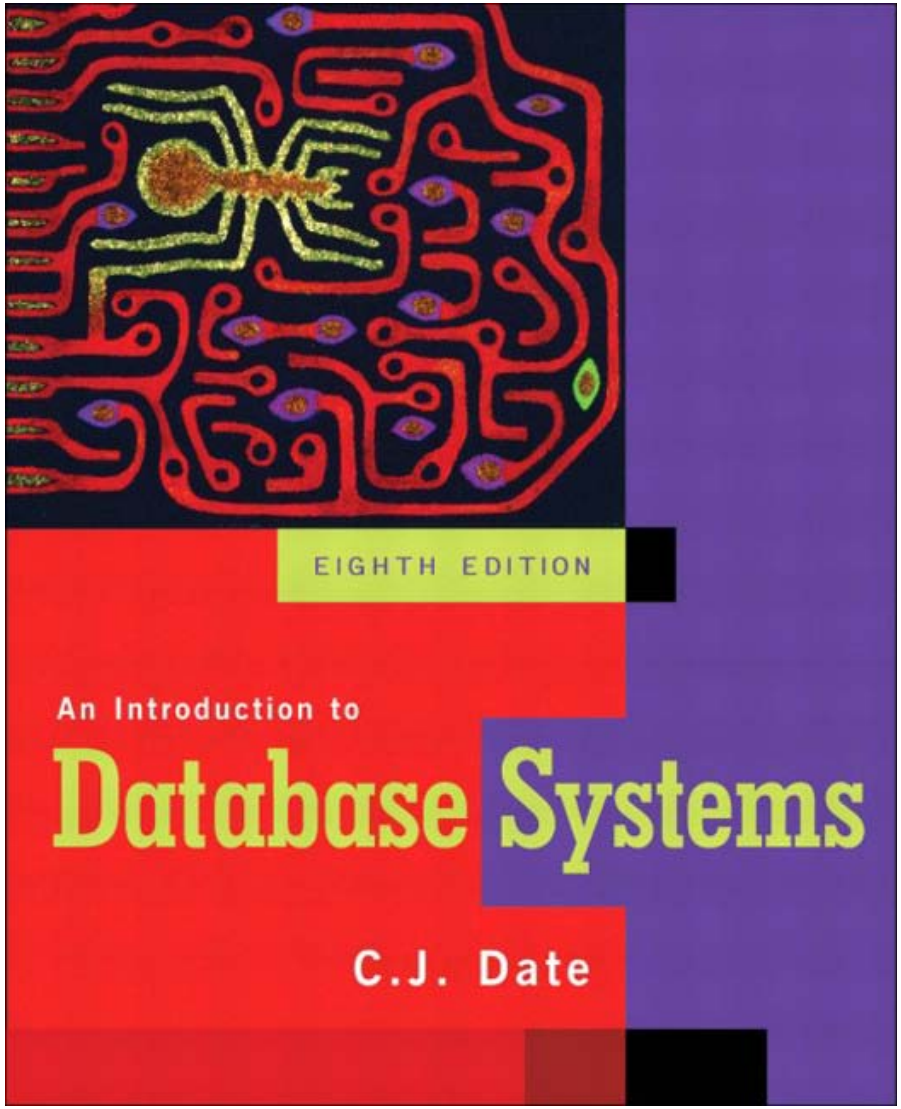
McGraw-Hill,

ISBN: 0-07-295886-3.



Supplementary Reading

Introduction to Database Systems,
C. J. Date,
8th Edition,
Addison Wesley,
ISBN: 0-321-19784-4.



Why Take This Class?

- This is not a course for:
  - Oracle administrators.
  - IBM DB2 engine developers.
    - though it is useful for both.
- It is a course for well-educated computer scientists:
  - Database system concepts and techniques increasingly used "**outside the box**".
  - A rich understanding of these issues is a basic and fortunately unusual skill.

Indicative Topics

1. The relational model
2. Relational algebra and calculus
3. SQL: queries, constraints, triggers
4. Storing data: disks and files
5. Tree-structured indexing
6. Hash-based indexing
7. Query evaluation
8. Transaction management

Indicative Topics (cont)

9. Concurrency control
10. Crash recovery
11. Database tuning
12. Security and authorization
13. XML data
14. Parallel databases
15. Distributed databases

Grading Breakdown

Programming projects and written assignments (five – seven)……25%

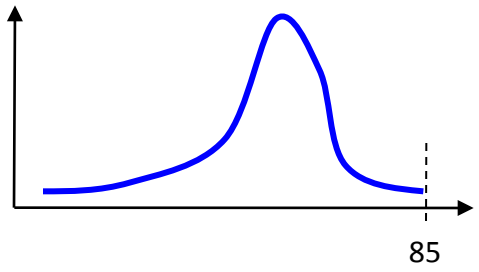
Midterm exam……37%

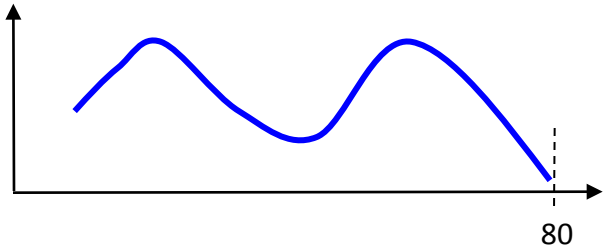
Final exam……35%

Class participation……3%

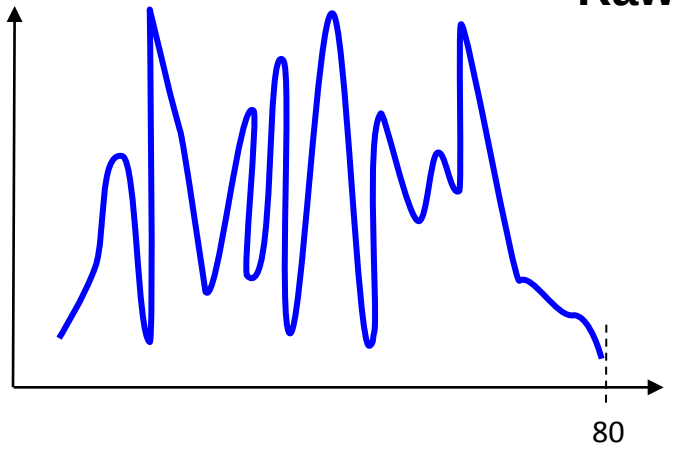
All work must be done on your own personal installation of MySQL.

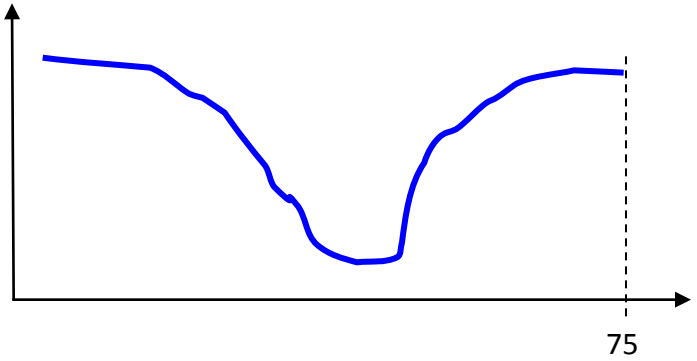
Both C/C++ and Java will be the implementation languages.

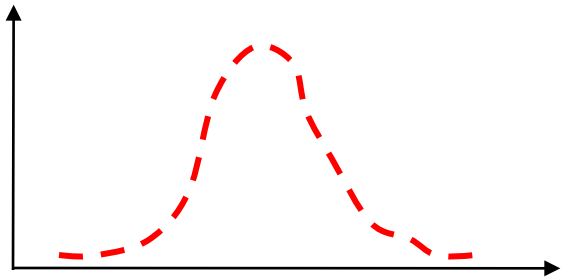




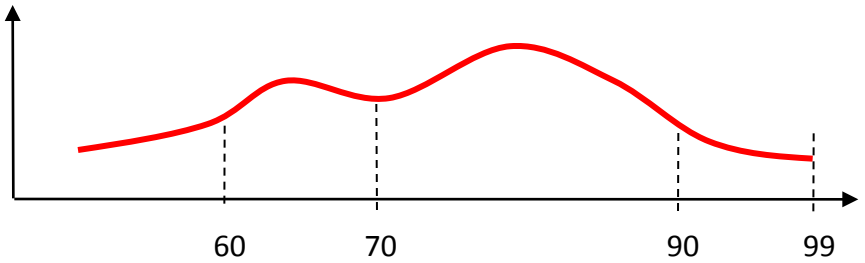
Raw scores







Non-linear scaling



千金難買早知道 **A word before is worth two behind.**

Academic Honesty Policy

- **All graded materials (examinations and programming assignments) must be strictly individual efforts.**
- **Students who cheat skew the grading curve in a class, resulting in lower grades for students who worked hard and did their own work.**
- **Cutoff for passing grades at the end of the semester will be the raw score 60 or close to the scale of 45%, depending on which one is lower.**

大二同學的評分標準

- 為鼓勵大學部二年級同學提早修習本科目，對其將採取不同的評分標準：

- 大二同學的修課人數將獨立，不納入修課總人數來計算。
- 大二同學的學期個人總成績，將依據其他非大二同學調整之後的分數，向上再提昇至少2至5分 (但以99分為上限)。

Academic Honesty Policy

- Programming projects are to be carried out individually. Students are forbidden from copying code, makefile, or any other material from the Internet. If you look at one, record it in your REAME. Any violation of this policy will also be considered cheating.

- Discussions with other people are also permitted and encouraged. Working with other students can be beneficial but the rules below must be followed. The actual program submitted by you must be individually yours. You must understand what the program is doing and why it is doing it.

- If two or more students work together on a programming assignment, all students are to acknowledge this in their individual program documentation (and README).

- If student A asks student B for help then it is student B's responsibility to see that A understands the problem and solution. It is A's responsibility to acknowledge B's assistance in the program documentation (and README).

- We believe that by encouraging students to submit their own work and, where possible, removing instances of copying and plagiarism of computer program submissions from the course we can better help weaker students to overcome their problems and guarantee that work actually done is correctly rewarded.

CodeSim 程式碼相似度比對工具

- **http://delphi.ktop.com.tw/board.php?cid=31&fid=79&tid=100527**

- 助教會利用程式碼相似度比對軟體來偵測可能的抄襲。一旦抄襲，該同學們 (無論誰抄襲誰) 全學期的作業成績就是零。

嚴格遵守學術倫理

- 有許多學生引用學長姐留下來的專案加以修改。造成了助教批改作業時發現有非常多的作業擁有相同格式的介面，這樣子被認為算是抄襲。

- 有下列情形者，應在readme上註明出處：
  1.參考了某某人的專案，改寫了裡面的內容，但是架構是一樣的。
  2.參考了某個網站的教學，複製了裡面的某段讀圖程式或者某段函式。
  3.只要這個專案不是你從零開始寫的。你都應該要在readme上註明出處。

- 例如:
- 我編修了602410000王天才的程式，使用了他的介面，其餘”主要主幹”還是自己撰寫。

  （O）這樣的情形你要事先告知。但助教還是會依修改程度扣分。

- 我觀看了www.example.com/howToC++/hw3.php裡面的seam教學。

  但所有程式碼都是我自己撰寫的，沒有複製裡面的函式或迴圈。

  （X）這樣的情況不是抄襲，可以不必寫。

- 我參考了www.example.com/howToC++/hw3.php裡面的seam教學。裡面有一個彩色to灰階的函式（此函數為”非”作業主幹），我是複製下來用的。

  （O）這樣的情況允許接受，但你要事先告知。

- 我參考了602410012王天才的程式，我只改了一小部分。

  （X）這樣的情況你告知了，還是０分。


ORACLE


SYBASE
OPEN
SOLUTIONS
PARTNER


MySQL


Microsoft
Access


FOXPRO


MariaDB
VS
MySQL


A GUIDE TO
DB2
FOURTH EDITION
C. J. DATE
with
COLIN J. WHITE

What is a Database?

- A collection of data, typically describing the activities of one or more related organizations.

- A database can be of any size and of varying complexity.

What is a Database? (2)

Typically models a real-world “enterprise”企業:

- Entities (e.g., students, courses).
- Relationships (e.g., Tom is taking CS128).

What is a Database? (3)

Might surprise you how flexible this is:

- **Web search**:
  1. **Entities: words, documents.**
  2. **Relationships: word in document, document links to document.**
- **P2P file-sharing**:
  1. **Entities: words, filenames, hosts.**
  2. **Relationships: word in filename, file available at host.**

What is a Database? (4)

- A schema is the definition of a database.

  It defines the meaning of data.

- An instance of a database is the collection of data in the database at a particular point of time (snap-shot).

What is a Database? (5)

Student Name	ID	Age	Gender	Entrance Year	Grade
Chan Mei Yee	A34455	20	F	1998	A
Lee Wai Man	C23444	19	M	1999	B
Wong Wing Nam	C73334	19	M	2000	C

- For example, in the above, the schema is *"Student Name, ID, Age, Gender, Entrance Year, Grade"*.

- The remaining rows in the table make up an instance of the database.