

COL362/632: Introduction to Database Systems

Maya Ramanath

Your TAs for the semester

- Anjali
- Saransh Goyal
- Pushkar Singh
- Vivek Singh
- Gaurav Shukla
- Saurabh Godse
- Nilaksh Agarwal
- Ankit Kumar (UG TA)
- Gobind Singh (UG TA)
- Pratyush Pandey (UG TA)

What this course is about (1 / 2)

Database Management Systems

What is it ?

How to use it ?

How to build it ?

What is the theory behind it ?

PostgreSQL

What this course is about (2/2)

- Textbooks
 - “Database Systems: The Complete Book” by Garcia-Molina, Ullman and Widom
 - “Database System Concepts” by Silberschatz, Korth and Sudarshan, 6th edition
- Authors of the second book also provide detailed slides
 - <http://db-book.com/>

How you will be evaluated (1/2)

1. Homework (1) – ungraded, but compulsory *-2 if not submitted*
2. Assignments (3) – 7% + 7% + 18%
3. Course project (1) – 18%
4. Minor exams (2) – 15% each
5. Major exam – 20%

How you will be evaluated (2/2)

- Assignments – individually.
- Project – groups of at most 3.

You are allowed to discuss assignments with others, *provided you document this. The actual work has to be your own.*

Cheating and plagiarism

- There is zero tolerance for anything even remotely resembling dishonesty with regard to your assignments, class work, exams and ~~attendance~~
- I will not only give you an F grade, but will immediately refer you to the department and escalate it to the institute level
- It is easier to learn and do well, than to cheat !!

Attendance policy

- Minimum 75% attendance is required to pass
- Those who have less than 75% attendance will get a penalty of 1 grade
 - That is, if you scored enough for a B, then I will actually assign you a B-
 - If you have enough for an NP, then I will change it to NF
- Use Timble for your attendance
 - If Timble says you have 75% attendance, then I believe it!

→ **NOTE:** The 25% that you “can miss” *includes* time off for sickness and emergencies.

Audit pass and grading

- Should have an equivalent of B- at the end of the semester
- Grading is a mix of absolute and relative
 - Minimum 80% required for A (but if someone has 90%, the 80% is A- or lower)
 - Minimum 30% required for D

Above and beyond the course

- LaTeX for everything
 - Templates will be put up on the course website
- Web services + Java
 - Required for project 1
- C/C++ coding
 - Required for assignment 3

Contacting me and the TAs

- Use Piazza (piazza.com/iitd.ac.in/spring2020/col362632)
- If it's a short question, talk to me right after class
- If it's a lengthy discussion, schedule an appointment *through Piazza*

COURSE OVERVIEW

Database Management System

- Large amounts of data, persisting “forever”
 - Think “database”, think “disk”
- Physical and logical independence
 - Declarative languages for data manipulation
- Operations on the data
 - Creating a database
 - Insert, delete, modify, retrieve data
- Guarantees about the data

What kind of data?

- In principle, any kind of data, including video, audio, spatial, text, etc
- “Structured” data
 - Crisp units of data – (short) strings, numbers, dates, etc.
 - Student database, course database, tourism information, etc.



🏠 Medico Residente at [CCSS](#) 🎓 Studied at [Universidad de Costa Rica](#) 🏠 Lives in [San José, Costa Rica](#) 🌐 Knows Español, English, A tiny bit of japanese :D, would like to learn others 🏠 From [San José, Costa Rica](#)

Wall

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Nat likes [9GAG](#). · [Like Page](#)

RECENT ACTIVITY

Nat likes [Yuplón](#). · [Like Page](#)

Nat is now friends with [Norbert Looknut](#) and [MCristina Solis](#).

RECENT ACTIVITY

Nat and [Andrea Mora](#) are now friends. · [Add Friend](#)

Nat changed her profile picture.

RECENT ACTIVITY

" =D " on [Vera Celada's](#) Wall.

RECENT ACTIVITY

Nat likes [Hofbräu-Festzelt](#). · [Like Page](#)

Nat installed Facebook on her iPhone. · [Get Facebook Mobile](#)



Nat Mad

Russian night in Munich! =D — with [Cristián Madrigal-Mora](#) and [Mikhail Evstyugov-Babaev](#).

Like · Comment · September 22 at 10:35pm near Munich, Bayern, Germany · 🌐

[Cristián Madrigal-Mora](#) and 3 others like this.

View all 5 comments

[Mikhail Evstyugov-Babaev](#) Ha...ha...ha...
September 23 at 12:37am · [Like](#)

[Nat Mad](#) =P
September 26 at 3:21am · [Like](#)

Wall

Info

Photos

Notes

Friends

Friends (414)

[Andrea Madrigal](#)[María Consuelo Rodríguez Roblero](#)[Xinia Mora Vargas](#)[María Jesús Solis](#)[Víctor Hugo Pérez Herra](#)[Gloriana Loria](#)[Cristián Madrigal-Mora](#)
Uni Saarland[Laura Quirós Mazas](#)

You and Nat



4 Mutual Friends

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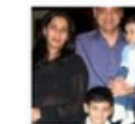
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Smart Kids Start Early



Innovative method of teaching have increased my son's interest in books, it keeps him busy & interested (Nikhita Gupta – India)

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Department

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Books

Computers & Technology (52)

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Education & Reference (13)

Politics & Social Sciences (4)

History (3)

Medical Books (2)

Christian Books & Bibles (1)

Religion & Spirituality (1)

Children's Books (1)

Format

☐ Paperback (34)

☐ Hardcover (28)

Author

Abraham Silberschatz (1)

Ann Shaffer (1)

Joseph J. Adamski (1)

Kathy T. Finnegan (1)

Patrick Carey (1)

Peter Norvig (1)

Stuart J. Russell (1)

Language

☐ English (56)

☐ German (2)

☐ Italian (1)

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International Shipping

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Books > "a first course in database systems"

Related Searches: [database management systems](#), [database system concepts](#), [fundamentals of database systems](#).

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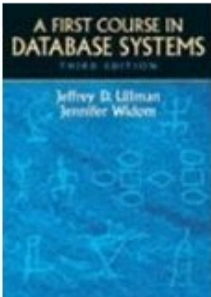
Format

Paperback

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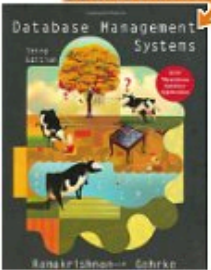
First Course in Database Systems, A (3rd Edition)

by [Jeffrey D. Ullman](#) and [Jennifer Widom](#) (Oct 6, 2007)

★★★★☆ (16 customer reviews)

Formats	Price	New	Used
Hardcover	Order in the next 43 hours to get it by Wednesday, Jan 4.		
	\$136.00 \$100.96	\$97.94	\$67.57

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Database Management Systems

by [Raghu Ramakrishnan](#) and [Johannes Gehrke](#) (Aug 14, 2002)


★★★★☆ (29 customer reviews)

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	\$131.47	\$108.75	\$69.98
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Excerpt - Page 2: "... use of rooms for courses. A database management system, or DBMS, is ..." [See a random page](#) in this book.

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Database Systems: The Complete Book (2nd Edition)

by [Hector Garcia-Molina](#), [Jeffrey D. Ullman](#) and [Jennifer Widom](#) (Jun 15, 2008)

Getting to know your data

- What is the data (analyze the requirements)?
- How to store it logically ? *Logical & physical independence*
 - Data models (ER and relational models)
 - Schema and data

“Each book has multiple authors, and each author has multiple books?” How to represent this requirement?

Getting to know your queries

- Declarative query language (SQL) *Seequel* *Sequel*

“I want the list of authors who have written at least 200 books”

Getting to know your system

- Is there anything you can do to make your queries run faster?
 - Indexes, materialized views
- What if the database system gets corrupted/ crashes?
 - Transaction management (ACID properties)
- What if my dog eats my...no, deletes my database?
 - Security, Recovery

Writing your own system

- How does a DBMS manage memory?
 - Buffer management
- How to write an algorithm that runs efficiently for data on disk?
 - Complexity analysis now includes disk accesses
- And more...