

Carnegie Mellon University

# Database Systems

Course Overview &  
Logistics



15-445/645 FALL 2024 » PROF. ANDY PAVLO

 ClickHouse

DATASTACK

FIREBOLT

 RelationalAI

 TiDB

 CONFLUENT

 dbt

 NEON

star<sup>⚡</sup>tree

 Weaviate

# TODAY'S AGENDA

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Waitlist

Lecture Rules

Course Logistics

# WAIT LIST

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We do not control the wait list.

We do not take bribes (anymore).

Admins will move students moved off the wait list as new spots become available.

If you are not currently enrolled, the likelihood that you will get in is unfortunately very low.

***15-445/645 will be offered in Spring 2025!***

# LECTURE RULES

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Do interrupt us for the following reasons:

- I am speaking too fast.
- You don't understand what I am talking about.
- You have a database-related question.

Do **not** interrupt for the following reasons:

- Whether you can use the bathroom.
- Questions about blockchains.

I will **not** answer questions about the lecture immediately after class.

# COURSE OVERVIEW

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This course is about the design/implementation of database management systems (DBMSs).

This is **not** a course about how to use a DBMS to build applications or how to administer a DBMS.  
→ See [CMU 95-703](#) (Heinz College)

# COURSE LOGISTICS

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Course Policies + Schedule: [Course Web Page](#)

Discussion + Announcements: [Piazza](#)

Homeworks + Projects: [Gradescope](#)

Final Grades: [Canvas](#)

Non-CMU students can complete all assignments using [Gradescope](#) (Code: **WWWJZ5**).

→ Do **not** post your solutions on Github.

→ Do **not** email instructors / TAs for help.

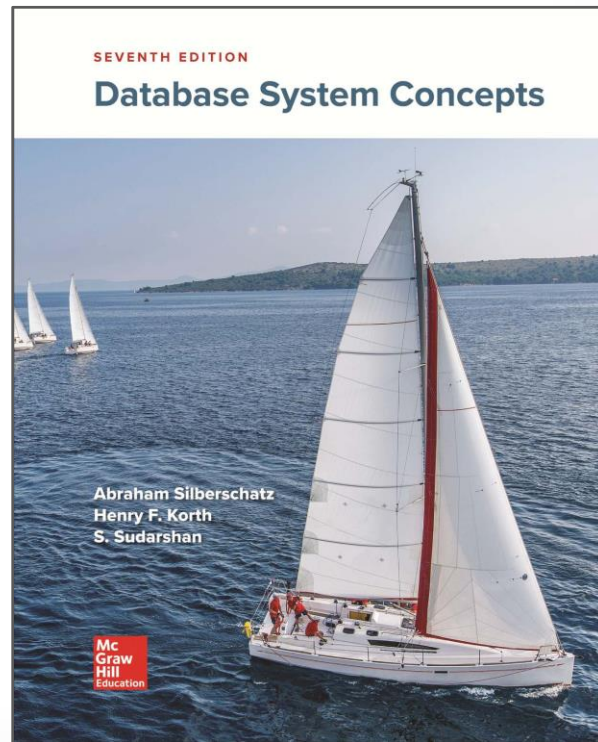
→ Discord Channel: <https://discord.gg/YF7dMCg>

# TEXTBOOK

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## Database System Concepts 7th Edition Silberschatz, Korth, & Sudarshan

We also provide lecture notes  
that cover topics not found in  
textbook.





# GRADING RUBRIC

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**Homeworks (15%)**

**Projects (45%)**

**Midterm Exam (20%)**

**Final Exam (20%)**

# HOMWORKS

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Six homework assignments that cover lecture and reading material.

→ First homework is a SQL assignment.

→ The rest will be pencil-and-paper assignments.

Submit all assignments via Gradescope.

All homework should be done individually.

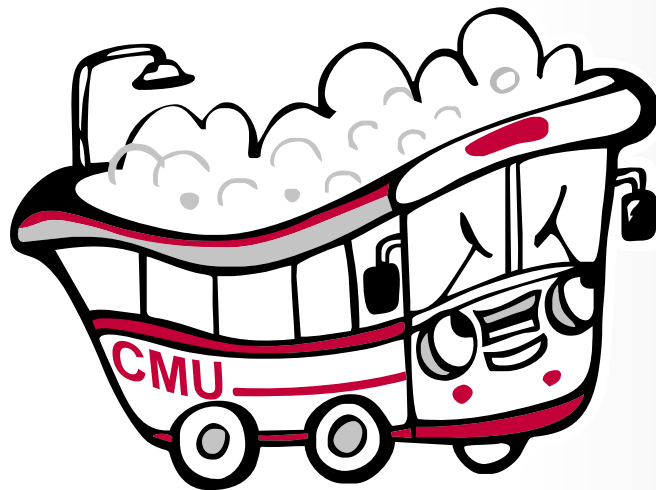
# PROJECTS

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- All projects will use the CMU DB Group [BusTub](#) academic DBMS.
- Each project builds on the previous one.
  - We will **not** teach you how to write/debug C++17.
  - See the [15-445/645 Bootcamp](#).

Total of **four** late days the entire semester for projects only.

We will hold an online recitation for each project after it is released.



## BusTub

# C++ REQUIREMENT

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If you are new to C++, you must learn it now!

## Important Topics:

- Scoping
- Type Conversion
- lvalues/rvalues
- Stack and Heap Memory
- Move Semantics
- Templates

See also this material from the Germans:

- <https://db.in.tum.de/teaching/ss23/c++praktikum/slides/lecture-10.2.pdf?lang=en>

# PROJECT #0

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To ensure that students have the programming skills to handle this course, we require everyone to complete Project #0 by **Sunday Sept 8<sup>th</sup>** .

- You must pass all tests with a perfect score.
- This is an ungraded assignment.

If you do not complete this assignment, you will be asked to withdraw from the course.

**Zero exceptions will be made.**

# OFFICE HOURS

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Instructors and TAs will hold office hours on weekdays (Mon-Fri) at different times.

We will also hold a TA power session on the Saturday before each project is due.

There will not be any office hours on Sundays.

# PROJECT LATE POLICY

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You will lose 10% of the points for a project or homework for every 24 hours it is late.

You have a total of **four** late days to be used for **projects only**.

We will grant no-penalty extensions due to extreme circumstances (e.g., medical emergencies).

→ If something comes up, please contact the instructors as soon as possible.



# PLAGIARISM WARNING

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The homework and projects must be your own original work. They are **not** group assignments. You may **not** copy source code from other people or the web.

Plagiarism is **not** tolerated. You will get lit up.  
→ Please ask instructors (not TAs!) if you are unsure.

See [CMU's Policy on Academic Integrity](#) for additional information.



# DB FLASH TALKS

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Quick 10-minute talks from CMU-DB IAP partners about their DBMSs at end of every Wednesday lecture.

**On-campus database recruiting event September 16 + 17.**

→ Everyone in this class is invited.

Information about internship + full-time openings will be posted soon.

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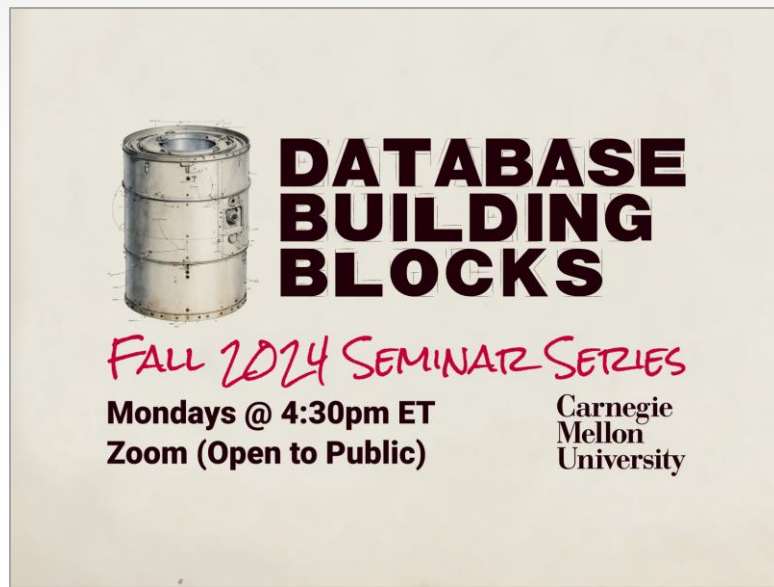
# Database Building Blocks

Mondays @ 4:30pm (starting on 9/23)

Live on Zoom. Published to YouTube afterwards.

Open to the public.

<https://db.cs.cmu.edu/seminar2024>



# NEXT CLASS

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**In-class on Monday August 26<sup>th</sup> @ 1:00pm**

We will begin to discuss the beautiful world of databases and the relational model.

We can also have a quick Q&A session at the end of class to discuss any thing you want about databases.