

Database Systems

CMU 15-445/645 – Fall 2024

Intro to Database Systems

Yes, this is the premier course at Carnegie Mellon University on the design and implementation of database management systems. Topics include data models (relational, document, key/value), storage models (n-ary, decomposition), query languages (SQL, stored procedures), storage architectures (heaps, log-structured), indexes + filters (order preserving trees, hash tables, vector indexes), transaction processing (ACID, concurrency control), recovery (logging, checkpoints), query processing (joins, sorting, aggregation, optimization), and parallel architectures (multi-core, distributed). Case studies on open-source and commercial database systems are used to illustrate these techniques and trade-offs. The course is appropriate for students that are prepared to sweat their systems programming skills.

 **Time:** Mon/Wed 2:00pm-3:20pm ET

 **Location:** [Tepper 1403](#) 

 **Textbook:** [DB System Concepts \(7th Ed.\)](#) 

 **Discussion:** [Piazza](#)

Acknowledgements

Thanks to the following organizations for their support towards course development as part of the [CMU-DB Affiliates Program](#).

CMU 15-445/645

DATASTACK

FIREBOLT

RelationalAI

TiDB

dbt


NEON

star-tree

Weaviate



Instructors

	Name	Office Hours
	Andy Pavlo	Wednesday 3:30-4:30pm GHC 9019

Teaching Assistants

	Name	Office Hours
	Connor Tsui	Thursday 6:00-7:00pm GHC 5th Floor (Commons, Carrel 2)
	Yash Kothari	Friday 2:00-3:00pm GHC 5th Floor (Commons, Table 7)
	William Zhang	Wednesday 10:30-11:30am GHC 5th Floor (Commons, Table 7)

CMU 15-445/645



[Kunle Li](#)

Thursday 9:30-10:30am
GHC 5th Floor (Commons, Table 1)



[Prashanth Duvvada](#)

Friday 4:00-5:00pm
GHC 5th Floor (Commons, Table 1)



[Lan Lou](#)

Monday 12:45-1:45pm
GHC 5th Floor (Commons, Table 1)



[J-How Huang](#)

Tuesday 10:30-11:30am
GHC 5th Floor (Commons, Table 1)



[Yuanxin Cao](#)

Tuesday 12:30-1:30pm
GHC 5th Floor (Commons, Table 1)