

# Seminar: Modern Database Systems

Kickoff Meeting

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# Overview

## Weekly Meeting

- Monday, 14:00 - 16:00, starting April 25, 2022
- Room MI 02.09.014
- 2 presentations per meeting
- [There will be an attendance log](#)

## Required Work

- Seminar paper ( $\leq 5$  pages)
- Sample implementation (C++)
- Presentation (20 minutes + 10 minutes discussion)

# Organization

## Registration through matching system

- Write an email to [mds@mailkemper.in.tum.de](mailto:mds@mailkemper.in.tum.de). if you are interested
  - Subject should be: [DBSeminar] Kickoff Meeting
  - Emails will be filtered based on this subject
- **Register for the seminar on <https://matching.in.tum.de>!**

## After matching: Check in with us for your preferred topic

1. Check in **soon after matching** for paper recommendations (preferences considered FCFS)
2. Check in when rough structure is planned
3. Check in when first draft is ready

## Due Dates

- Structure: ca. 4 weeks prior to presentation date
- Presentation slides: 1 week prior to presentation date
- Seminar paper and finished implementation: 2 weeks after presentation date

# Preliminary Topic List

## Transactions

- Fast Serializable Multi-Version Concurrency Control for Main-Memory Database Systems
- Cicada: Dependably Fast Multi-Core In-Memory Transactions
- Speedy transactions in multicore in-memory databases
- Hekaton: SQL server's memory-optimized OLTP engine
- HyPer: A hybrid OLTP&OLAP main memory database system based on virtual memory snapshots
- Tictoc: Time traveling optimistic concurrency control

## Locks

- Optimistic Lock Coupling: A Scalable and Efficient General-Purpose Synchronization Method
- Scalable and robust latches for database systems

## Sampling and Statistics

- Optimal random sampling from distributed streams revisited
- Concurrent online sampling for all, for free
- alpha to omega: the G(r)eek Alphabet of Sampling
- Small Selectivities Matter: Lifting the Burden of Empty Samples

## Index Structures and Compression

- Contention and Space Management in B-Trees
- The adaptive radix tree: ARTful indexing for main-memory databases
- FSST: Fast Random Access String Compression

<https://db.in.tum.de/teaching/ss22/seminarModernDatabaseSystems/>