



Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

FAKULTÄT
FÜR MATHEMATIK, INFORMATIK
UND NATURWISSENSCHAFTEN

Databases and Information Systems (DIS)

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Foto: UHH/Esfandiari

Course Outline



Architectures of Database Systems



Transaction Management



Modern Database Technology



Data Warehouses and OLAP



Data Mining



Big Data Analytics



Exercises

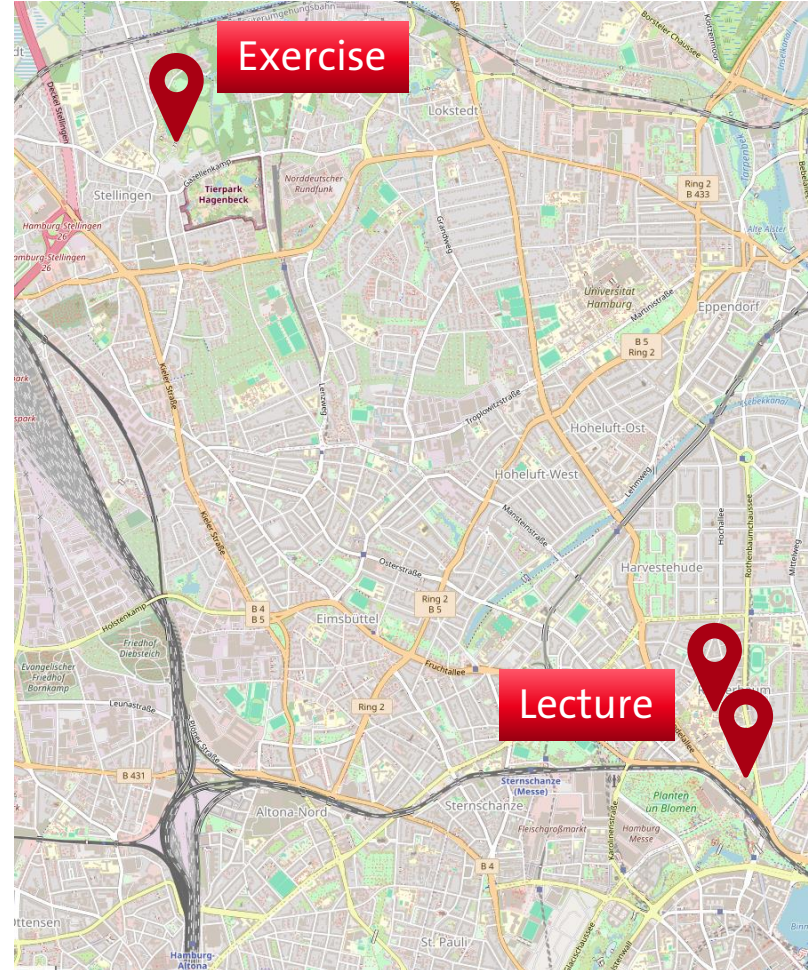
- Will start on 09.04.2024, first deadline 23.04.2024
- Working period: usually 1 or 2 weeks
- Handling
 - Teams of students (~2 students)
 - Mostly practical exercises
 - Exercise hours in Stellingen/Informatikum, different buildings → Look at STiNE for the building and room of your exercise
 - You can also work on exercises at home or at IRZ
- Demonstration of results/solutions during exercise hours, see advisors!

Requirements to obtain certificate

- **Successful and timely submission:** All but one exercise sheets must be submitted and approved on time. What exactly is required for an approval, depends on the specification of the task. For theoretical tasks, 50% of the maximum points are required in any case.
- **Teamwork:** All participants work in groups of two, submitting one common solution. Attempted fraud may lead to the reduction of points or, in severe cases, even to the denial or withdrawal of the certificate.
- **Active participation:** An active participation in the exercises through presentation of solutions and through discussions is also required. Refusal to participate actively may lead to the reduction of points.

Lecture

- 2x per week
 - Monday: 12:15 ESA J
 - Wednesday: 10¹⁵ Phil G
- In-person (unless stated otherwise)
- Exam:
 - 120 min
 - 31.07.2024, 9³⁰ (Audi 1)
 - 25.09.2024, 9³⁰ (ESA A)



Moodle

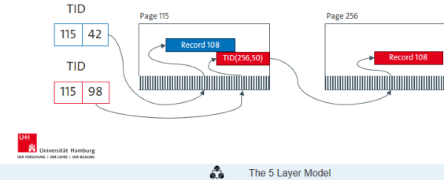
- lernen.min.uni-hamburg.de
→ Exercise sheets and lecture slides

Slideset with handout
(where applicable)



TIDs

- Address is the tuple (Page ID, index in this page)
- Array in page holds the position of the records
- Migration possible without change of TID → Required when a record in a page becomes too big



Deleting a record:

- The entry in the page array is marked as invalid
- All other records on the same page can be moved to maximize the free continuous space → only the positions are changed, not their index in the page array.
- This way, record addresses are not changed, the same TIDs can still be used

Changing a record:

- **Case 1:** Record becomes smaller → all records are moved withing the same page, positions in the page array are changed (same as with a deleted record)
- **Case 2:** Record becomes larger and space on the page is sufficient to store it → see case 1
- **Case 3:** Record becomes larger and space on the page is not sufficient to store it → Record is moved to another page and TID is stored on the original page (see Figure), If record is moved again later, TID in original page is changed again → only one additional reference necessary even if record is changed multiple times