

MDS Self-Study
Winter Term 2024/25
Prep 2

For the upcoming lesson on October 24, 2024, prepare the self-study material in advance and answer the questions under Q&A. Bring your answers to the next lesson.

This unit is based on content from Jens Dittrich's book "Patterns in Data Management: A Flipped Textbook" from 2016.

Self Study Material

We refer to this video playlist by Jens Dittrich from Saarland University on "Query Planning and Optimization": <https://www.youtube.com/watch?v=Qx3E88tWHhI&list=PLC4UZxBVGKtcZgLCrIUenuano53pbPpf1>.

Watch videos 14.500, 14.502, 14.503 (up until min. 4:22), and 14.514 to recap the fundamentals of database query optimization.

Q&A

1. What is the task of the query parser?

2. What is the high-level task of the query optimizer?

3. What is the relationship between the WHAT and HOW aspects of query planning?

4. What kind of information does the catalog contain?

5. What is the relationship between query optimization and programming language compilation?

6. What does a single optimization rule do?

7. What is the advantage of breaking up conjunctions of selections?

8. Why does it make sense to push down selections?

9. Why would we prefer joins over cross products whenever possible?

10. When is it possible to introduce a join?

11. When is it possible to push down projections?

12. What may be the effect of picking the wrong join order?

13. Is the join order problem only relevant for joins?

14. What is a left-deep tree?

15. What is a bushy tree?