

## Exercise 6

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### 1 Star Schema Benchmark

The Star Schema Benchmark is a collection of queries on a database schema for quantitative comparison of database management systems in OLAP workloads. In this assignment you shall have a look at the Star Schema Benchmark [2] as it will be used through out this exercise.

1. What are the benefits of a star schema? Which applications make use of it?
2. Describe schema and queries of the Star Schema Benchmark. What pattern do you recognize in the queries?

### 2 Star Joins

1. What is a Star Join?
2. What techniques do you know to calculate star joins efficiently? Discuss their advantages and disadvantages and in which situations they should be used.
3. What is a Semi Join? How can they be used to optimize Star Joins?
4. Apply all techniques to query 2.3 of the Star Schema Benchmark.
5. An advanced technique to efficiently calculate star joins is the so called „Invisible Join“, proposed by Abadi et. al. [1]. Explain the functioning and apply it to the example query from the previous assignment.

### Literatur

- [1] Daniel J. Abadi, Samuel R. Madden, and Nabil Hachem. Column-stores vs. row-stores: How different are they really? In *SIGMOD*, pages 967–980. ACM, 2008.
- [2] Pat O’Neil, Elizabeth J. O’Neil, and Xuedong Chen. The star schema benchmark (ssb), 2009. Revision 3, <http://www.cs.umb.edu/~poneil/StarSchemaB.PDF>.