

Project Proposal

Team CelestialDB

Group Details:

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Title: Simple Query Optimiser

Abstract:

The goal of this project is to design and implement a simple query optimizer for a database management system. The optimizer will take unoptimized execution plans as input and output optimized execution plans along with associated cost measures. The optimizer will consider various factors such as CPU, memory, and disk requirements, as well as utilize (faked) table statistics to choose optimal plans. Additionally, it will integrate a mechanism for limiting the search effort of the optimizer to ensure efficient optimization within reasonable time constraints.

Weekly Work Plan:

- **Week 1:** Research existing query optimization techniques and algorithms. Define the structure and representation of query plan nodes. Begin implementation of the query optimizer framework.
- **Week 2:** Implement cost estimation methods for different query plan nodes. Develop mechanisms for incorporating table statistics into the optimization process. Start integrating CPU, memory, and disk requirements considerations into the optimization.

- **Week 3:** Refine the implementation of the query optimizer based on initial testing and feedback. Develop the mechanism for limiting the search effort of the optimizer. Test and debug the optimizer with various query scenarios and workloads.
- **Week 4:** Finalize the implementation of the query optimizer. Conduct comprehensive testing and performance evaluation. Prepare documentation, including user guides and technical documentation. Present the finalized project with demonstrations and explanations of the implemented features and optimizations.