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Facharbeit (9KP)

Topic: Implementation of a relational algebra based graphical user-interface for the execution of temporal queries.

Temporal databases store data that has associated interval timestamps, this timestamps specify the time period for which the data is valid in the real world. Application examples for temporal databases can be found in the financial sector, such as accounting and banking, in the medical sector for the management of patient histories, scientific applications, monitoring applications, and in the processing of sensor and streaming data. Due to the difficulty to process temporal data in traditional relational databases, most applications use the database for storage only, and perform the processing within the application.

In [2] a unified framework has been introduced that allows to reduce temporal algebra expressions to nontemporal algebra expressions by the use of temporal primitives. The primitives have been implemented into the kernel of PostgreSQL[1].

Within this project a graphical user-interface for the execution of temporal algebra expressions shall be planned and implemented in Java's Swing or Qt. The application shall allow to execute temporal and nontemporal expressions, and provide a guided wizard to build simple algebra expressions.

Tasks:

- Literature study on temporal queries [1, 2].
- Conceptual design of the interface and wizard.
- Implementation and testing of the application.

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[1] http://www.ifi.uzh.ch/dbtg/research/align.html

- Writing report of approx. 10 pages.
- 10 min. presentation of the results at dbtg meeting.

References

[1] M. H. Böhlen, C. S. Jensen, and R. T. Snodgrass. Temporal statement modifiers. *ACM Trans. Database Syst.*, 25(4):407–456, 2000.

[2] A. Dignös, M. H. Böhlen, and J. Gamper. Temporal alignment. In *Proceedings of the 2012 international conference on Management of Data*, SIGMOD '12, pages 433–444, New York, NY, USA, 2012. ACM.

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