TUTORIAL 6

Data Management for Real-Time Systems

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Timeliness of execution is part of the correctness criterion in a variety of application domains, such as air-traffic control, CIM, or network control. To achieve real-time behavior in a DBMS it is necessary to develop new approaches to transaction scheduling, to the analysis of a transaction's execution time, the interplay between the DBMS and the (real-time) operating system, and the handling of overload situations, that is, situations in which not all transactions can be executed on time and the system must adapt his processing strategy to maximize some value function. The goal of this tutorial is to present a state of the art overview of data management for real- time systems, analyze proposed approaches and identify necessary development.
The tutorial will cover the following topics:

- Motivation and possible application domains for real-time systems
- Notions of real-time (hard/soft real-time, statistical approaches to achieving real-time behavior, real-time vs. high-performance DBMSs)
- Real-time scheduling
- Real-time data management, OS impact
- Survey and analysis of proposed real-time database approaches
- Overload handling: Contingency plans
- The need for reengineering real-time DBMSs