Concurrency Control in Advanced Database Applications

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Abstract

Concurrency control has been thoroughly studied in the context of traditional database applications such as banking and airline reservations systems. There are relatively few studies, however, that address the concurrency control issues of advanced database applications such as CAD/CAM and software development environments. The concurrency control requirements in such applications are different from those in conventional database applications; in particular, there is a need to support non-serializable cooperation among users whose transactions are long-lived and interactive, and to integrate concurrency control mechanisms with version and configuration control. This paper outlines the characteristics of data and operations in some advanced database applications, discusses their concurrency control requirements, and surveys the mechanisms proposed to address these requirements.

Categories and Subject Descriptors: H.2.4 [**Database Management**]: Systems—*concurrency*; *transaction processing*; H.2.8 [**Database Management**]: Applications; D.2.6 [**Software Engineering**]: Programming Environments—*interactive*; D.2.9 [**Software Engineering**]: Management—*programming teams*

General Terms: Algorithms, Design, Management

Additional Key Words and Phrases: Concurrency control, design environments, advanced database applications, object-oriented databases, extended transaction models, cooperative transactions, long transactions, relaxing serializability