

CHAPTER 17



Transactions

Collections of operations that form a single logical unit of work are called transactions. A database system must ensure proper execution of transactions despite failures—either the entire transaction executes, or none of it does. Furthermore, it must manage concurrent execution of transactions in a way that avoids the introduction of inconsistency.

Bibliographical Notes

The concept of serializability was formalized by [Eswaran et al. (1976)] in connection with work on concurrency control for System R.

[Gray and Reuter (1993)] provides detailed textbook coverage of transaction-processing concepts, techniques and implementation details, including concurrency control and recovery issues. [Bernstein and Newcomer (2009)] provides textbook coverage of various aspects of transaction processing.

Bibliography

[Bernstein and Newcomer (2009)] P. A. Bernstein and E. Newcomer, *Principles of Transaction Processing*, 2nd edition, Morgan Kaufmann (2009).

[Eswaran et al. (1976)] K. P. Eswaran, J. N. Gray, R. A. Lorie, and I. L. Traiger, “The Notions of Consistency and Predicate Locks in a Database System”, *Communications of the ACM*, Volume 19, Number 11 (1976), pages 624–633.

[Gray and Reuter (1993)] J. Gray and A. Reuter, *Transaction Processing: Concepts and Techniques*, Morgan Kaufmann (1993).

