: How does decision support processing differ from transaction processing?

by Dan Power

Editor, DSSResources.com

Information systems can be categorized in many ways, but historically business information systems began as tools to record and process transactions. It is still useful to distinguish between informational decision support and transaction processing systems. Transaction processing is divided into individual, indivisible operations, called transactions. More specifically, a transaction is a discrete unit of work that must be completely processed by a computer system or it fails. For example, entering a customer order is an example of a transaction. Decision support or informational systems summarize and report on transactions.

Over the years, database experts have identified four characteristics of an effective transaction processing system: 1) atomicity, 2) consistency, 3) isolation, and 4) durability (ACID). These characteristics insure acurate and reliable processing. What do these characteristics mean?

A transaction is **atomic** when if one step or part fails, the entire transaction fails and the database is not changed. This characteristic is an all or none principle for transaction processing.

A transaction is **consistent** when it conforms to all the defined rules and the rules are checked before the transaction data is written to the database.

A transaction is **isolated** when it does not interfere or conflict with another transaction.

A transaction is **durable** when once it is written to a database it remains an entry in the database. Any changes to the database can be tracked. The transaction system is a "system of record".

A decision support or informational system process reports using historical transaction data that helps managers understand activity in a business. Data-driven decision support reporting systems do not change the database. Theses systems have the characteristics of Nigel Pendse's FASMI test, fast analysis of shared, multi-dimensional information test. FAST means that the system delivers most responses to users within about five seconds. ANALYSIS means that the system can

cope with any business logic and statistical analysis that is relevant for the application and the user. SHARED means that the software has security capabilities needed for sharing data among users. MULTI-DIMENSIONAL is an essential requirement. Multi-dimensional databases can have multiple variables with a common or a unique set of dimensions.

A specific information system may have both transaction processing and informational decision support reporting capabilities. These related but separate subsystems access the same database, but the transactional system creates the transaction database and the informational system is a read-only capability that summarizes what has occurred.

References

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Author: Daniel Power
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