



19ITE305 – BIG DATA ANALYTICS

UNIT I: INTRODUCTION TO BIG DATA AND ANALYTICS

Topic 8: Basically Available Soft State Eventual Consistency

ACID property in RDBMS

Atomicity: Either the task (or all tasks) within a transaction are performed or none of them are. This is the all-or-none principle. If one element of a transaction fails the entire transaction fails.

Consistency: The transaction must meet all protocols or rules defined by the system at all times. The transaction does not isolate those protocols and the database must remain in a consistent state at the beginning and end of a transaction; there are never any half-completed transactions.

Isolation: No transaction has access to any other transaction that is in an intermediate or unfinished state. Thus, each transaction is independent unto itself. This is required for both performance and consistency of transactions within a database.

Durability: Once the transaction is complete, it will persist as complete and cannot be undone; it will survive system failure, power loss and other types of system breakdowns.

BASE (Basically Available, Soft state, Eventual consistency). In a system where BASE is the prime requirement for reliability, the activity/potential (p) of the data (H) changes; it essentially slows down.

Basically Available: This constraint states that the system does guarantee the availability of the data as regards CAP Theorem; there will be a response to any request. But, that response could still be 'failure' to obtain the requested data or the data may be in an inconsistent or changing state, much like waiting for a check to clear in your bank account.

Eventual consistency: The system will eventually become consistent once it stops receiving input. The data will propagate to everywhere it should sooner or later, but the system will continue to receive input and is not checking the consistency of every transaction before it

moves onto the next one. Werner Vogel's article "Eventually Consistent – Revisited" covers this topic in much greater detail.

Soft state: The state of the system could change over time, so even during times without input there may be changes going on due to 'eventual consistency,' thus the state of the system is always 'soft.'