Explain each letter of A.C.I.D. and what it does.

ACID stands for Atomicity, Consistency, Isolation, and Durability, which are the four key properties of a transaction in a database management system.

Atomicity: Ensures that either all the operations in a transaction are successfully completed and committed or none of them are. In other words, a transaction is treated as a single unit of operation, and it is either fully completed or fully rolled back in case of failure.

Consistency: Ensures that the database remains in a consistent state before and after the execution of a transaction. It means that the database constraints, such as foreign key constraints, triggers, and other rules, are not violated during or after the transaction.

Isolation: Ensures that the operations within a transaction are isolated from other concurrent transactions. It prevents the intermediate states of a transaction from being visible to other transactions until the transaction is completed and committed.

Durability: Ensures that once a transaction is committed, the changes made by the transaction persist even in the event of system failures. This is usually achieved through logging and maintaining a record of the changes made by the transaction.

Collectively these properties ensure the reliability, integrity, and consistency of the data within a database, especially that of a multi-user concurrent access environment.

References:

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