ACID

(Atomicity, Consistency, Isolation, Durability)

.NET

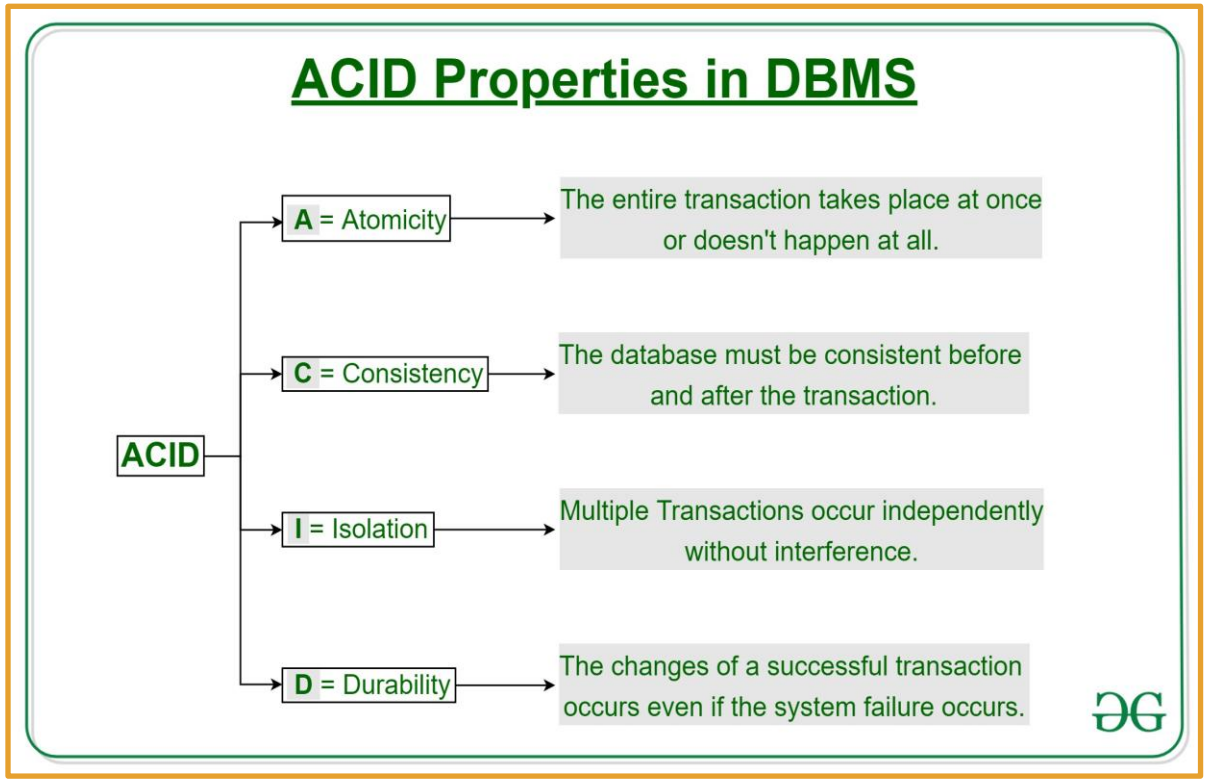
ACID (atomicity, consistency, isolation, durability) *is a set of properties of database transactions intended to guarantee validity even in the event of errors or power failures.*

HTTPS://EN.WIKIPEDIA.ORG/WIKI/ACID

ACID – Atomicity

https://docs.microsoft.com/en-us/windows/win32/cossdk/acid-properties

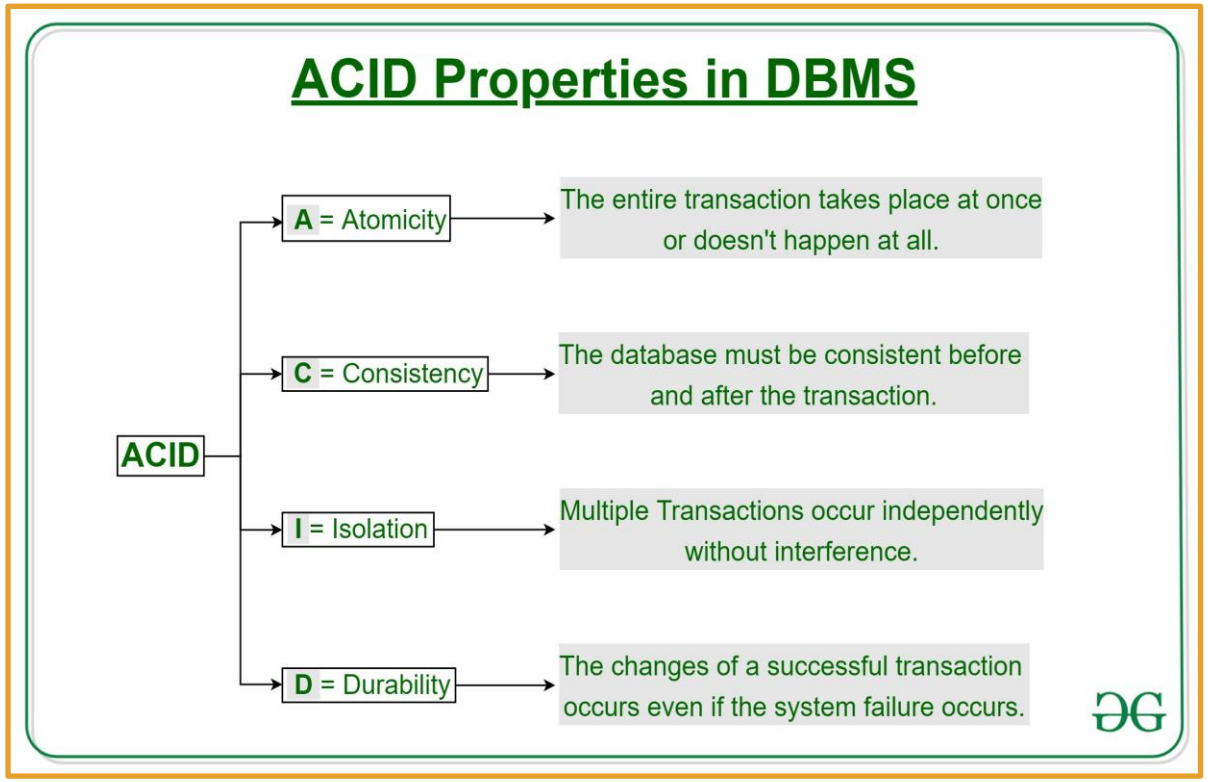
- A ***transaction*** must execute exactly once and must be ***atomic.***
- An ***Atomic Transaction*** is indivisible and irreducible. Either all operations occur, or none do.
- By performing only a subset of interdependent operations, the overall intent of a ***transaction*** would be compromised.
- ***Atomicity*** eliminates the chance of processing only a subset of operations.



ACID – Consistency

https://docs.microsoft.com/en-us/windows/win32/cossdk/acid-properties

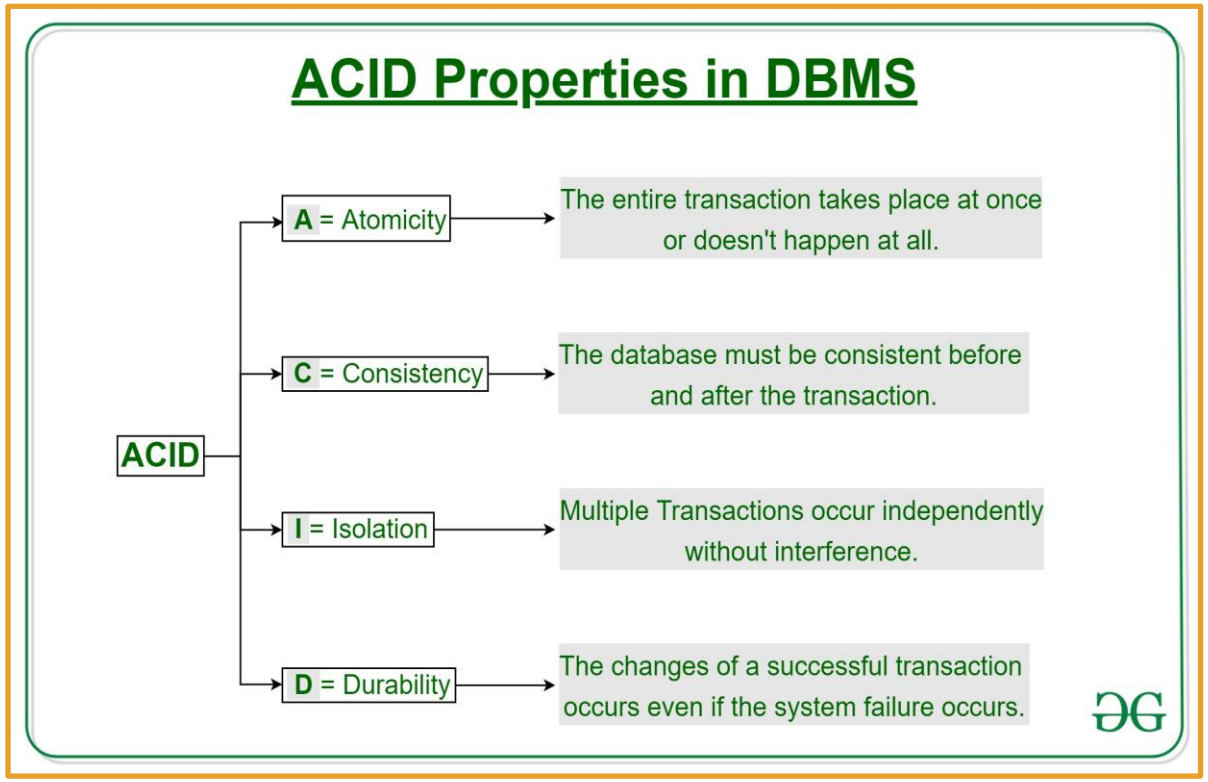
- A ***transaction*** must transform data from one ***consistent*** state to another ***consistent*** state.
- The responsibility for maintaining ***consistency*** falls to the application developer.
- ***Referential Integrity*** must be maintained when transforming one consistent state of data into another consistent state of data.



ACID – Isolation

https://docs.microsoft.com/en-us/windows/win32/cossdk/acid-properties

- A ***transaction*** must be completed in isolation.
- ***Concurrent Transactions*** should behave as if each were the only ***transaction*** running in the system.
- A high degree of ***isolation*** can limit the number of ***concurrent transactions.***
- There are 5 levels of Isolation.



ACID – Durability

https://docs.microsoft.com/en-us/windows/win32/cossdk/acid-properties

- A ***transaction*** must have durability (be recoverable).
- If a ***transaction*** '***commits***', its updates will ***persist*** even if the system fails immediately after.
- Specialized logging allows the system's restart procedure to complete unfinished operations required by the ***transaction***. This makes the ***transaction durable***.