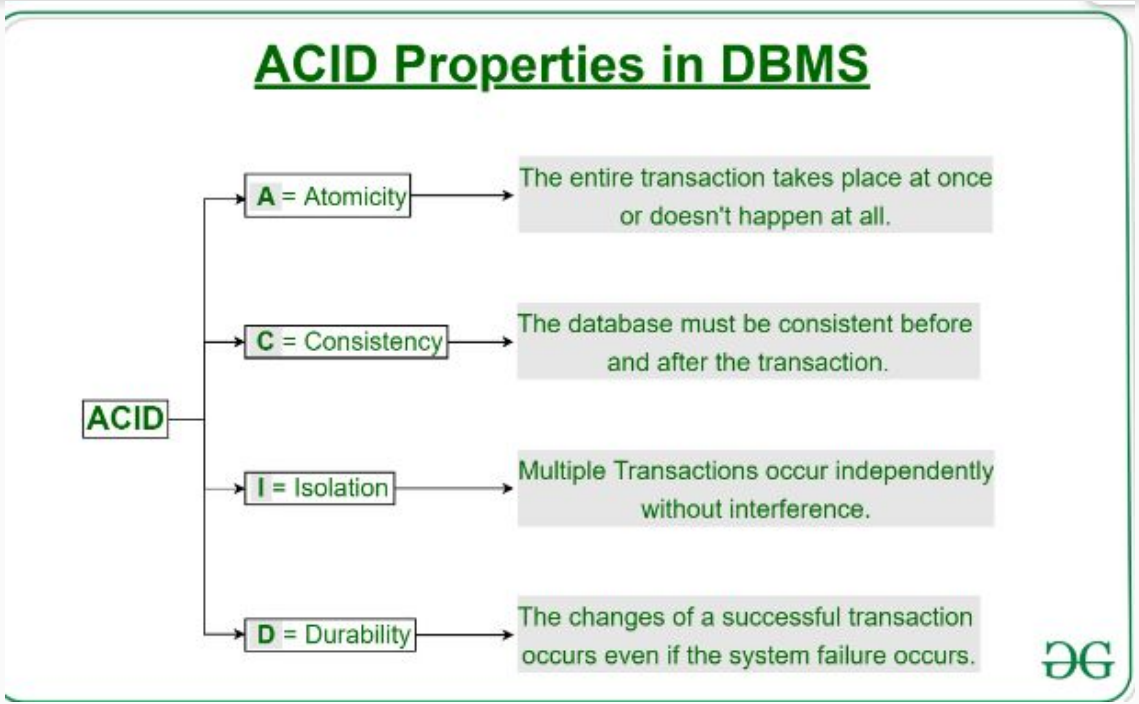
ACID Properties in DBMS

Transactions in DBMS



Atomicity

Before: X : 500	Y: 200
Transaction T	
T1	**T2**
Read (X) X: = X − 100 Write (X)	Read (Y) Y: = Y + 100 Write (Y)
After: X : 400	Y : 300

Consistency

The total amount before and after the transaction must be maintained.
Total **before T** occurs = **500 + 200 = 700**.
Total **after T occurs** = **400 + 300 = 700**.
Therefore, the database is **consistent**. Inconsistency occurs in case **T1** completes but **T2** fails. As a result, T is incomplete.

Isolation

T	T''
Read (X) X: = X*100 Write (X) Read (Y) Y: = Y – 50 Write (Y)	Read (X) Read (Y) Z: = X + Y Write (Z)

Durability

This property ensures that once the transaction has completed execution, the updates and modifications to the database are stored in and written to disk and they persist even if a system failure occurs. These updates now become permanent and are stored in non-volatile memory. The effects of the transaction, thus, are never lost.