Lecture-2

ACID Properties of SQL

1. **Atomicity:** Whether The Particular Transaction is successfully completed or not. It doesn't give fuzzy outputs.

   Eg: let's say you're transferring Rs. 1000. If the money is deducted from your account but fails to get credited to your friend's account, that's a disaster, right? Atomicity makes sure that either the entire transaction succeeds, or it rolls back to its original state. It's all or nothing!
2. **Consistency:** Content before and after is the same.

   Eg: For example Two Bank Accounts are there.

   Before Transaction

   Let's say A and B

   A's Balance=Rs.20

   B's balance=Rs.30

   Total amount=Rs.50

   A wants to transfer Rs.10 to B

   After Transaction

   A's Balance=Rs.10

   B's Balance=Rs.40

   Total amount=Rs.50
3. **Isolation:** At a time only one transaction is possible.Which means it separates the transactions in order to prevent interference and ensure that concurrent transactions do not affect each other's consistency or outcomes.

   Eg: If you and your friend are both trying to transfer money from the same account, the database ensures that these operations don't clash and lead to wrong balances. It's like a protective bubble around each transaction.
4. **Durability:** Once a transaction is committed, its changes are permanent, ensuring that even in the event of a system failure, the data remains intact and consistent in the database.