Hotwax Training

Assignments : Day 1

Task 1: Explore ACID Properties.

In DBMS, the ACID properties are basic 4 pillars that should be integrated with database tables to manage it properly.
Here is the significance of each of them:
A - Atomicity: It indicates that the current transaction should be either completed at once or nothing should be transactioned.
Example: If we are transferring some amount form one bank account to another, then the amount should either be transferred completely or if there is an issue, then the transaction must not be completed.
C - Consistency: This means, the current transaction should take the database from one consistent state to another consistent state.
Example: The sum of amount before and after the transaction should remain constant, i.e., before and after the transaction balance in accounts must be stable.
I - Isolation: Two or more concurrent transactions should not interfere with each other. Changes in one transaction should not reflect in one another.
Example: Phone Pay can handle multiple transactions simultaneously by multiple users without any payment loss error, is an example of isolation property.
D - Durability: The transaction data after commit should persist in the database even after the system failure or shut down.
Example: After a successful transaction from one Account to another, the balance should exist in both accounts correctly even after the system shuts down.

Task 2: Second Normal Form.

We use to convert the existing table in 2nd normal form to reduce the redundancy in database.
A table is in 2nd normal form:

- If it is already in first normal form.
- If it has no partial dependency.

Partial Dependency: The non functional attributes should be derived just from the primary key, not by its any part.

Task 3: Third Normal Form.

A table in database is said to be in 3rd normal form if:

- It is already in 2nd normal form.
- It has not transitive dependency.

Transitive dependency: When a non-prime attribute is derived by a non-prime attribute not by Primary Key.

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Task 4: Difference between Procedural and Declarative languages.

Procedural language: These are programming languages that show what task to perform, how to perform a task, using loops, logic, conditions etc.
Example: C, C++, Java, Python etc.

Declarative languages: These are the languages that only show which task is to be performed, not the procedure of performing the task.
Example: SQL, HTML etc.