

What is anomalies? Explain Update anomaly in SQL.

Anomalies:

Anomalies in SQL refer to inconsistencies or errors that can occur in a database due to poorly designed data structures. These anomalies can lead to data integrity issues and incorrect results.

Update Anomalies:

Update anomalies happen when updating a record in one table requires updating related records in other tables to maintain data integrity. This can lead to inconsistencies and errors.

Example:

Consider a database with two tables: "CUSTOMERS" and "ORDERS". If a customer's address changes, you need to update the address in both tables to ensure consistency. If you only update the address in the "CUSTOMERS" table, the "ORDERS" table will still have the old address, leading to an update anomaly.

What is Normalization? State the types of Normalization.

- Normalization is a database design technique used to organize data into tables in such a way that reduces redundancy and dependency of data.
- It ensures data integrity by eliminating insertion, deletion, and update anomalies.

Types of Normalization:

1. **First Normal Form (1NF):** Each attribute in a table should be atomic (indivisible) and should not contain repeating groups.
2. **Second Normal Form (2NF):** A table is in 2NF if it is in 1NF and all non-key attributes are dependent on the entire primary key.
3. **Third Normal Form (3NF):** A table is in 3NF if it is in 2NF and there are no transitive dependencies between non-key attributes.