

DATABASE TECHNOLOGY WEEK12 ASSIGNMENT

1.Explain what is normalization and explain the normalization with its examples

Normalization is a database design technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update and Deletion Anomalies. Normalization rules divides larger tables into smaller tables and links them using relationships.

ADVANTAGE OF NORMALIZATION.

- 1) A smaller database can be maintained as normalization eliminates the duplicate data. Overall size of the database is reduced as a result.
- 2) Better performance is ensured which can be linked to the above point. As databases become lesser in size, the passes through the data becomes faster and shorter thereby improving response time and speed.
- 3) Narrower tables are possible as normalized tables will be fine-tuned and will have lesser columns which allows for more data records per page.
- 4) Fewer indexes per table ensures faster maintenance tasks (index rebuilds).

DISADVANTAGES OF NORMALIZATION

- 1) More tables to join as by spreading out data into more tables, the need to join table's increases and the task becomes more tedious. The database becomes harder to realize as well.
- 2) Tables will contain codes rather than real data as the repeated data will be stored as lines of codes rather than the true data. Therefore, there is always a need to go to the lookup table.
- 3) Data model becomes extremely difficult to query against as the data model is optimized for applications, not for ad hoc querying. (Ad hoc query is a query that cannot be determined before the issuance of the query. It consists of an SQL that is constructed dynamically and is usually constructed by desktop friendly query tools.). Hence it is hard to model the database without knowing what the customer desires.
- 4) As the normal form type progresses, the performance becomes slower and slower.
- 5) Proper knowledge is required on the various normal forms to execute the normalization process efficiently. Careless use may lead to terrible design filled with major anomalies and data inconsistency.

1NF	A relation is in 1 NF it contains an atomic value
2NF	A relation will be in 2NF if it is in 1NF and all non-key attributes are fully functional dependent on the primary key
3NF	A relation will be in 3NF if it is in 2NF and no transitive dependency exists
BCNF	Boyce and codd normal form is a higher version of the third normal form. This form deals with certain type of anomaly that is not handled by 3NF. A 3NF table which does not have multiple overlapping candidate keys is said to be in BCNF.
4NF	A relation will be in 4NF if it is in boyce codd normal form and has no multi-valued dependency.
5NF	A relation is in 5NF if it is in 4NF and not contains any join dependency and joining should be lossless.