Normalization

* The word normalization and normal form refer to the structure of a database
* Normalization was developed by IBM researcher **E.F.Codd** in the 1970.
* Normalization increases clarity in organizing data in Databases.
* Normalization of a database is achieved by following a set of rules called “Forms” in creating the database.

Normalization is the process of organizing the data in the database.

Normalization is used to minimize the redundancy from a relation or set of relations. It is also used to eliminate the undesirable characteristics like insertion, update and deletion.

Normalization divides the larger table in smaller table and links them using relationship.

The normal form is used to reduce redundancy from the database tables.

There are different types of normal forms:

1. 1NF

A relation is in 1nfnif it contains an atomic value.

It must hold single-valued attribute.

First normal form disallows the multi-valued attribute.

1. 2NF

A relation will be in 2nf if it in 1nf and all non-key attributes are fully functional dependent on the primary key.

1. 3NF

A relation will be in 3nf if it is in 2nf and no transition dependency exists.

3nf is used to reduce the data duplication.

1. Boyce Codd Normal Form(BCNF)

BCNF is the advance version of 3nf.

It is stricter than 3nf.

A table is in BCNF if every functional dependency X🡪Y, X is the super key.

1. 4NF

A relation will be in 4nf if it is in Boyce Codd normal form and has no multi-valued dependency.

For a dependency A🡪B, if for a single value of A, multiple values of B exists, then the relation will be multi-valued dependency.

1. 5NF

A relation will be in 5nf if it is in 4nf and not contains any join dependency and joining should be lossless.

5nf is satisfied when all the tables are broken into as many tables as possible.

5nf is also known as Project-join normal form (PF/NF).