**NORMALIZATION**

Functional Dependency (FD)

* FD depicts relationship between attributes.
* It is expressed as A -> B or A determines B.
* Trivial FD: X -> Y & Y is a subset of X.
* Non Trivial FD: X -> Y & Y is not a subset of X.

Normalization

* It is a process if organizing the data to reduce data redundancy and improve data integrity.
* It ensures optimum structure.
* It ensures atomic data.
* It eliminates data inconsistencies & anomalies (update, insert & delete).

First Normal Form (1NF)

* A relation is in 1NF if there are no repeating groups at the intersection of each row & column that means values at the intersection of each row and column is atomic.

Second Normal Form (2NF)

* To be in second normal form, a relation must be in 1NF and relation must not contain any partial dependency.
* If proper subset of candidate key determines non-prime attribute, it is called partial dependency.

Third Normal Form (3NF)

* A relation is in third normal form, if there is no transitive dependency for non-prime attributes is it is in second normal form.
* A relation is in 3NF if at least one of the following condition holds in every non-trivial function dependency X –> Y
  + X is a super key.
  + Y is a prime attribute (each element of Y is part of some candidate key).