Normalization

- The process of breaking down or decomposing as complex relation into simple relation. It reduces redundancy (unnecessary repetition of data) using principle of non-loss decomposition in which ***table are reduce to smaller tables without loss of information.***

Normalization is the database design process in which complex database table is broken down into simple separate tables. It makes data model more flexible and easier to maintain.

<u>Advantages of normalization</u>

1.It reduces data redundancy (duplication of data)

2.It improves faster sorting and indexing.

3.It simplifies the structure of the database table.

4.It improves the performance of a system.

5.It avoids loss of information.

Teacher Name	Subject	Address	Age
Ramesh	**C**	**Btm**	**26**
Nabin	DBMS	Ktm	30
Ramesh	**C**	**Btm**	**26**
Suman	Java	Ktm	30
Nirmal	C	Btm	29
Ramesh	**DBMS**	**Btm**	**30**

Here we find Row Level Duplication so is not in normal form

To remove this duplication we can use the concept of **primary key**

T.Id	Teacher Name	Subject	Address	Age
1	Ramesh	C	Btm	26
2	Nabin	DBMS	Ktm	30
3	surendra	C#	BTM	26
4	Suman	Java	Ktm	30
5	Nirmal	C	Btm	29
6	Ramesh	DBMS	BTM	30

Here we find Insertion Anomaly, Deletion Anomaly And Updation Anomaly So this table is not in normal form

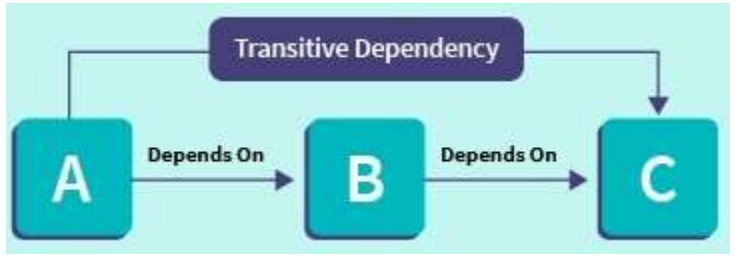
Insertion Anomaly ?
Deletion Anomaly ?
Updation Anomaly ?

Dependency ?

- Functional Dependency
  - All the Non prime attribute should be fully dependency on The candidate key or primary key

Student name	Address	Phone number
Suman	btm	980000001
Saurab	btm	980000002

- Transitive Dependency
  - when a nonprime attribute determines another nonprime attribute
  - (A->B , B->C then A->C)



Student name	Faculty	subject
Suman	Management	CS
Saurab	Science	Physics

Here subject only depends upon faculty not to student hence is called transitive dependency