Normalization

Teacher Name	Subject	Address	Age
Ramesh	C,c#	Btm	26
Nabin	DBMS,Java	Ktm	30

Table is not in Normal Form

First Normal Form (1NF)

Rules:-
-All The Attributes should be atomic means There should not be any Repeated Group Item
-All column should have unique name
-No Duplicate Rows

Teacher Name	Subject	Address	Age
Ramesh	C	Btm	26
Ramesh	C#	BTM	26
Nabin	DBMS	Ktm	30
Nabin	Java	Ktm	30

Here we have Teacher name + Subject Will be Candidate key or we can say composite primary key

Now Table is in 1NF

Second Normal Form (2NF)

Rules:-

-Table should be in 1NF

-**Remove Partially functional dependency** Using Primary key and Foreign Key (All the non prime attribute should be functionally depend on Candidate key or primary key not only the part of the candidate key)

After arranging given data sets in 1NF, we eliminate partial functionally dependent attributes i.e. in this case, Subject depends upon the teacher not on the age and address, similarly age and address also depends upon teacher not on subject. So, in 2NF we remove such partial functional dependencies by _introducing_ _primary key and foreign key_.

pk

Teacher ID	Teacher Name	Address	Age
1	Ramesh	Btm	26
2	Nabin	KTM	30

FK

Teacher Id	Subject
1	C
1	C#
2	DBMS
2	JAVA

Now Table is in 2 NF

Problem on 2nf

As we normalize till 2NF, now to achieve 3NF we have to overcome some more issues associated with 2NF. Let us say, in above table if one teacher left the job, then in this table as partially functional dependencies are eliminate it will not affect other data.

Teacher ID	Teacher Name	Address	Age
1	Ramesh	Btm	26
2	Nabin	KTM	30

But, in the table below if teacher is changed it will affect subject, change in one affects other this is known as transitive functional dependencies.

Teacher Id	Subject
1	C
1	C#
2	DBMS
2	JAVA

Third Normal Form (3NF)

Rules:-

-Table should be in 2NF

- Remove Transitive functional dependency

Teacher ID	Teacher Name	Address	Age
1	Ramesh	Btm	26
2	Nabin	KTM	30

Teacher Id	Subject Id
1	1
1	2
2	3
2	4

Subject Id	Subject
1	C
2	C#
3	DBMS
4	JAVA

Now Table is in 3 NF