

# 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 )

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
1	C
1	C#
2	DBMS
2	JAVA

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

*Now Table is in 3 NF*

- DBA (Database Administrator)
- DBA is the most responsible person in an organization with sound knowledge of DBMS. He/she is the overall administrator of the program. He/she has the maximum amount of privileges for accessing database and defining the role of the employee which use the system. The main goal of DBA is to keep the database server up to date, secure and provide information to the user on demand.

- **Qualities of good DBA**

- 1.He/she should have sound and complete knowledge about DBMS and its operation.
- 2.He/she should be familiar with several DBMS packages such as MS Access, MY SQL, Oracle etc
- 3.He/she should have depth knowledge about the OS in which database server is running.
- 4.He/she should have good understanding of network architecture.
- 5.He/she should have good database designing skill.

# Responsibility of DBA

- Installing and upgrading server
- Monitoring Server
- Manage database user
- security

# Database Security

It is a process of protecting data from unauthorized access and corruption.

Database security is a mechanism that protect the database against internal and accidental threats .

## **Methods of data security are as follows**

- Keep Backup Regularly
- Use login password in system
- Specify the specific roles for every user
- Use data encryption method
- Keep antivirus regular updated . .