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CT-04

01. Define join dependencies & 5th NF with an Example
02. Explain FD and what are its different types

01. * A relation is in 5NF if it is in 4NF and not contain any join dependency and joining should be lossless.
* 5NF is satisfied when all the tables are broken into as many tables as possible in order to avoid redundancy
* 5NF is also known as project join normal form.

Eg:-

Subject	lecturer	Semester
CS	Anshika	Sem 1
CS	John	Sem 1
Math	John	Sem 1
Math	Akash	Sem 2
Chem	praveen	Sem 1

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Sem	Subject
Sem 1	CS
Sem 1	Math
Sem 1	Chem
Sem 2	Math

P2

Subject	lecturer
CS	Anshika
CS	John
Math	John
Math	Akash
Chem	praveen

P3

Sem	lecturer
Sem 1	Anshika
Sem 1	John
Sem 1	John
Sem 2	Akash
Sem 1	praveen

02. Functional dependencies is a constraints b/w 2 sets of attribute from the db.
FD is used to describe the relationship b/w the attribute in a given relation R denoted as $X \rightarrow Y$ means that Y is functionally depending on X.
LHS of FD is called as Determinant RHS of FD is called as dependent.

Eg:- USN → name (holds good)
name → USN (can't write)

Pnumber → {Pname, Plocation}
Essn → Hours (not holds good)

⇒ Types of FD's

(1) Trivial FD {A,B} → {B}, {A,B} → {A}

(2) non Trival FD → (A → B)

(1) A FD is trival iff the attribute in RHS is a subset of LHS.

Eg: {Ssn, name} → name

(2) Attribute of RHS won't be a subset of LHS then it is called non trival FD

Eg: usn → name.