SNS COLLEGE OF TECHNOLOGY

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Join Dependencies and Fifth Normal Form

COURSE : 23CAT- Database Management System
UNIT III   : Database Design
CLASS   : I Semester / I MCA

❑ A relation is said to have join dependency if it can be recreated by joining multiple sub relations and each of these sub relations has a subset of the attributes of the original relation

❑ It is a generalization of MVD

Condition

If the join of R1 and R2 over Q is equal to relation R then we can say that a join dependency exists, where R1 and R2 are the decomposition R1 (P, Q) and R2 (Q, S) of a given relation R (P, Q, S). R1 and R2 are a lossless decomposition of R

Supplier	Product	Consumer
XX1	A1	Cons1
XX2	A2	Cons2

Table 1

Ioin dependency exists in Table 1, therefore Table 1 is not in 5NF
If Table 2, Table 3 and Table 4 when joined yield the original table

Supplier	Product
XX1	A1
XX2	A2

Table 2

Consumer	Product
Cons1	A1
Cons2	A2

Table 3

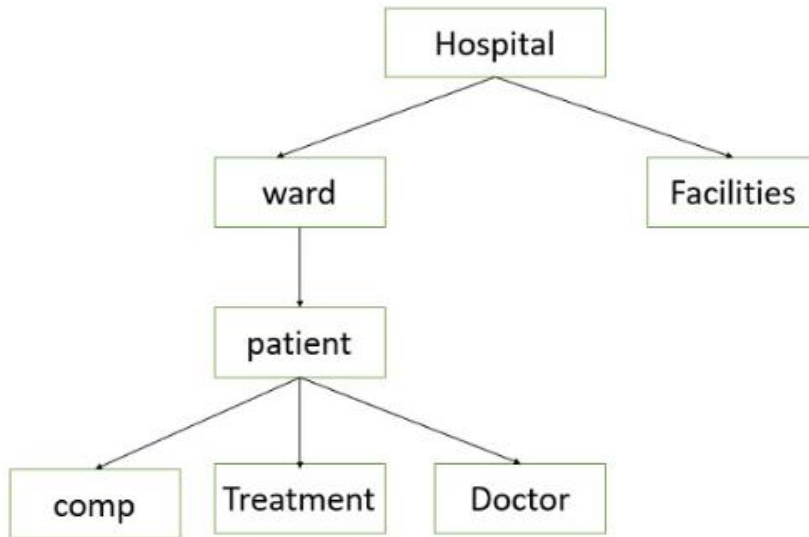| Supplier	Consumer
XX1	Cons1
XX2	Cons2

Table 4

❑ A relation is in 5NF if it is in 4NF and not contains 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 (PJ/NF).

In this case, multivalued dependencies,
Hospital->-> ward or
Hospital ->-> facilities hold.

we can store hospital database as lossless join
of the following –
Hospital_facility(hospital, facilities),
Hospital_ward(hospital, ward, patient,
complaints, treatment, doctor)