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1. $X \rightarrow YZ$: Not valid

Here for the value of X = 'abcdefg' we get two different values of YZ. {1,9} and {3,9}

2. $x \rightarrow z$: valid

Here for every unique value of x determines a ~~value~~ unique value of z

3. $XY \rightarrow A$: Not valid

Here fo the value of x = 'xyz', we get two different value of A which are 11 and 13. Thats why this is not valid

4. $A \rightarrow xyz$: Not valid

Here, for the value of A = '40' we get two different values of XYZ which are {abcefg, 1, 9} and {abcdefg, 3, 8}. So not valid

5. $YZ \rightarrow X$: Not valid

Here for the value of 39 on YZ, we get two different values of x which are feg and abcdefg.

i) This is in 1NF as there are no multivalued, composite attribute and no nested relation present.

ii) This is not in 2NF because for FD1 and FD2 there is a partial dependency. On FD1, Engineer-Name, TotalRepairs, commision-Percentage depend on only Engineer-ID. similarly, for FD2, Customer-Name, Issue, Priority-Level, Service-charge depend on only Comp-ID. In both cases all the attributes must be dependent on both comp-ID and Engineer-ID if it is in 2NF But for FD3 and FD4, there is no concern for partial dependency.

Turning to 2NF:

CR1

Comp-ID	Engineer-ID	Date-Assigned	Date-Repaired

CR2

Engineer-ID	Engineer-Name	Total-Repairs	Commision percentage

CR3

comp-ID	Customer-Name	Issue	Priority-Level	service charge

iii) This is not in 3NF form because of the presence of transitive function dependency.

Here Engineer-ID → commission-percentage, there is a transitive function dependency in this case because of Engineer-ID → Total Repairs and Total Repairs → commission-percentage. Similarly, for comp-ID → service-charge, there is a transitive function dependency which is comp ID → priority level and priority-level → service-charge.

Forming to 3NF :

a- R1

comp-ID	Engineer-ID	Date-Assigned	Date-Repaired

CR2

Engineer ID	Engineer Name	Total Repairs

e-R3

Total - Repairs	Commission - charge

e-R4

Comp-ID	Customer-Name	Issue	priority - Level

CR5

Priority - Level	Service - charge