DBMS Assignment-6

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1) The table is not in INF because the attribute courses contains more than value for ex: ID-1, courses → 'DBMS TOC, OS' it is not in 1NF it can't be in 2NF & 3NF

converted table:

ID	Name	Age	Location	Courses
1	Sachin	22	Delhi	OS
1	Sachin	22	Delhi	DBMS
2	Ram	22	Jamshedpur	DAA
2	Ram	22	Jamshedpur	DBMS
3	Mike	23	Chennai	ME
3	Mike	23	Chennai	OS
4	Sameer	21	Bengaluru	DAA
4	Sameer	21	Bengaluru	ML
5	vijay	22	Mumbai	ML
5	vijay	22	Mumbai	DBMS

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→ The above table is in INF

→ Prime Attributes: ID & name

Non-prime Attributes: Age & location, courses

→ FD → ID → Age, location, courses

→ The second table mentioned in the question is in INF

2) This is not in 2NF because there
a) is partial dependency {Duty-shift-Id} → Duty-shift. for a table to be in 2NF all the non key attributes should be functionally dependent on entire primary key

→ The primary key is {Emp-ID, Duty-shift-ID}

But {Duty-shift-ID} → Duty-shift,

Hence partial dependency exists

2NF could be primary key

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2Nf could be primary key

Emp-ID	Duty_shift-ID	Name	Age
101	1	Arun	26
102	2	Bobby	22
103	3	suresh	32
104	1	sita	24

Name, age are non-prime attributes

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Duty-shift-ID	Duty-shift
1	Morning
2	Afternoon
3	Night

Duty-shift is non prime attribute.

6) This is not in 2Nf because there exists partial dependency

{project-ID} → {proj-Name}

The primary key is {EmpID, project-ID}

All the non-prime attributes Name, proj-Name, No-of-hours should be completely depend on primary key

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Emp-ID	Project-ID	Name	No-of-hours
123	Prj-21	Ajay	10
321	Prj-45	chanu	15
546	Prj-24	Rajesh	23
765	Prj-11	Abhishek	16

{ emp-ID, project-ID } → primary key

Project-ID	Proj-Name
Prj-21	Speech-system
Prj-45	HR system
Prj-24	Automatic tickets
Prj-11	NLP

[Project-ID] → primary key

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3) Not in 3NF there exists transitive
a) dependency between {cust-address}
& {cust-loc} on a non-primary
key which is {cust-postcode}
3NF could be.

Cust-ID	Cust-Name	Cust-Postcode
25	Dell	560037
45	Lenovo	560046
89	Acer	210067
90	Samsung	450078

{Cust-ID} → primary key

Cust-postcode	Cust-Address	Cust-loc
560037	whitefield	Bangalore
560046	Marathahalli	Bangalore
210067	Bandra	Mumbai
450076	Delhi Central	Delhi

{Cust-postcode} → primary key

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b) Here theare exists transitive dependency so it is not in 3Nf

{contractory → {feey

There shoucd se no transitive dependency in 3Nf

{Building} → primary key

{contractor, Builder.fee} → non-prime attributes

3Nf could se

Building	Contractor	Builder
B-2156	Taylor	Prestige
B-8765	sandeep	Hiranandani
B-4567	vishaka	Tata

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primary key - { contractor, fee }

contractor	fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990

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