

DBMS Class Assignment

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- 1) The table is in 1NF because the attribute courses contain more than value. for example:- ID - 1 courses \rightarrow 'OS, DBMS' so as 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	DBMS DAA
2	Ram	22	Jamshedpur	DBMS
3	Mike	23	Chennai	HL
3	Mike	23	Chennai	OS
4	Sameer	21	Bengaluru	DAA
4	Sameer	21	Bengaluru	HL
5	Vijay	22	Mumbai	HL
5	Vijay	22	Mumbai	DBMS

\rightarrow The above table is in 1NF.

\rightarrow prime Attributes \rightarrow ID & Name

Non-prime \rightarrow Age, Location, Courses.

\rightarrow FD \rightarrow ID \rightarrow Age, Location, Courses

- The given ~~second~~ second table is already in a 1NF so no need to convert.

(2) This is not in 2NF because there is partial dependency $\{ \text{Duty-shift-ID} \} \rightarrow \text{Dutyshift}$. For a table to be in 2NF, all the non key attributes should be functionally dependent on the entire primary key.

The primary key is $\{ \text{Emp-ID} ; \text{Duty-shift-ID} \}$

But $\{ \text{Duty-shift-ID} \} \rightarrow \text{Duty-shift}$,

Hence partial dependency exists.

2NF would be primary key

name, age are non- prime attributes	Emp-ID	Duty-shift-ID	Name	Age
	101	1	Arun	26
	102	2	Bobby	28
	103	3	Suresh	32
	104	1	Sita	24

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

Duty shift is
non-prime
attribute

(b) This is not in 2NF because there exists partial dependency

$\{\text{project-id}\} \rightarrow \{\text{proj-name}\}$

3) (a) Not in 3NF, there exist transitive dependency between $\{\text{cust-address}\}$ and $\{\text{cust-loc}\}$ on a non-primary key which is $\{\text{cust-postcode}\}$.

3NF could be

Cust-ID	Cust-Name	Cust-Postcode
25	DELL	560037
45	lenovo	560046
89	acer	210067
90	Samsung	4500078

$\{\text{cust-ID}\} \rightarrow$ Primary key.

cust postcode.	Cust-Address	Cust-loc
560037	whitefield	Banglore
560046	Marathahalli	Banglore
210067	Bandra	Mumbai
4500078	Delhi Central	Delhi

$\{\text{cust-postcode}\} \rightarrow$ Primary key

(b) Here, there exists transitive dependency. So it is not in 3NF

$\{ \text{contractor} \} \rightarrow \{ \text{Fee} \}$

There should be no transitive dependency in 3NF

$\{ \text{Building} \} \rightarrow \text{primary key}$

$\{ \text{contractor}, \text{Builder}, \text{Fee} \} \rightarrow \text{non-prime attributes}$

3NF would be

Building	contractor	Builder
B-156	Taylor	Prestige
B-8765	Sandeep	Hiranandani
B-4567	Vishaka	Tata

Primary Key - $\{ \text{contractor}, \text{Fee} \}$

contractor	Fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990