

DBMS Assignment - 6

19BCS043

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1. a) The given table is not in 1NF, because the attribute 'courses' contains more than 1 value.

Eg:- ID - 1 Courses \rightarrow 'OS, DBMS'.

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	ML
3	Mike	23	Chennai	OS
4	Sameer	21	Bengaluru	DAA
4	Sameer	21	Bengaluru	ML
5	Vijay	22	Mumbai	ML
5	Vijay	22	Mumbai	OSMS

The above table is in 1NF.

Prime attributes \rightarrow ID, Name, ~~Location~~

Non-Prime " \rightarrow Age, Location, Courses.

FD \rightarrow ID \rightarrow Age, Location, Courses

b). The given table is already in 1NF, so no need to convert.

2. a. This is not in 2NF because there is partial dependency $\{Duty_Shift\ ID\} \rightarrow Duty_Shift$.
For a table to be in 2NF, all non key attributes should be functionally dependent on entire primary key.

Primary key - $\{Emp\ ID, Duty\ Shift\ ID\}$
But $\{Duty\ Shift\ ID\} \rightarrow Duty\ Shift$.
hence partial dependency exists.

Non Prime - Name, age, Duty Shift.
Converted Table:

Emp ID	Duty Shift ID	Name	Age
101	1	Arun	26
102	2	Bobby	28
103	3	Suresh	32
104	1	Sita	24

Duty Shift ID	Duty Shift
1	Morning
2	AFTERNOON
3	Night

b. This is not in 2NF, because there exists a partial dependency.

$\{Project-ID\} \rightarrow \{Proj-Name\}$

The Primary key - $\{EmpID, Project-ID\}$

Non-Prime - Name, Proj-Name,
No. of hours.

This non-Prime attributes should completely depend on Primary key.

Converted Table:-

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

{Emp-ID, Project-ID} → Primary Key.

Project-ID	Proj-Name
Pxj-21	Speech System
Pxj-45	HR System
Pxj-24	Automate Tickets
Pxj-11	NLP

{Project-ID} → Primary Key.

3. a. It is NOT in 3NF, there exists a transitive dependency between $\{Cust-Address\}$ & $\{Cust-loc\}$ on a non-Primary, which is $\{Cust-Postcode\}$.
converted table:

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

$\{Cust-ID\} \rightarrow$ Primary key

Cust-Postcode.	Cust-Address	Cust-loc.
560037.	Whitefield.	Bangalore
560046.	Marathahalli.	Bangalore
210067.	Bandra	Mumbai
4500078.	Delhi Central	Delhi

$\{Cust-Postcode\} \rightarrow$ Primary key

b. Here, there exists transitive dependency
 So, it is not in 3NF. {Contractor} - {Fee}
 There should be no transitive
 dependency in 3NF.

{Building} → Primary Key.

{Contractor, Building, Fee} - Non-Prime.

Converted Table:-

Building	Contractor	Builder.
B-2156.	Taylor	Prestige
B-8765	Sandeep	Hiranandani
B-4567.	Vishaka.	Tata

Primary key - {Contractor, Fee}

Contractor	Fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990