DBMS ASSIGNMENT

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Q1)

Ans)

The table is not in 1NF because the attribute courses contain more than value.

Ex:- ID-1 courses -> 'OS, DBMS' , so as it is not in 1NF it can't be in 2NF and 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	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	DSMS

The above table is in 1NF

Prime Attributes -> ID and Name

Non-prime -> Age, Location and Courses

FD-> ID -> Age, Location and Courses

<u>Note:-</u> The 2nd table given in the question is already in 1NF so no need to convert.

Primary key -> Id

Candidate key -> Id, name, Phone, State

Prime -> Id, Name, Phone, State

Non-prime -> Country

Q2)

Ans)

The table 2.1 is not in 2NF because it is not fully functionally independent as:-

Emp_ID -> Name, Age

Emp_ID , Duty_shift_ID -> Duty_shift

Primary keys -> Emp_ID

Candidate keys -> Emp_ID

Primary attributes -> Emp_ID , Duty_shift_ID

Non-prime -> Name, Age, Duty_shift

<u>Converted Table:-</u>

Table 1 (Emp_ID)

Emp_ID	Name	Age
101	Arun	26
102	Bobby	28
103	Suresh	32
104	Sita	24

Table 2 (Duty_shift_ID)

Emp_ID	Duty_shift_ID	Duty_shift
101	1	Morning
102	2	Afternoon
103	3	Night
104	1	Morning

Table 2.2:-

It is not in 2NF form because it is not fully functionally independent as:-

Emp_ID -> Name

Emp_ID, Project_ID -> Project_name, no_of_hours

Primary Keys -> Emp_Id

Cndidate key -> Emp_Id, Project_Id

Prime attributes -> Emp_Id, Project_Id

Non- prime -> Name, Pro_name, no_of_hours

Converted Table:-

Emp_Id	Name
123	Ajay
321	Charu
546	Rajesh
765	Abhishek

Emp_Id	Project_Id	Name	No_of_hours
123	Prj_21	Speech_system	10
321	Prj_45	HR System	15
546	Prj_24	Automatic Tickets	23
765	Prj_11	NLP	16

Q3)

Ans)

Table 3.1 is not in 3NF form because it has a transitive dependency as:-

Cusrt_Id -> Cust_loc -> Cust_address

Primary key -> Cust_Id

Candidate key -> Cust_Id , Cust_name, Cust_postcode, Cust_address

Prime attributes -> Cust_Id , Cust_name, Cust_postcode, Cust_address

Non-prime -> Cust_loc

Converted Table:-

Cust_Id	Cust_Name	Cust_loc	Cust_address
25	Dell	Banglore	Whitefield
45	Lenovo	Banglore	Marathahalli
89	Acer	Mumbai	Bandra
90	Samsung	Delhi	Delhi Central

Cust_address	Cust_postcode
Whitefield	560037
Marathahalli	560046
Bandra	210067
Delhi Central	450078

Note:- Table 3.2 is already in 3NF as all attributes non-key attributes and unique

Primary key -> Building

Candidate key -> Building, Contractor, Builder, Fee

Prime attributes -> Building, Contractor, Builder, Fee

Non-prime -> none