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19BCS104.

C.S.E.

DBMS. - ASSIGNMENT.

1. (a) The 1NF would be

Id	Name	Age	Location
1	Sachin	22	Delhi
2	Ram	22	Jamshedpur
3	mike	23	chennai
4	Sameer	21	Bengaluru.
5	Vijay	22	Mumbai.

Id	Course
1	OS
1	DBMS
2	DAA
2	DBMS
3	ML
3	OS
4	DAA
4	ML
5	ml
5	OBMS

Answers:-

1) The given table is not isn 1NF as the column
'course' contains more than one value, but to be
in 1NF, a table must contain atomic values
in rows & column

4) primary key - 'Id'
candidate key(s) - No candidate keys
prime attributes - 'Id'.
Non-Prime attribute - 'Name', 'age', 'Location',
'course'.

3) In the given table, there is no transitive or
partial dependency.

1,2 → The given table is already in 1NF, because
all fields contain only scalar values.

2. The converted 2 NF form for given table will be

Emp-ID	Name	Age
101	Arun	26
102	Bobby	28
103	Suresh	32
104	Sita	24

Emp-ID	Duty-shift-ID	Duty-shift
101	1	morning
102	2	Afternoon
103	3	Night
104	1	morning

Answers -

1. The given table is not in 2NF as it is not fully functionally dependent on primary Keys as

   Emp-ID ——→ Name, Age

   Emp-ID, Duty-shift-ID ——→ Duty-shift

   So, we need to divide the table into two parts as above

2. Primary key : Emp-ID

   candidate key : Duty-shift-ID, {Emp-ID, Duty-shift-ID}

   prime attribute : Emp-ID

   Non-prime attribute : Name, Age, Duty-shift

3. There is no transitive dependency in the given table and in given table, 'Duty-shift' is dependent on by "Duty-shift-ID" which is part of Primary key. So there is a partial dependency.

2 (b). The converted 2NF table will be

Emp.ID	Name
123	Ajay
321	Chary
546	Rajesh
765	Abhishek

Emp-ID	Project-ID	Proj-Name	No. of hours
123	Prj-21	speech system	10
321	Prj-45	HR system	15
546	Prj-24	Auto. tickects	23
765	Prj-11	NLP	1c

ANS →

1. Given table is not in 2NF because it is not fully functionally dependent as:

   Emp-ID → Name

   Emp-ID, Project-ID → Proj-Name, No. of hours

   So, there are two tables with above conditions

2. Primary key - Emp-ID

   Candidate key - project-ID & {Emp-ID, project-ID}

   Prime attribute - Project-ID, Emp-ID

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

3. There is no transitive dependency in given table But there is a partial dependency, as the attributes 'Proj-Name' & 'No.-of-hours' are only dependent on 'project-ID', and attribute 'Name' is dependent on Emp-ID.

3. (a) The converted 3NF for given table

Cust-ID	Cust-Name	Cust-Postcode
25	Dell	560037
45	Lenovo	560046
89	Acer	210067
90	Samsung	4500078

cust-postcode	Cust-address	cust-loc
560037	whitefield	Banglore
560046	Marathahalli	Banglore
210067	Bandra	mumbai
4500078	Delhi-central	Delhi

Ans →

1. The given table is not in 3NF as there exist transistive dependency.

2. Primary key - cust-ID
candidate key - { cust-ID, cust-postcode }
Prime attribute- Cust-ID, Cust-Postcode
Non-Prime attribute - cust-Name, cust-address, cust-loc

3. There is a transitive dependency as follow

{cust_ID} ⟶ {cust_postcode}

{cust_postcode} ⟶ {cust_address, cust_loc}

{cust_ID} ⟶ {cust_address, cust_loc}

And,

There is a partial dependency as 'cust_address' 'cust_loc' dependent only on 'cust_postcode'.

3. (b) The converted 3 NF will be

Building	Contractor	Builder
B-2156	Tylor	Prestige
B-8765	Sandeep	miranandan
B-4567	Vishaka	Tata
↑ p.k		

Contractor	fee
Taylor	25 67891
Sandeep	38567356
Vishaka	4567990

Primary key - {contractor, fee}

ANS →

1. The given table is not in 3NF as it contains transitive dependency.

2. Primary key - Building
Candidate key - {Building, contractor}
{Building, Builder}

Prime attribute - Building, contractor, Builder

Non prime attribute - fee

3. There is transitive dependency between following attributes

$$\{building\} \longrightarrow \{contractor\}$$
$$\{contractor\} \longrightarrow \{fee\}$$

and

There is partial dependency as non-key attribute {fee} is dependent only on {contractor} attribute which is just part of candidate key { building, contractor}.