DBMS Assignment-6

Name : M. Joshasree
Roll No : 19BCS069

1. (a) The INF would be like

Id	Name	Age	location
1	Sachin	22	Delhi
2	Ram	22	Jamshedpur
3	Mike	23	chennai
4	Someer	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	DBMS

Answers:

(i) The given table is not in INF as the column "Course" contains more than one value. But, to be in INF, a table must contain atomic values in rows and columns.

(2) Primary key :- "ID"

Candidate key :- No candidate keys

Prime Attributes :- "ID"

Non-Prime attributes :- "Name", "Age", "Location", "Course".

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

(b) The given table is already in 1NF, because all the fields contain only scalar values.

Answers :-

(1) Already in 1NF

(2) Primary key :- "ID".

Candidate key :- "ID", "phone".

Primary attribute :- "ID"

Non-Prime Attributes :- "Name", [illegible], "state", "country".

(3) There is No transitive & partial dependency in the table.

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2. (a) The converted 2NF would be like :-

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	4	Morning

Answers:-

(1) The given table is not in 2NF as it is not fully functionally dependent on the primary key as

Emp-ID → Name, age

Emp-ID, Duty-shift-ID → Duty-shift

So, We need to divide the table into two parts as shown 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 the given table, "Duty-shift" is depended on "Duty-shift-ID" which is a part of primary key. So, there is a partial dependency.

(b) The Converted 2NF would be like:-

Emp-ID	Name
123	Ajay
321	chary
546	Rajesh
765	Abhishek

Emp-ID	Project-ID	Project-Name	No-of-hours
123	Prj-21	Speech-System	10
321	Prj-45	HR System	15
546	Prj-24	Automate Tickets	23
765	Prj-11	NLP	16

Answers :-

(1) The given table is not in 2NF because it is not fully functionally dependent as :

Emp_ID ⟶ Name

Emp_ID, Project_ID ⟶ Project_Name, No_of_hours

So, I have drawn 2 tables with the above candidates.

(2) Primary key :- Emp_ID

Candidate key :- Project_ID {emp_ID, Project_ID}

Primary attributes :- Project_ID, Emp_ID

Non-Prime Attributes :- Name, Project_Name, No_of_hours.

(3) There is no transitive dependency in the given table. But, There is a partial dependency, as the attributes "Project_Name" & "No_of_hours" are only dependent on "Project_ID" and the attribute "Name" is dependent on "Emp_ID".

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3. (a) The converted 3NF would be like..

Cust_ID	Cust_Name	Cust_Postcode
25	Dell	560037
45	Lenovo	560046
89	Acer	210067
90	SamSung	4500078

Cust_Post Code	Cust_Address	Cust_loc
560037	white field	Bangalore
560046	Marathalli	Bangalore
210067	Bandra	Mumbai
4500078	Delhi Centra	delhi

Answers :-

(1) The given table is not in 3NF as there exists a transitive dependency.

(2) Primary key :- cust-ID

Candidate key :- cust-ID, cust-Postcode

Prime Attribute :- cust-ID, cust-Postcode

Non-Prime Attribute :- Cust-Name, cust-Adress, Cust-loc

(3) There is a transitive dependency as follows :-

cust-ID' ⟶ cust-Postcode

cust-Postcode ⟶ cust-address, Cust-loc

∴ cust-ID ⟶ Cust-address, Cust-loc

There is a partial dependency as "cust-address" "cust-loc" depended only on "cust-postcode".

B(b) The converted 3NF would be like

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

↓

Primary key.

Contractb	Fee
Tayler	2567891
Sandeep	3567356
Vishaka	4567990

Primary key → {Contractb, Fee}

Answers:-

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

2. Primary key : Building
Candidate key : {Building, Constractb}
{Building, builder}

Prime Attribute : Building, Contractb, Builder

non-Prime attribute : Fee

3. There is transitive dependency blw the attributes:

Building → Contractb

Contractb → Fee

and, There is a partial dependency as the non-key attribute(Fee) is fully dependent on only the "Contractb" Attribute, which is just a part of Candidate key "building", "Contractb".