DBMS - LAB ASSIGNMENT-6

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① a) The 1NF would be

Primary key

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

Primary key

Id	course
1	OS
1	DBMS
2	DAA
2	DBMS
3	ML
3	OS
4	DAA
4	ML
5	ML
5	DBMS

Answers :- ~~The~~ given

1). The given table is not in 1 NF as the column "course" contains more than one value. But, to be in 1 NF, a table must contain atomic values in rows and columns.

2). Primary key(s):- "Id"

Candidate key(s) :- 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.

①. b). i) Already in 1NF

2). primary key :- 'Id'

candidate key :- '{Id", phone}

prime attribute :- Id, phone

Non-prime attributes :- Name, State, country.

3). There is no transitive dependency and partial dependency.

②a) The converted 2NF form for given table will be:

Primary

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

Primary key

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 the primary key as

Emp-ID ⟶ Name, Age

Emp_ID, Duty-Shift_ID ⟶ Duty-shift

So, we need to ~~write~~ ~~the~~ divide the table into two parts as shown above.

2).

primary key : Emp-ID, ~~Duty-shift_ID~~.

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

prime attribute :- Emp-ID, Duty-shift_ID.

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

~~3). Here, "Duty-shift_ID" is dependent~~

~~Emp-ID~~

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.

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

Primary key

Emp_ID	Name
123	Ajay
321	chary
546	Rajesh
765	Abhishek.

Primary key

Emp_ID	Project_ID	Proj_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 ⟶ Proj_Name, NO_of_hours.

So, I have drawn 2 tables with the 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 the given table.

But, There is a partial dependency, as the Attributes "Proj-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 ~~for~~ for the given table will be :-

Primary key

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

Primary key

Cust_postcode	Cust_Address	Cust_loc
560037	whitefield	Bangalore
560046	Marathahalli	Bangalore
210067	Bandra	Mumbai
4500078	Delhi central	delhi

Answers :-

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

2). primary key :- Cust_ID

Candidate key :- ~~Cust_postcode~~ {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 follows;

{Cust_ID} ⟶ {cust_postcode}

{cust_postcode} ⟶ {cust_address, Cust_loc}

∴ ~~To avoid~~ {cust_ID} ⟶ {cust_address, cust_loc}.

And,

There is pastial dependency as "Cust_Name" is depended only on "Cust_ID" and

There is a pastial dependency as "Cust_address", "cust_loc" depended only on "cust_postcode."

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③. b) The convested 3NF will be as.

Building	contractor	Builder
B-2156	Taylor	prestige
B-8765	Sandeep	Hiranandani
B-4567	Vinhaka	Tata.

↓
primary key

Contractor	Fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990.

primary key — {contractor, Fee}

Answers:-

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 the following attributes;

{Building} ⟶ {contractor}

{contractor} ⟶ {Fee}

And,
There is a partial dependency as the non-key attribute {Fee} is dependent on only the {contractor} attribute, which is just a part of candidate key {Building, contractor}