DBMS - LAB ASSIGNMENT 6

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1) a INF

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	DBMS

i, A table is said to be in INF if it doesn't contain multivalued or composite attribute, It should contain only single-valued attributes.

The given table is not in INF because it has multivalue attribute "Course".

ii, Primay key : Id

Candidate key : -

Prime attribute : Id

Non-prime : Name, Age, Location, Course.

iii, There is no transitive and partial dependency in the table.

i) b = The given table is already in INF because all attributes in table are single-valued. It has only scalar values

2) a Converted Table 2 NF table

Table-1

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

Table-2:

Emp_ID	Duty_Shift_ID	Duty_Shift
101	1	Morning
102	2	Afternoon
103	3	Night
104	1	Morning

Answers:

i, A table is said to be in 2NF if table is already in 1NF and all the non-key attributes in the table must be functionally dependent on entire primary key.

The table is not fully functionally dependent on the primary key as

Emp_ID → Name, Age

Emp-ID, Duty-Shift-ID → Duty-Shift.

So, the table is divided as above.

ii, Primary keys : Emp_ID

Candidate keys : Duty_Shift_ID, {Emp-ID, Duty-Sh

Prime Attributes : Emp-ID

Non-prime attributes: Name, Age, Duty_Shift.

iii, There is no transitive dependency in the table and "Duty-Shift" is dependent on "Duty-Shift-ID" which is part of primary key.

2) b) Converted 2NF table

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

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

Answers:

i) The table is not in 2NF because it is not fully dependent as

Emp_ID → Name

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

So, we have 2 table satisfying above condition

ii) 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

iii) There is no transitive dependency. and "Proj_Name", "No_of_hours" is dependent on Project_ID which is a part of primary key and the attribute "Name" is dependent on "Emp_ID"

3) a Converted 3NF 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	White field	Bangalore
560046	Marathalli	Bangalore
210067	Bandra	Mumbai
4500078	Delhi central	Delhi

Answers:

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

ii)

Primary key : cust_ID

Candidate key : {cust_ID, cust_post code}

Prime attribute : cust_ID , Cust post code

Non-prime attribute : Cust_Name, cust_address, cust_loc.

iii) 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" does dependent only on "cust_postcode"

3) b Converted 3NF:

Building	Contractor	Builder
B_2156	Taylor	Prestige
B_8765	Sandeep	Mirannandan
B_4567	Vishaka	Tata

↳ Primary key.

Contractor	Fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990

Primary key

i) It is not in 3NF as it has transitive dependency.

ii) Primary key: Building

Candidate key: {Buiding, Contractor}
{Buiding, Builder}

Prime attribute: Building, Contractor, Builder

Non prime attribute: Fee

iii) There is transitive dependency between Building & Fee

Building → Contractor
Contractor → Fee.

There is a partial dependency as "Fee" is dependent "contractor" which is a part of Candidate key {Building, Contractor}