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19BCS096

Normalization
DBMS.

1) a) The INF 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	Courses
1	OS
1	DBMS
2	DAA
2	DBMS
3	ML
3	OS
4	DAA
4	ML
5	ML
5	DBMS

Answer.

① The given table is not in INF as the column "course" contain more than one value. So to be in INF. a table must contains atomic value in rows and columns.

② Primary key: "Id"
No candidate keys.
Prime attribute :- "Id"
Non-prime attribute = "Name", "Age", "location" "Course".

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

1)b) The given tables is already in INF, because all the fields contain only scalar values.

(2) a). The corrected 2NF form for given table will be.

Emp-ID.	Name	Age.
101	Arun	26
102	Babby	28
103	Sruthi	32
104	Sita	24

Emp-ID	Duty-Shift-ID.	Duty-Shift.
101	1	Morning
102	2	Afternoon
103	3	Night
104	1	Morning.

Answer:

1) The given table is not in 2NF as it is not fully functional 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 dependent 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.

Emp-ID	Name
123	Ajay.
321	Vijay
546	Rajesh
765	Abhishek.

Emp-ID	Project-ID	Proj-Name	No.-of-hours.
123	Prj-21	Speech Syste	10
321	Prj-45	HR System	15
546	Prj-24	Autonomous Vehicle	23
765	Prj-11	NLP	16.

Answer.

(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 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.