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Regn. No.: 19BCS063

DBMS Lab Assignment - Normalization

1NF Normalization

1) The table given in the question was not in 1NF as the course attribute was multi-valued. Thus, we separated the column and kept it in a different table.

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 here is {ID}

The table added:

ID	Course
1	OS
1	DBMS
2	DAA
2	DBMS
3	ML
3	OS
4	DAA
4	ML
5	ML
5	DBMS

The Primary key here is {ID, Course}

2) The table given is already in 1NF as there is no multi-valued attribute.

2NF Normalization

1) The table given in the question is not in 2NF form as Duty_Shift has partial dependency as it solely depends on Duty_Shift_ID rather than Emp_ID

Emp_ID	Name	Age	Duty_Shift_ID
101	Arun	26	1
102	Bobby	28	2
103	Suresh	32	3

| 104 | Sita | 24 | 1 |

Primary Key here is {Emp_ID}

The table added:

Duty_Shift_ID	Duty_Shift
1	Morning
2	Afternoon
3	Night

Primary Key here is {Duty_Shift_ID}

2) The table given in the question is not in 2NF as Project_name and No_of_hours solely depend on Project_ID rather than Emp_ID resulting in partial dependency

Emp_ID	Project_ID	Name
123	Prj_21	Ajay
321	Prj_45	Charu
546	Prj_24	Rajesh
765	Prj_11	Abhishek

Primary Key here is {Emp_ID}

The table added:

Project_ID	Proj_Name	No_of_hours
Prj_21	Speech System	10
Prj_45	HR System	15
Prj_24	Automatic Tickets	23
Prj_11	NLP	16

Primary Key here is {Project_ID}

3NF Normalization

1) The table given in the question is not in 3NF as Cust_Address and Cust_loc attributes depend transitively i.e., on a non-primary key attribute which is Cust_Postcode.

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

Primary Key here is {Cust_ID}

The table added:

Cust_Postcode	Cust_Address	Cust_loc
560037	Whitefield	Bangalore
560046	Marathahalli	Bangalore
210067	Bandra	Mumbai
4500078	Delhi central	Delhi

Primary Key here is {Cust_Postcode}

2) The table given in the question is not in 3NF as the fee depends on a non-prime attribute contractor.

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

The primary key here is {Building}

The table added:

Contractor	Fee
Taylor	2567891
Sandeep	3567356
Vishaka	4567990

The primary key here is {Contractor}