DBMS LAB ASSIGNMENT - 6

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Note: For each table explain the following
1. Explain why the tables are not in 1nf, 2nf and 3nf.
2. What are the primary keys and candidate keys, prime and non-prime attributes of the table.
3. How the transitive and partial dependency is taking place.

1. Convert the table to 1NF

Id	Name	Age	Location	Course
1	Sachin	22	Delhi	OS, DBMS
2	Ram	22	Jamshedpur	DAA, DBMS
3	Mike	23	Chennai	ML, OS
4	Sameer	21	Bengaluru	DAA, ML
5	Vijay	22	Mumbai	ML,DSMS

After Conversion :

Id	Name	Age	Location	Course
1	Sachin	22	Delhi	OS
1	Sachin	22	Delhi	DBMS
2	Ram	22	Jamshedpur	DAA
2	Ram	22	Jamshedpur	DBMS
3	Mike	23	Chennai	ML
3	Mike	23	Chennai	OS
4	Sameer	21	Bengaluru	DAA
4	Sameer	21	Bengaluru	ML
5	Vijay	22	Mumbai	ML
5	Vijay	22	Mumbai	DSMS

1) As the Course attribute consists of more than one value it is not in 1nf.

2) Assuming table not for the given data but normally like Name can have similar rows

Before Conversion :

Primary Key : Id
Candidate Key : Id
Prime Attributes : Id
Non-Prime Attributes : Name, Age, Location, Course.

After Conversion :

Primary Key : Id and Course(combined to be one primary key)
Candidate Key : Id and Course(combined to be one primary key)
Prime Attributes : Id, Course
Non-Prime Attributes : Name, Age, Location.

3) Transitive dependency : Name -> Age, etc
Partial Dependency : Name -> Id ,etc

ID	Name	Phone	State	Country
1	Kailley	9716245698	Karnataka	INDIA
2	Janet	9876543261	Maharashtra	INDIA
3	Robert	9456735678	Andra Pradesh	INDIA
4	Thomas	9966744381	Kerala	INDIA

After Conversion :

ID	Name	Phone	State	Country
1	Kailley	9716245698	Karnataka	INDIA
2	Janet	9876543261	Maharashtra	INDIA
3	Robert	9456735678	Andra Pradesh	INDIA
4	Thomas	9966744381	Kerala	INDIA

1) No difference.

2) Assuming table not for the given data but normally like Name can have similar rows
Before and After Conversion :

Primary Key : Id
Candidate Key : Id
Prime Attributes : Id,Phone
Non-Prime Attributes : Name, State, Country.

3) Transitive dependency : Name -> State
Partial Dependency : Name -> Id

2. Convert to 2nf
A)

Emp_ID	Duty_shift_ID	Name	Age	Duty_shift
101	1	Arun	26	Morning
102	2	Bobby	28	Afternoon
103	3	Suresh	32	Night
104	1	Sita	24	Morning

After Conversion :

Emp_ID	Age
101	26
102	28
103	32
104	24

1) As the rule “no non-prime attribute is dependent on the proper subset of any candidate key of the table” was violated the table was changed according to comply with the rule.
2) Assuming table not for the given data but normally like Age can have similar rows (or) for ideal case
Before Conversion :

Primary Key : Emp_ID
Candidate Key : Emp_ID
Prime Attributes : Emp_ID
Non-Prime Attributes : Duty_shift_ID, Name, Age, Duty_shift.

After Conversion :

Primary Key : Emp_ID
Candidate Key : Emp_ID
Prime Attributes : Emp_ID
Non-Prime Attributes : Age.

3) Transitive dependency : None
Partial Dependency : Emp_ID -> Age

B)

Emp_ID	Project_ID	Name	Proj_Name	No_of_hours
123	Prj_21	Ajay	Speech_system	10
321	Prj_45	Charu	HR System	15
546	Prj_24	Rajesh	Automate Tickets	23
765	Prj_11	Abhishek	NLP	16

After Conversion :

Emp_ID	No_of_hours
123	10
321	15
546	23
765	16

1) As the rule “no non-prime attribute is dependent on the proper subset of any candidate key of the table” was violated the table was changed according to comply with the rule.
2) Assuming table not for the given data but normally like Age can have similar rows (or) for ideal case
Before Conversion :

Primary Key : Emp_ID
Candidate Key : Emp_ID
Prime Attributes : Emp_ID
Non-Prime Attributes : Project_ID, Name, Proj_Name, No_of_hours.

After Conversion :

Primary Key : Emp_ID
Candidate Key : Emp_ID
Prime Attributes : Emp_ID
Non-Prime Attributes : No_of_hours.

3) Transitive dependency : None
Partial Dependency : Emp_ID -> No_of_hours.

3. Covert to 3NF

A)

Cust_ID	Cust_name	Cust_postcode	Cust_address	Cust_loc
25	Dell	560037	Whitefield	Bangalore
45	Lenovo	560046	Marathahalli	Bangalore
89	Acer	210067	Bandra	Mumbai
90	Samsung	4500078	Delhi	CentralDelhi

After Conversion :

Cust_ID	Cust_name
25	Dell
45	Lenovo
89	Acer
90	Samsung

1) As there should be no transitive dependency for 3nf it had to be changed to convert it to 3nf.
2) Assuming table for ideal case where name address location postcode can be similar for other data
Before Conversion :

Primary Key : Cust_ID
Candidate Key : Cust_ID
Prime Attributes : Cust_ID

Non-Prime Attributes : Cust_name, Cust_postcode, Cust_address, Cust_loc.

After Conversion :

Primary Key : Cust_ID
Candidate Key : Cust_ID
Prime Attributes : Cust_ID
Non-Prime Attributes : Cust_name

3) Only for after conversion
Transitive dependency : None
Partial Dependency : Cust_ID -> Cust_name.

B)

Building	Contractor	Builder	Fee
B_2156	Taylor	Prestige	2567891
B_8765	Sandeep	Hiranandani	3567356
B_4567	vishaka	Tata	4567990

After Conversion :

Building	Fee
B_2156	2567891
B_8765	3567356
B_4567	4567990

1) As there should be no transitive dependency for 3nf it had to be changed to convert it to 3nf.
3) Assuming table for ideal case where contractor and builder and fee can be same later data.
Before Conversion :

Primary Key : Building
Candidate Key : Building
Prime Attributes : Building

Non-Prime Attributes : Contractor, Builder, Fee.

After Conversion :

Primary Key : Building
Candidate Key : Building
Prime Attributes : Building
Non-Prime Attributes : Fee.

4) Only for after conversion
Transitive dependency : None
Partial Dependency : Building -> Fee.