

DBMS LAB ASSIGNMENT-6

Q1.

1. ~~name~~ ~~name~~

- a) The table is not in 1NF, because the 'course' attribute is non-scalar.

Table - 1				Table - 2	
Id	Name	Age	Location	Id	Name Course
1	sachin	22	Delhi	1	OS
2	Ram	22	Jamshedpur	1	DBMS
3	Mike	23	chennai	2	DAA
4	Sameer	21	Bengaluru	2	DBMS
5	Vijay	22	Mumbai	3	ML
				3	OS
				4	DAA
				4	ML
				5	ML
				5	DBMS

- b) Primary key is Id ; ^{candidate key is ID,} ~~Name, Age, Location~~, & ~~course~~ are candidate keys ; Id is the prime attribute whereas others are non-prime.

- c) Partial Dependencies:
 $\{Id\} \rightarrow \{Course\}$
 $\{Id\} \rightarrow \{Name, Age, Location\}$
 $\{Name\} \rightarrow \{Age, Location\}$

No transitive dependencies because a tuple can be extracted by using just 'Id' attribute.

Q1.

2.

- a) The table is already in 1NF.
- b) Primary key is Id, ^{candidate key is Id,} ~~name, phone & state~~ ~~are candidate keys~~, Id is prime attribute and name, phone and state are non-prime attributes.
- c) $\{ \text{Id} \} \rightarrow \{ \text{Name, phone, state, country} \}$
 $\{ \text{Name} \} \rightarrow \{ \text{phone, state, country} \}$
 $\{ \text{state} \} \rightarrow \{ \text{country} \}$.
- No transitive dependency present.

Q2.

1. a) The table is not in 2NF because "Duty-shift" attribute doesn't belong to any key and is not dependent on Emp-ID, & it contains 2 Primary Key ^{columns}.

Table - 1				Table - 2		
Emp-ID	^{duty shift-ID} ✓	Name	Age	Emp-ID	Duty-shift-ID	Duty-shift
101	+	Arun	26	101	1	Morning
102	+	Bobby	28	102	2	Afternoon
103	+	Suresh	32	103	3	Night
104	+	Sita	24	104	1	Morning

- b) Primary key is Emp-ID, ~~Duty-shift-ID~~, Emp-ID ^{are candidate} ~~are composite~~ keys, ~~Name, Age & Duty shift~~ are prime attributes and others are non-prime attributes.
- c) $\{ \text{Emp-ID} \} \rightarrow \{ \text{Duty-shift-ID, Name, Age} \}$
 $\{ \text{Duty-shift-ID} \} \rightarrow \{ \text{Duty-shift} \}$
 $\{ \text{Name} \} \rightarrow \{ \text{Age} \}$.

Q2.

2. a) The table is not in 2NF because 'No-of-hours' is not dependent on Emp-ID.

Table - 1			Table - 2		
Emp-ID	Project-ID	Name	Project-ID	Project-Name	No of hours
123	Prj-21	Ajay	Prj-21	Speech Sys	10
321	Prj-45	charu	Prj-45	HR System	15
546	Prj-24	Rajesh	Prj-24	Automate tickets	23
765	Prj-11	Abhishek	Prj-11	NLP	16

↑
Emp-ID

123

321

546

765

- b) Emp-ID is Primary key, candidate keys are Emp-ID & Project-ID, prime attributes are Emp-ID & Project-ID, Name, Project-Name & No. of hours are non-prime attributes.

Project-ID

- c) $\{Emp-ID\} \rightarrow \{Name\}$
 $\{Project-ID\} \rightarrow \{Project-Name, No-of-hours\}$

Q3.

2. a) It is not in 3NF because 'Fee' is transitively dependent on Building.

- b) Primary key is Building, Candidate keys ~~are~~ is Building, prime attributes ~~are~~ is Building & non-prime attributes are Contractor, Builder & fee.

Table - 1		
Building	Builder	Contractor
B-2156	Prestige	Taylor
B-8765	Hiranandani	Sandeep
B-4567	Tata	Vishaka

Table - 2	
Contractor	fee
Taylor	2567891
sandeep	3567356
Vishaka	4567996

- c) $\{ \text{Building} \} \rightarrow \{ \text{Builder, Contractor} \}$
 $\{ \text{Contractor} \} \rightarrow \{ \text{fee} \}$

Q3.

1. a) It is not in 3NF because 'Cust-address' & 'Cust-loc' is transitively dependent on Cust-postcode.

- b) Primary key is Cust-ID, prime attributes ~~are~~ is Cust-ID and non-prime attributes are ~~is~~ Cust-Name, Cust-postcode, Cust-address & Cust-loc.

Table - 1		
Cust-ID	Cust-Name	Cust-Postcode
25	Dell	560037
45	lenovo	560046
89	Acer	210067
90	Samsung	4500078

Table - 2	Cust-Postcode	Cust-Address	Cust-loc
	560037	white field	Bangalore
	560046	Marathahali	Bangalore
	210067	Bandra	Mumbai
	4500078	Delhi Central	Delhi

- c) $\{ \text{Cust-ID} \} \rightarrow \{ \text{Cust-Name, Cust-Postcode} \}$
 $\{ \text{Cust-Postcode} \} \rightarrow \{ \text{Cust-Address, Cust-loc} \}$