DBMS Lab Assignment 6

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1.(a)

1) The first table is not in 1nf since the column “Course” contains more than one entry per tuple.

2) Primary keys: Id

Candidate keys: Id, Name, location

Prime: Id

Non-prime: Name, location, Age, Course

3) Transitive dependency: Id->Name and Name->Course, then Id->Course

Partial dependency:

Prime attributes are: Id

Non-prime attributes are: Name, location, Age, Course

All non-prime attributes can be determined by “Id”, which makes the relation Partial Dependent.

One of the possible Converted Tables:

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

(b)

1) The Second table is already in 1NF since each table cell already has a single value and also each record is already unique.

2) Primary keys: Id

Candidate keys: Id, Name, Phone (in case multiple sim cards can be owned)

Prime: Id, Phone

Non-prime: Name, State, Country

3) Transitive dependency: Phone->State and State->Country

Partial dependency:

Prime attributes are: Id, Phone

Non-prime attributes are: Name, Phone, State, Country

All non-prime attributes can be determined by “Id” and “Phone”, which makes the relation Partial Dependent.

2.(a)

1) The first table was not in 2nf since there were two primary keys “Emp_ID” and “Duty_shift_ID”.

2) Primary keys: Emp_Id

Candidate keys: Emp_Id, Shift_ID, Name

Prime: Emp_Id, Shift_ID

Non-prime: Name, Age, Duty_shift

3) Transitive dependency: Emp_ID->Name and Name-> Duty_shift, then Emp_ID->Duty_shift

Partial dependency:

Prime attributes are: Emp_Id

Non-prime attributes are: Name, Age, Duty_shift

One of the possible Converted Tables:

Emp_ID	**Name**	**Age**	**Duty_shift**
101	Arun	26	Morning
102	Bobby	28	Afternoon
103	Suresh	32	Night
104	Sita	24	Morning

(b)

1) The second table was not in 2nf since there were two primary keys "Emp_ID" and "Project_ID".

2) Primary keys: Emp_Id

Candidate keys: Emp_Id, Project_ID, Name

Prime: Emp_Id, Project_ID

Non-prime: Name, Proj_Name, No_of_hours

3) Transitive dependency: Emp_ID-> Project_ID and Project_ID -> Project_ID, then Emp_ID-> Proj_Name

Partial dependency:

Prime attributes are: Emp_Id, Project_ID

Non-prime attributes are: Name, Proj_Name, No_of_hours

One of the possible Converted Tables:

Emp_ID	**Name**	**Proj_Name**	**No_of_hours**
123	Ajay	Speech_system	10
321	Charu	HR System	15
546	Rajesh	Automate Tickets	23
765	Abhishek	NLP	16

3.(a)

1) The second table was not in 2nf since the transitive dependencies can be found.

2) Primary keys: Cust_Id

Candidate keys: Cust_Id, Cust_name

Prime: Cust_Id

Non-prime: Cust _name, Cust _postcode, Cust _address, Cust_loc

3) Transitive dependency: Cust _loc-> Cust _address and Cust _address -> Cust _postcode, then Cust _loc-> Cust _postcode

Partial dependency:

Prime attributes are: Cust_Id

Non-prime attributes are: Cust _name, Cust _postcode, Cust _address, Cust_loc

A few Converted Tables:

Cust_ID	**Cust_postcode**
25	560037
45	560046
89	210067
90	4500078

Cust_ID	**Cust_loc**
25	Bangalore
45	Bangalore
89	Mumbai
90	Delhi

(b)

1) The second table was not in 2nf since the transitive dependencies can be found.

2) Primary keys: Building

Candidate keys: Building, Contractor

Prime: Building, Contractor

Non-prime: Builder, Fee

3) Transitive dependency: Builder-> Building and Contractor -> Builder, then Contractor-> Building

Partial dependency:

Prime attributes are: Building, Contractor

Non-prime attributes are: Builder, Fee

One of the possible Converted Tables:

Contractor	**Fee**
Taylor	2567891
Sandeep	3567356
Vishaka	4567990