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1. For all database scenarios of Lab 07 (Assembly Election, Lab-Projects, Library) , do following –

a. Derive minimal set of functional dependencies and write in canonical form as discussed in lectures.

Ans :- **A …. In assembly election**

Party
Name → symbol
Name → projected cm

Candidate
Name → vote count
Name → asset value
Name → party name

Constituency
Name → no. of voters
Name → vote casted

Fights
Votecount,contestant _name → vote count

B….. In lab project
Eval_parmas_stage
Param_name,stage_name → max marks

Evaluated
pgroup id → pname
Sid → sname
pgroupid ,sid → marks

Project_group
groupid → title
Groupid → tid

Teaching assistant
Tid → ta_name

Student
Sid → sname
Sid → groupid

C… Library
Book
Isbn → title
Isbn → publisher
Isbn → author
Isbn → year

Book_copy
Accession no → location
Accession no → status

Library member
Id → name
Id → email

Member category
Type → max_days
Type → max books

Issue
Isssue_date, accesion_no, id → return_due_date
Issue_date , assesion_no → Actual_due_date

Issued to
Accession_no, mem_id

b. Determine Normal form of each relation that you created in Lab06 (BCNF is desirable normal form) if a relation not found in BCNF, see if you can convert the relation into BCNF.

Ans :- Ans :- **A …. In assembly election**

Party = ***bcnf***

Candidate = ***bcnf***

Constituency = ***bcnf***

B….. In lab project

Eval_parmas_stage = **bcnf**

Evaluated = 1**nf**

SOLUTION. And to convert it we need to make

R1 = pgroup id → pname

R2 = Sid → sname

R3 = pgroupid ,sid → marks

Project_group= **bcnf**

Teaching assistant =**bcnf**

Student = **bcnf**

2. **Consider the scenario of Indian Railways. Suppose following are attributes that have been identified to store partial information for schedules of various trains. Meanings of relevant attributes are elaborated below. If meaning of some attribute is not clear to you from description here; find out meaning of such attribute yourself. Given this set of attributes with their meaning,**

a. Discover Functional Dependencies. Ensure that set is minimal and written canonical

Form.

Ans :-

1 .Train Number = a
2. Train_Run_Day = b

[note that train may not run on all days of a week]
Source_Station_Code = c

3. Destination_Station_Code = d

4. Station_Code – any other station on train route = e

5. Date_of_Run – a particular date of run = f

6. Scheduled_Arrival_Time = g

7. Scheduled_Departure_Time = h

8. Expected_Arrival_Time = i

A,f → b
A → c
A → d
A,e → g
A,e → h
A,e → i
Key = A,E,F

b. Derive relations using one of the decomposition algorithm discussed in lectures.
Ans :- the given relation in 1st normal form from

R1 = (A,F,B)
A,f → b
KEY = F,A

R2 = (A,C,D)
A → c
A → d
KEY= A

R3 = (A,E,G,H,I,F)
A,e → g
A,e → h
A,e → i
KEY = A,E,F