

# Functional Dependencies with Anomalies

## 1. Customers (cid, cname, cemail, ccontact, caddress)

cid -> cname

cid -> cemail

cid -> ccontact

cid -> caddress

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here.
- Deletion Anomaly:-There are no deletion anomaly here.

## 2. Vehicles (vehicle\_id, engine\_no, regis\_no, year\_purch, cid, model\_id, manu\_id, manu\_id, type\_id)

vehicle\_id -> engine\_no

vehicle\_id -> regis\_no

vehicle\_id -> year\_purch

vehicle\_id -> cid

vehicle\_id -> model\_id

vehicle\_id -> manu\_id

vehicle\_id -> type\_id

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here because we had used ON UPDATE CASCADE in DDL for cid.
- Deletion Anomaly:-There are no deletion anomaly here because we had used ON DELETE RESTRICT in DDL for cid.

### 3. vehicle\_type (type\_id, wheels, type\_name)

type\_id -> wheels

type\_id -> type\_name

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here.
- Deletion Anomaly:-There are no deletion anomaly here.

### 4. vehicle\_models (model\_id, model\_name, unit\_type, cubic\_cm, manu\_id, type\_id)

model\_id -> model\_name

model\_id -> unit\_type

model\_id -> cubic\_cm

model\_id -> manu\_id

model\_id -> type\_id

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here because we had used ON UPDATE CASCADE in DDL for manu\_id and type\_id.
- Deletion Anomaly:-There are no deletion anomaly here because we had used ON DELETE RESTRICT in DDL for manu\_id and type\_id.

### 5. service\_providers (pro\_id, pro\_name, pro\_address, pro\_branch, pro\_contact, pro\_email)

pro\_id -> pro\_name

pro\_id -> pro\_address

pro\_id -> pro\_branch

pro\_id -> pro\_contact

pro\_id -> pro\_email

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here.
- Deletion Anomaly:-There are no deletion anomaly here.

6. services (service\_id, service\_info, service\_mode, entry\_time, exit\_time, vehicle\_id, staff\_id, pay\_id)

service\_id -> service\_info

service\_id -> service\_mode

service\_id -> entry\_time

service\_id -> exit\_time

service\_id -> vehicle\_id

service\_id -> staff\_id

service\_id -> pay\_id

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here because we had used ON UPDATE CASCADE in DDL for vehicle\_id,staff\_id,pay\_id.
- Deletion Anomaly:-There are no deletion anomaly here because we had used ON DELETE RESTRICT in DDL for cid for vehicle\_id,staff\_id,pay\_id.

7. staff\_details (staff\_id, staff\_name, staff\_contact, pro\_id)

staff\_id -> staff\_name

staff\_id -> staff\_contact

staff\_id -> pro\_id

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here because we had used ON UPDATE CASCADE in DDL for pro\_id.
- Deletion Anomaly:-There are no deletion anomaly here because we had used ON DELETE RESTRICT in DDL for pro\_id.

#### 8. payments (pay\_id, amount, pay\_mode)

pay\_id -> amount

pay\_id -> pay\_mode

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here.
- Deletion Anomaly:-There are no deletion anomaly here.

#### 9. manufacturers(manu\_id, manu\_name, manu\_address, manu\_contact, manu\_email)

manu\_id -> manu\_name

manu\_id -> manu\_address

manu\_id -> manu\_contact

manu\_id -> manu\_email

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here.
- Deletion Anomaly:-There are no deletion anomaly here.

#### 10. feedbacks(feed\_id, feed\_des, feed\_ratings, service\_id)

feed\_id -> feed\_des

feed\_id -> feed\_ratings,

feed\_id -> service\_id

- Insert Anomaly:- There are no insert anomaly here.
- Modify Anomaly:-There are no modify anomaly here because we had used ON UPDATE CASCADE in DDL for service\_id.
- Deletion Anomaly:-There are no deletion anomaly here because we had used ON DELETE RESTRICT in DDL for service\_id.

# Logic Of How We arrived at BCNF

- At first we started with ER diagram and viewed each and every entity as object.
- After that we made Relational Model diagram.
- After making relational model we had checked that Is Primary Key available for each and every relation and we were able to found to primary key for each relation.
- Than we had checked foreign key for each “Total Participant” relation.
- Than we fired DDL.
- We made relational algebra and queries as per project requirements.
- Than we made Functional Dependencies and than check for normalization.
- We found that our tables are already in BCNF form.