

# Group 5

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### UN-NORMALISED schema

```
NETWORK_PROVIDER(NETWORK_ID INTEGER, NETWORK_NAME CHAR(30), PRIMARY KEY (NETWORK_ID));
```

```
SHOP(SHOP_ID CHAR(10), SNAME CHAR(30), LOCATION CHAR(30), PRIMARY KEY (SHOP_ID));
```

```
CUSTOMER(CID CHAR(10), CNAME CHAR(30), PRIMARY KEY (CID));
```

```
SALESPERSON(SPID CHAR(10), SPNAME CHAR(30), SALARY REAL, DOJ DATE, PRIMARY KEY (SPID));
```

```
ITEM_PURCHASE(CID CHAR(10), ITEM_ID CHAR(10), DISCOUNT REAL, DATE_PURCHASED DATE, PRIMARY KEY (CID, ITEM_ID), FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
MOBILE( ITEM_ID CHAR(10), CID CHAR(10), PRICE REAL, DOP DATE, MODEL CHAR(10), PRIMARY KEY (ITEM_ID, CID), FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
LANDLINE( ITEM_ID CHAR(10), CID CHAR(10), PRICE REAL, DOP DATE, MODEL CHAR(10), PRIMARY KEY (ITEM_ID, CID), FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
CELLACCESSORIES( ITEM_ID CHAR(10), CID CHAR(10), PRICE REAL, DOP DATE, TYPE CHAR(10), QUANTITY INTEGER, MODEL CHAR(10), PRIMARY KEY (ITEM_ID, CID), FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
SIM( ITEM_ID CHAR(10), CID CHAR(10), DOP DATE, TYPE CHAR(10), NETWORK_NAME CHAR(30), PRIMARY KEY (ITEM_ID, CID), FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
RECHARGE_CARDS( ITEM_ID CHAR(10), CID CHAR(10), PRICE REAL, DOP DATE, NETWORK_NAME CHAR(30), PRIMARY KEY (ITEM_ID, CID), FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
EARN_POLICY(INCOME_DAILY INTEGER,AMTPAID INTEGER,PROFIT_TOTAL INTEGER,
SHOP_ID CHAR(10),PRIMARY KEY (INCOME_DAILY,SHOP_ID), FOREIGN KEY
(SHOP_ID) REFERENCES SHOP ON DELETE CASCADE);
```

```
SELLS( SHOP_ID CHAR(10), ITEM_ID CHAR(10), PRIMARY KEY (SHOP_ID,ITEM_ID),
FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE CASCADE, FOREIGN KEY
(ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE SET NULL);
```

```
WORKS(SPID CHAR(10), SHOP_ID CHAR(10), PRIMARY KEY(SPID,SHOP_ID) ,
FOREIGN KEY(SPID) REFERENCES SALESPERSON, FOREIGN KEY (SHOP_ID)
REFERENCES SHOP ON DELETE CASCADE);
```

```
DETAILS_SIM(NAME CHAR(30), ADDRESS_PROOF INTEGER,PHOTOS INTEGER, CID
CHAR(10), SHOP_ID CHAR(10), PRIMARY KEY (CID,SHOP_ID), FOREIGN KEY (CID)
REFERENCES CUSTOMER ,FOREIGN KEY(SHOP_ID) REFERENCES SHOP);
```

```
SEND_DETAILS(NAME CHAR(30), ADDRESS_PROOF INTEGER, PHOTOS INTEGER, CID
CHAR(10), SHOP_ID CHAR(10),NETWORK_ID CHAR(10),PRIMARY KEY
(CID,NETWORK_ID,SHOP_ID),FOREIGN KEY (CID) REFERENCES CUSTOMER , FOREIGN
KEY(NETWORK_ID) REFERENCES NETWORK_PROVIDER, FOREIGN KEY(SHOP_ID)
REFERENCES SHOP);
```

```
ADMINISTRATING(AD_ID CHAR(10), AD_NAME CHAR(30), SHOP_ID CHAR(10),
PRIMARY KEY (AD_ID) , FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE
CASCADE ON UPDATE CASCADE);
```

```
SUPERVISES(AD_ID CHAR(10), ITEM_ID CHAR(10), CID CHAR(10), DOC DATE,
PRIMARY KEY(CID,ITEM_ID,AD_ID), FOREIGN KEY (CID) REFERENCES CUSTOMER,
FOREIGN KEY (ITEM_ID) REFERENCES ITEM, FOREIGN KEY (AD_ID) REFERENCES
ADMINISTRATING);
```

INTEGRITY CONSTRAINTS

IN the table DETAILS\_SIM,SEND\_DETAILS PHOTOS AND ADDRESS\_PROOF takes only 1.or else they will not be inserted. ITS just like the boolean value.

## functional dependencies.....

In sales person table salary attribute is dependent on experience which is inturn calculated from DOJ . so there exist a functional dependency which is not in 3 NF.

so SALESPERSON TABLE CAN BE DONE LOSELESS DECOMPOSITION INORDER TO SATISY 3 NF.

```
SALESPERSON(SP_ID,DOJ,SPNAME)
-----PRIMARY KEY(SP_ID)
SP_SALARY(DOJ,SALARY)
-----PRIMARY KEY(DOJ)
```

For the following tables the key itself derives all other feilds in the table. IT follows 3NF.

```

NETWORK_PROVIDER    NETWORK_ID->---
SHOP                SHOP_ID->-----
CUSTOMER            CID->-----
MOBILE              (ITEM_ID,CID) ->-----
LANDLINE            (ITEM_ID,CID) ->-----
CELL_ACCESSORIES    (ITEM_ID,CID) ->-----
SIM                 (ITEM_ID,CID) ->-----
RECHARGE_CARDS      (ITEM_ID,CID) ->-----
ADMINISTRATING      AD_ID
ITEM_PURCHASE        CID,ITEM_ID
SEND_DETAILS         CID  ->-----
DETAILS_SIM          CID   ->-----

```

## NORMALISED SCHEMA.....

```

NETWORK_PROVIDER(NETWORK_ID INTEGER, NETWORK_NAME CHAR(30), PRIMARY KEY
(NETWORK_ID));

```

```

SHOP(SHOP_ID CHAR(10), SNAME CHAR(30), LOCATION CHAR(30), PRIMARY KEY
(SHOP_ID));

```

```

CUSTOMER(CID CHAR(10), CNAME CHAR(30), PRIMARY KEY (CID));

```

```

SALESPERSON(SPID CHAR(10), SPNAME CHAR(30), DOJ DATE, PRIMARY KEY
(SPID));

```

```

SP_SALARY(DOJ DATE,SALARY REAL,PRIMARY KEY (DOJ));

```

```

ITEM_PURCHASE(CID CHAR(10),ITEM_ID CHAR(10),DISCOUNT REAL,DATE_PURCHASED
DATE,PRIMARY KEY(CID,ITEM_ID), FOREIGN KEY (CID) REFERENCES CUSTOMER ON
DELETE SET NULL ON UPDATE CASCADE);

```

```

MOBILE( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP DATE, MODEL
CHAR(10), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID) REFERENCES
ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON
DELETE SET NULL ON UPDATE CASCADE);

```

```

LANDLINE( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP DATE, MODEL
CHAR(10), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID) REFERENCES
ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID) REFERENCES CUSTOMER
ON DELETE SET NULL ON UPDATE CASCADE);

```

```

CELLACCESSORIES( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP DATE,
TYPE CHAR(10),QUANTITY INTEGER, MODEL CHAR(10), PRIMARY KEY (ITEM_ID,CID)
, FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE,
FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE
CASCADE);

```

```

SIM( ITEM_ID CHAR(10), CID CHAR(10), DOP DATE, TYPE CHAR(10) ,
NETWORK_NAME CHAR(30),PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID)
REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID) REFERENCES
CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

```

```
RECHARGE_CARDS( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP DATE,  
NETWORK_NAME CHAR(30), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID)  
REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID) REFERENCES  
CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);
```

```
EARN_POLICY(INCOME_DAILY INTEGER,AMTPAID INTEGER,PROFIT_TOTAL INTEGER,  
SHOP_ID CHAR(10),PRIMARY KEY (INCOME_DAILY,SHOP_ID), FOREIGN KEY  
(SHOP_ID) REFERENCES SHOP ON DELETE CASCADE);
```

```
SELLS( SHOP_ID CHAR(10), ITEM_ID CHAR(10), PRIMARY KEY (SHOP_ID,ITEM_ID),  
FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE CASCADE, FOREIGN KEY  
(ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE SET NULL);
```

```
WORKS(SPID CHAR(10), SHOP_ID CHAR(10), PRIMARY KEY (SPID,SHOP_ID) ,  
FOREIGN KEY (SPID) REFERENCES SALESPERSON, FOREIGN KEY (SHOP_ID)  
REFERENCES SHOP ON DELETE CASCADE);
```

```
DETAILS_SIM(NAME CHAR(30), ADDRESS_PROOF INTEGER,PHOTOS INTEGER, CID  
CHAR(10), SHOP_ID CHAR(10), PRIMARY KEY (CID,SHOP_ID), FOREIGN KEY (CID)  
REFERENCES CUSTOMER , FOREIGN KEY (SHOP_ID) REFERENCES SHOP);
```

```
SEND_DETAILS(NAME CHAR(30), ADDRESS_PROOF INTEGER, PHOTOS INTEGER, CID  
CHAR(10), SHOP_ID CHAR(10),NETWORK_ID CHAR(10),PRIMARY KEY  
(CID,NETWORK_ID,SHOP_ID),FOREIGN KEY (CID) REFERENCES CUSTOMER , FOREIGN  
KEY (NETWORK_ID) REFERENCES NETWORK_PROVIDER, FOREIGN KEY (SHOP_ID)  
REFERENCES SHOP);
```

```
ADMINISTRATING(AD_ID CHAR(10), AD_NAME CHAR(30), SHOP_ID CHAR(10),  
PRIMARY KEY (AD_ID) , FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE  
CASCADE ON UPDATE CASCADE);
```

```
SUPERVISES(AD_ID CHAR(10), ITEM_ID CHAR(10), CID CHAR(10), DOC DATE,  
PRIMARY KEY (CID,ITEM_ID,AD_ID), FOREIGN KEY (CID) REFERENCES CUSTOMER,  
FOREIGN KEY (ITEM_ID) REFERENCES ITEM, FOREIGN KEY (AD_ID) REFERENCES  
ADMINISTRATING);
```

# DDL commands to create tables(normalized).....

```
create database CELL;
use CELL;
create table NETWORK_PROVIDER(NETWORK_ID INTEGER, NETWORK_NAME CHAR(30),
PRIMARY KEY (NETWORK_ID));
create table SHOP(SHOP_ID CHAR(10), SNAME CHAR(30), LOCATION CHAR(30),
PRIMARY KEY (SHOP_ID));

create table CUSTOMER(CID CHAR(10), CNAME CHAR(30), PRIMARY KEY (CID));

create table SALESPERSON(SPID CHAR(10), SPNAME CHAR(30), DOJ DATE,
PRIMARY KEY (SPID));

create table SP_SALARY(DOJ DATE,SALARY REAL,PRIMARY KEY (DOJ));

create table ITEM_PURCHASE(CID CHAR(10),ITEM_ID CHAR(10),DISCOUNT
REAL,DATE_PURCHASED DATE,PRIMARY KEY(CID,ITEM_ID), FOREIGN KEY (CID)
REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

create table MOBILE( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP DATE,
MODEL CHAR(10), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID)
REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY (CID) REFERENCES
CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

create table LANDLINE( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL, DOP
DATE, MODEL CHAR(10), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID)
REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID) REFERENCES
CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

create table CELLACCESSORIES( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL,
DOP DATE, TYPE CHAR(10),QUANTITY INTEGER, MODEL CHAR(10), PRIMARY KEY
(ITEM_ID,CID) , FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE
CASCADE, FOREIGN KEY (CID) REFERENCES CUSTOMER ON DELETE SET NULL ON
UPDATE CASCADE);

create table SIM( ITEM_ID CHAR(10), CID CHAR(10), DOP DATE, TYPE CHAR(10)
, NETWORK_NAME CHAR(30),PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY (ITEM_ID)
REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID) REFERENCES
CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

create table RECHARGE_CARDS( ITEM_ID CHAR(10), CID CHAR(10),PRICE REAL,
DOP DATE, NETWORK_NAME CHAR(30), PRIMARY KEY (ITEM_ID,CID) , FOREIGN KEY
(ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE CASCADE, FOREIGN KEY ( CID)
REFERENCES CUSTOMER ON DELETE SET NULL ON UPDATE CASCADE);

create table EARN_POLICY(INCOME_DAILY INTEGER,AMTPAID
INTEGER,PROFIT_TOTAL INTEGER, SHOP_ID CHAR(10),PRIMARY KEY
(INCOME_DAILY,SHOP_ID), FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE
CASCADE);
```

```
create table SELLS( SHOP_ID CHAR(10), ITEM_ID CHAR(10), PRIMARY KEY
(SHOP_ID,ITEM_ID), FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON DELETE
CASCADE, FOREIGN KEY (ITEM_ID) REFERENCES ITEM_PURCHASE ON DELETE SET
NULL);
```

```
create table WORKS(SPID CHAR(10), SHOP_ID CHAR(10), PRIMARY
KEY(SPID,SHOP_ID) , FOREIGN KEY(SPID) REFERENCES SALESPERSON, FOREIGN KEY
(SHOP_ID) REFERENCES SHOP ON DELETE CASCADE);
```

```
create table DETAILS_SIM(NAME CHAR(30), ADDRESS_PROOF INTEGER,PHOTOS
INTEGER, CID CHAR(10), SHOP_ID CHAR(10), PRIMARY KEY (CID,SHOP_ID),
FOREIGN KEY (CID) REFERENCES CUSTOMER ,FOREIGN KEY(SHOP_ID) REFERENCES
SHOP,CHECK(ADDRESS_PROOF=1 AND PHOTOS=1));
```

```
create table SEND_DETAILS(NAME CHAR(30), ADDRESS_PROOF INTEGER, PHOTOS
INTEGER, CID CHAR(10), SHOP_ID CHAR(10),NETWORK_ID CHAR(10),PRIMARY KEY
(CID,NETWORK_ID,SHOP_ID),FOREIGN KEY (CID) REFERENCES CUSTOMER , FOREIGN
KEY(NETWORK_ID) REFERENCES NETWORK_PROVIDER, FOREIGN KEY(SHOP_ID)
REFERENCES SHOP,check(ADDRESS_PROOF=1 AND PHOTOS=1));
```

```
create table ADMINISTRATING(AD_ID CHAR(10), AD_NAME CHAR(30), SHOP_ID
CHAR(10), PRIMARY KEY (AD_ID) , FOREIGN KEY (SHOP_ID) REFERENCES SHOP ON
DELETE CASCADE ON UPDATE CASCADE);
```

```
create table SUPERVISES(AD_ID CHAR(10), ITEM_ID CHAR(10), CID CHAR(10),
DOC DATE, PRIMARY KEY(CID,ITEM_ID,AD_ID), FOREIGN KEY (CID) REFERENCES
CUSTOMER, FOREIGN KEY (ITEM_ID) REFERENCES ITEM, FOREIGN KEY (AD_ID)
REFERENCES ADMINISTRATING);
```