



SALE TABLE

The sale table is in 3NF as it is in 2NF(no partial dependency exists) and there exists no transitive dependency in the sale table. The deposit and remainder that were attributes of the sale table in the question will have transitive dependency as such :

sid -> deposit
deposit -> remainder
sid -> remainder
So, as to remove the transitive dependency we will have different tables for deposit and remainder. The 3NF functional dependencies of the SALE table are as follows :

sid -> PK
dep_id -> FK
del_id -> FK
sid -> date
sid -> dep_id
sid -> del_id

The deposit_id(dep_id) is a foreign key that refers to the primary key of the deposit table.
The delivery_id(del_id) is a foreign key that refers to the primary key of the Delivery Notes table.
The realtionship between sale and delivery notes table is one to many as there can be multiple sales and one to one on the delivery notes side as specific sale will have specific delivery notes.

DEPOSIT DETAILS TABLE

It has dep_id as it's primary key and cid and rem_id(remainder id) as the foreign key which refers to the paymnet table and remainder table respectively
PK -> dep_id
FK -> rem_id
FK -> cid
dep_id -> deposit
dep_id -> cid
dep_id -> rem_id

REMAINDER DETAILS TABLE

The primary key is rem_id. It has a one to one realtionship on both the remainder and deposit side.
PK -> rem_id
rem_id -> remainder

DELIVERY NOTES TABLE

The del_id is the primary key and this table satisfies 3NF as there exists no transitive dependency and it is in 2NF (no partial dependency)

PK -> del_id
FK -> SKU
del_id -> location
del_id -> gate
del_id -> time
del_id -> SKU

SKU is the foreign key which refers to the primary key in the Item table. There is a one-to-one relationship on the delivery notes side and many-to-one relationship on the items side.

ITEM TABLE

SKU is the primary key in the item table. The functional dependencies are :

PK -> SKU
SKU -> ItemName
SKU -> UnitPrice
SKU -> QuantityInStock

Table is in 3NF no transitive or partial dependency exists.

PAYMENT TABLE

The cid is the primary key and the table is in 3NF as it has no transitive dependency and it is in 2NF as there exits no partial dependency

PK -> cid
FK -> cust_id
cid -> amount
cid -> cust_id
cid -> currency

cust_id is the foreign key in the payment table which refers to the primary key of the customer table.

CUSTOMER TABLE

cust_id is the primary key in the customer table
PK -> cust_id
cust_id -> cardNumber
cust_id -> expDate
cust_id -> cardHolder name
cust_id -> billingZipCode
It has a one to one relation on the customer side whereas a one to many relation on the payment side as one customer can do multiple payments.