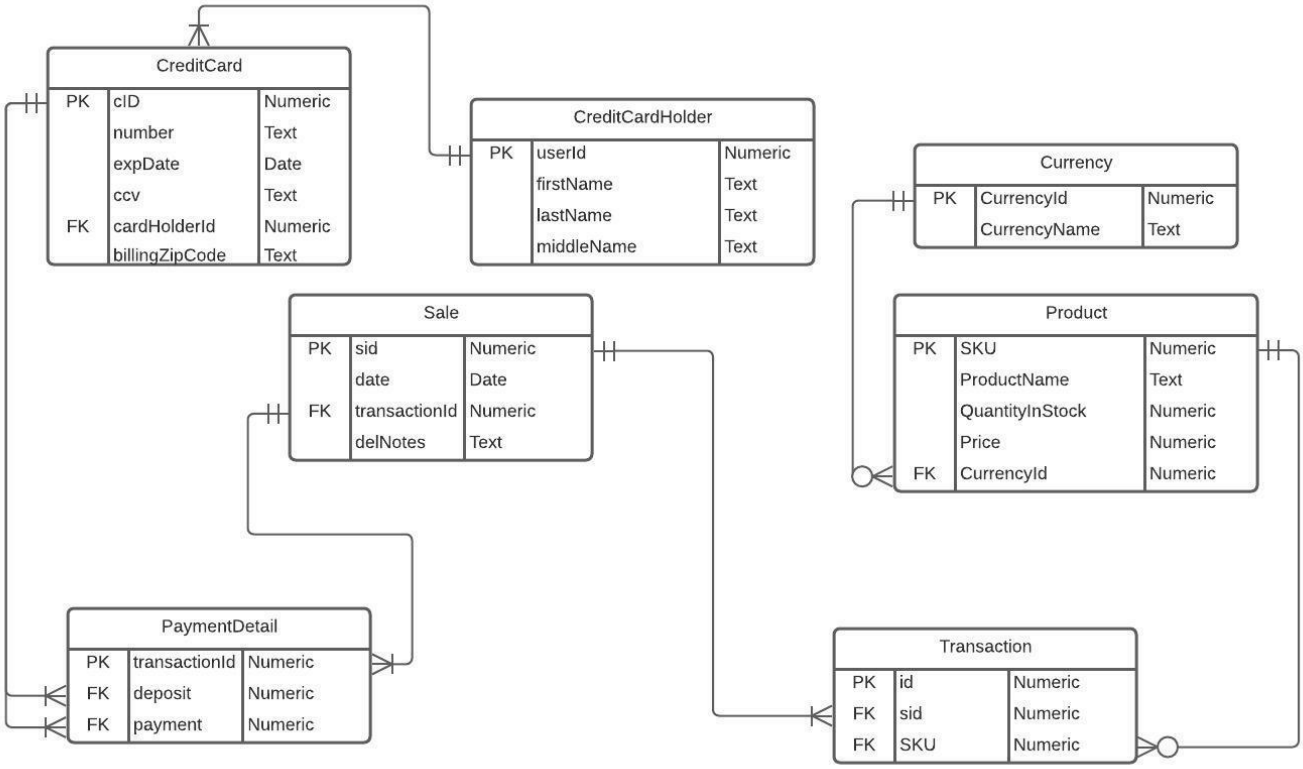
ASSIGNMENT-2 / NORMALIZE A SCHEMA

Below is the Entity-Relationship Diagram for the given problem.



Initially, I have the following tables - Sale, CreditCard and Product and below is my understanding of the tables.

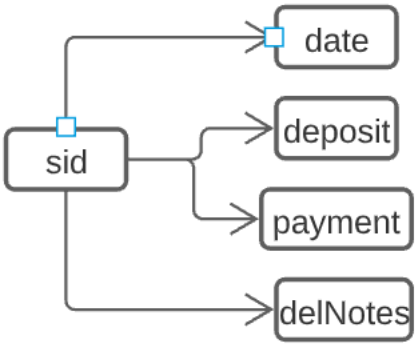
--**Sale** table captures the sale details

--**CreditCard** captures the credit card details used for deposit/payment during the sale of a product

--**Product** captures the product details

Following are the steps I have performed on each table for Normalization:-

1) **<u>On Sale Table</u>**
   Prime Attributes - sid
   Non Prime Attributes - date, deposit, payment, delNotes
   Below is the possible functional diagram for the table.

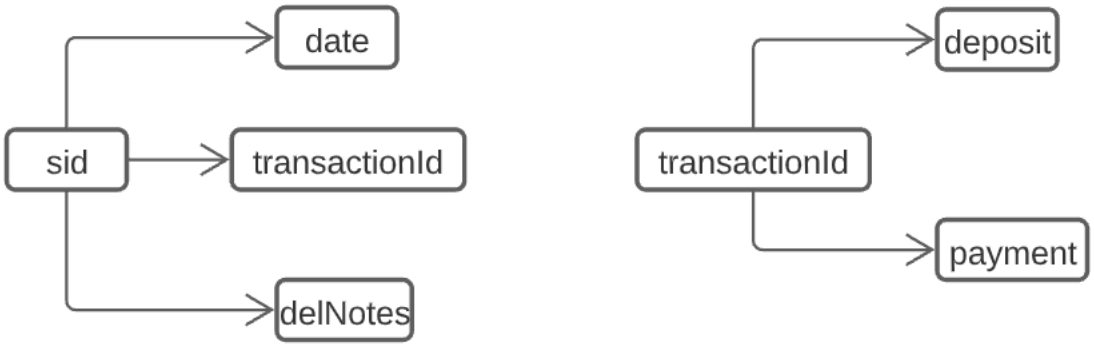


a) This table is not in 1NF, as there can be multiple values for payment and deposit. So a table called **PaymentDetail** containing

Prime Attributes- transactionId

Non Prime Attributes – deposit, payment

has been created to get the tables into 1NF. Following is the modified functional diagram.



b) This table is in 2NF, as it is in 1NF and all non prime attributes are fully functional dependent on the primary key --sid. So no operation performed.

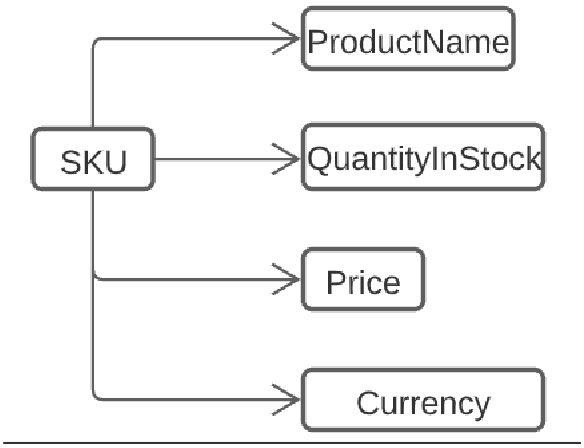
c) This table is in 3NF, as it is in 2NF as there is no case where a non prime attribute is dependent on another non-prime attribute. So no operation performed.

2) **<u>On Product Table</u>**

Prime Attributes – SKU

Non Prime Attributes - ProductName, QuantityInStock, Price , Currency

Below is the possible functional diagram for the table

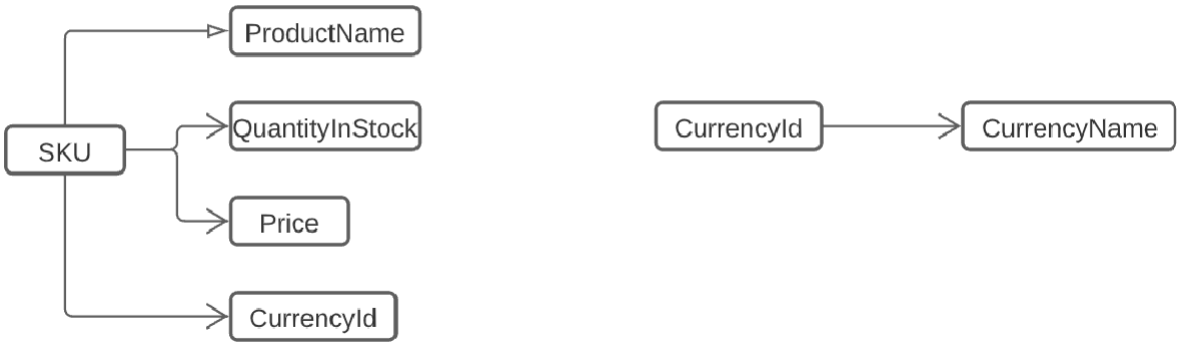


a) This table is in 1NF, as the values of each attribute is atomic. So no operation performed.

b) This table is in 2NF, as it is in 1NF and all non prime attributes are fully functional dependent on the primary key --SKU. So no operation performed.

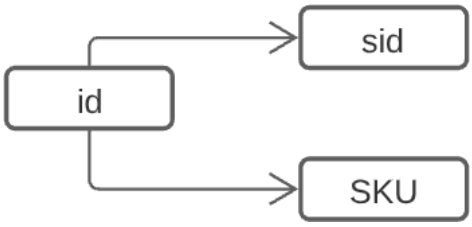
c) This table is in 3NF, as it is in 2NF as there is no case where a non prime attribute is dependent on another non-prime attribute. So no operation performed.

Since the type of Currency attribute is a ValueSet, a lookup table - **Currency** has been defined to hold the currency details. Below is the modified Functional Diagram.

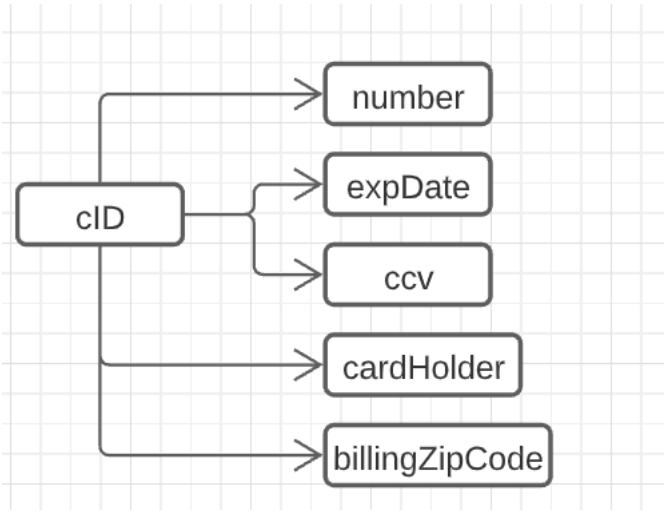


AS THERE IS A MANY TO MANY RELATIONSHIP BETWEEN PRODUCT AND SALE, A JUNCTION TABLE - **SaleProduction Junction**, HAS BEEN CREATED TO CARRY THE RELATIONSHIP. BELOW ARE THE DETAILS OF THE TABLE.

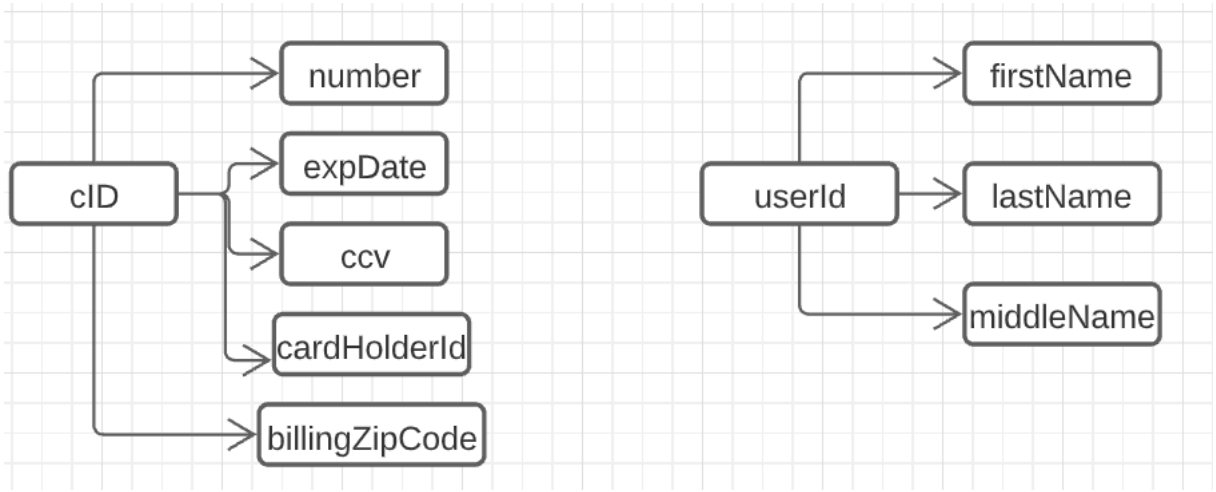
Prime Attributes :- id
Non Prime Attributes - sid,SKU
Following is the Functional Diagram of the table.



3) **<u>On CreditCard Table-</u>**
Prime Attributes - cID
Non Prime Attributes - number, expDate, ccv, cardHolder, billingZipCode
Below is the possible functional diagram for the table



a) This table is not in 1NF, as the value of the cardHolder can be composite, Since it can consist of First Name, Middle Name and Last Name. So a table - **CreditCardHolder** has been created to hold all the 3 parts of the names. Following is the modified Functional Diagram.



b) This table is in 2NF, as it is in 1NF and all non prime attributes are fully functional dependent on the primary key --cID. So no operation performed.

c) This table is in 3NF, as it is in 2NF as there is no case where a non prime attribute is dependent on another non-prime attribute. So no operation performed

After performing all th above steps, it can be confirmed that all the given tables are atleast in 3NF.

Thanks

Harshitha