Addis Ababa University

Addis Ababa Institute of Technology

School of Electrical and Computer Engineering

Database Systems Project

Title:- Electronic commerce (Online retailer website)

Phase Two:- Logical Design

GROUP FIVE

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Submitted to:- Mr.Tesfamichael
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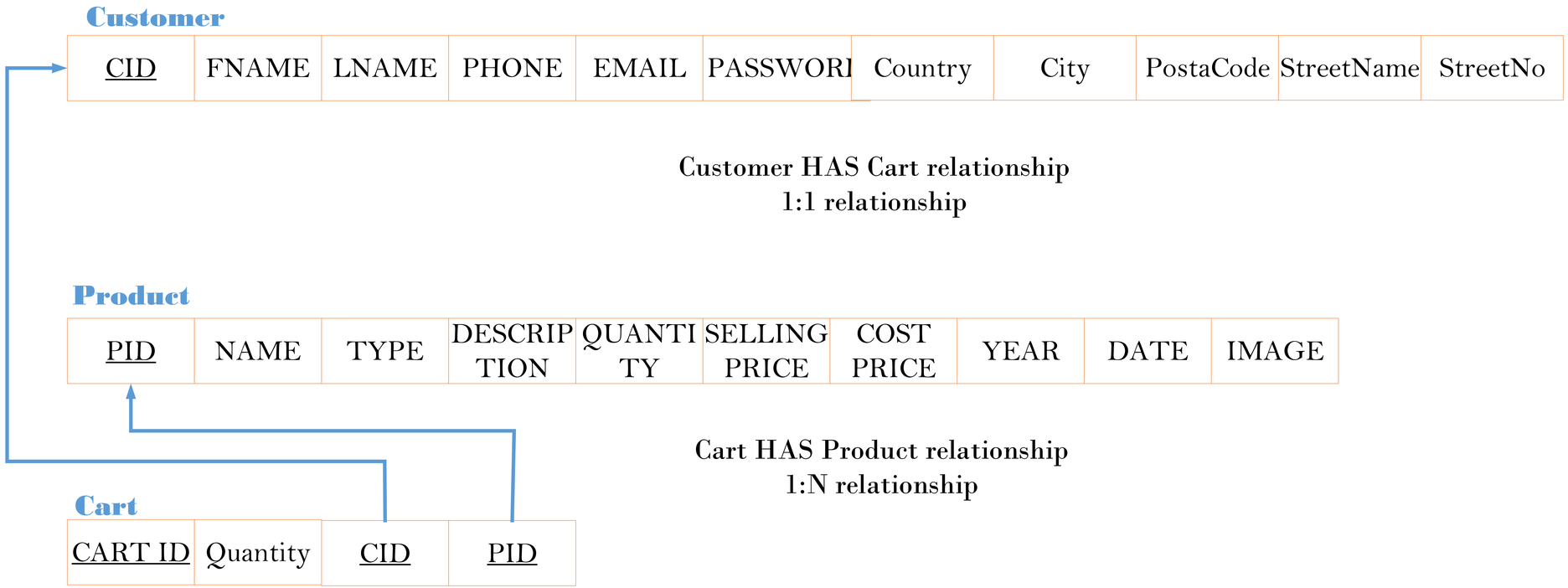
During mapping the Enhanced Entity model we have used the following abbreviations

CID : - CUSTOMER IDENTIFICATION NUMBER
SID : - SUPPLIER IDENTIFICATION NUBMER
PID : - PRODCUT IDENTIFICATION NUMBER


Customer
CID
FNAME
LNAME
PHONE
EMAIL
PASSWORI
Country
City
PostaCode
StreetName
StreetNo
Customer HAS Cart relationship
1:1 relationship
Product
PID
NAME
TYPE
DESCRIP TION
QUANTI TY
SELLING PRICE
COST PRICE
YEAR
DATE
IMAGE
Cart HAS Product relationship
1:N relationship
Cart
CART ID
Quantity
CID
PID

Customer

CID	FNAME	LNAME	PHONE	EMAIL	PASSWORD	ADDRESS	Country	City	PostaCode	StreetName	StreetNo

Customer Has Order relationship
1:N relationship

Supplier

SID	SNAME	PHONE	EMAIL	PASSWORD	Country	City	PostaCode	StreetName	StreetNo

Supplier Has Order relationship
1:N relationship

Product

PID	NAME	TYPE	IMAGE	DESCRIPTION	QUANTITY	SELLING PRICE	COST PRICE	YEAR	DATE

Order HAS Product relationship
1:1 relationship

Order

ORDER NUMBER	CID	SID	PID	ORDER DATE	PROFIT

Supplier

SID	SNAME	PHONE	EMAIL	PASSWORD	Country	City	PostaCode	StreetName	StreetNo

Product

PID	NAME	TYPE	YEAR	QUANTITY	SELLING PRICI	COST PRICE	DESCRIPTION	DATE	SID	IN STORE	IMAGE

The Derived attribute 'IN STORE' is on the relationship 'Supplies'. We add it onto the N sided Entity 'Product'

Supplier Supplies Product relationship
1:N relationship

Customer

CID	FNAME	LNAME	PHONE	EMAIL	PASSWORD	Country	City	PostaCode	StreetName	StreetNo

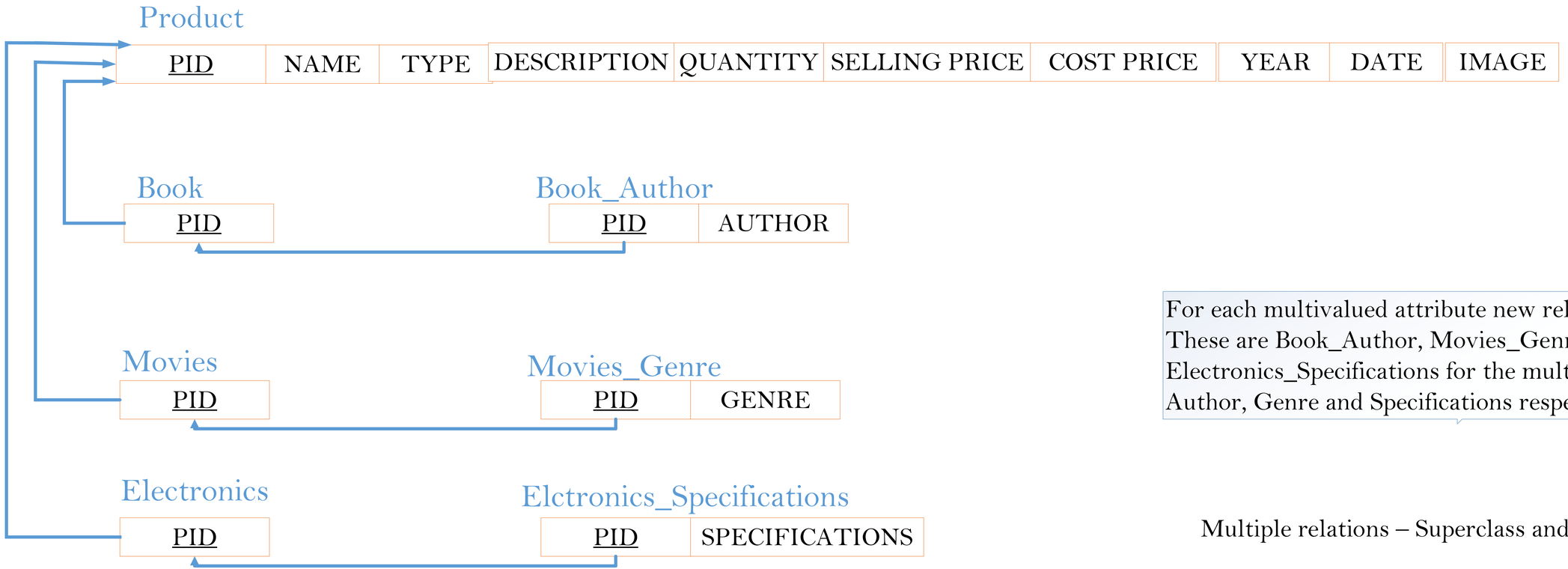
DELIVERY

CID	SID	DATE	Item

Supplier

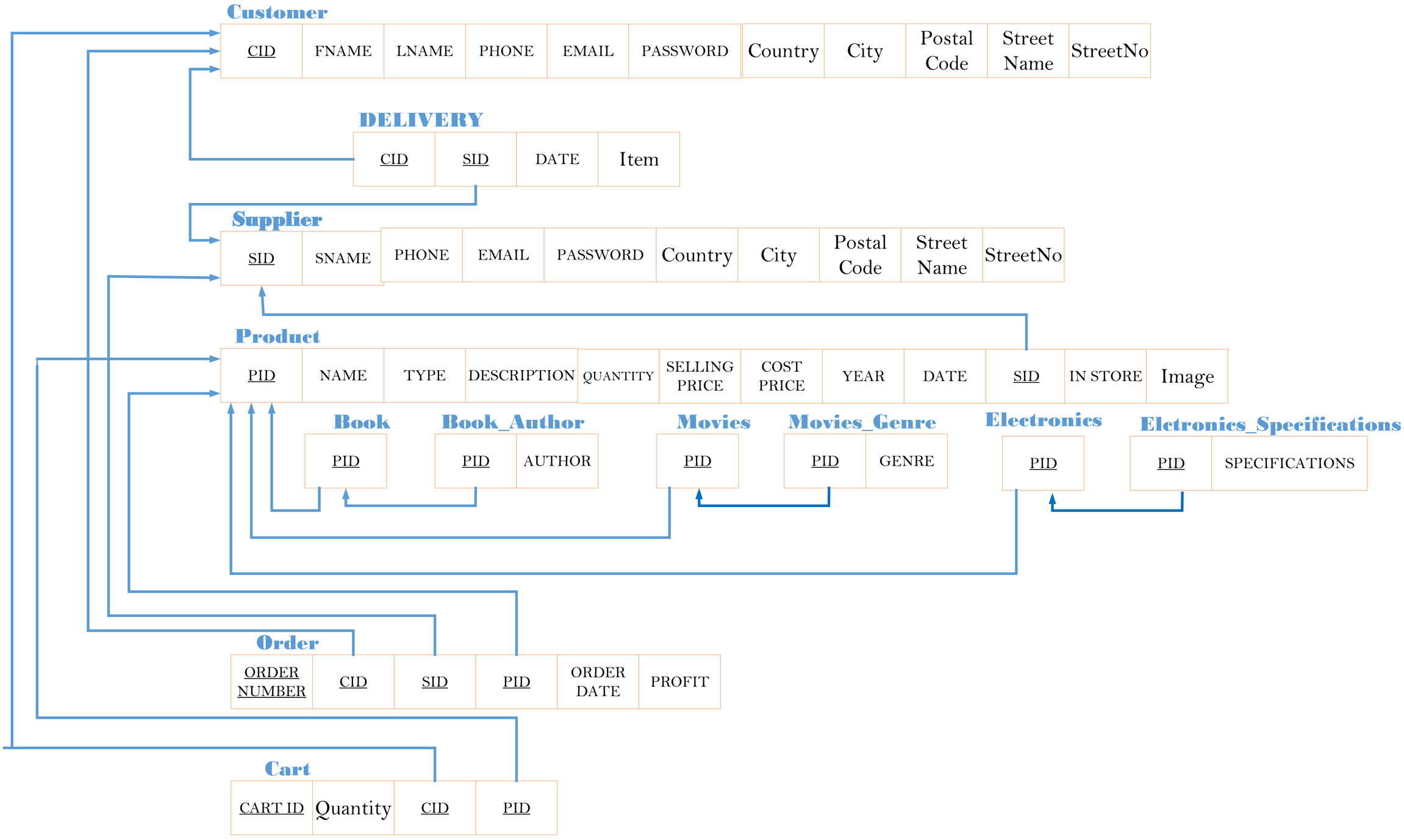
SID	SNAME	PHONE	EMAIL	PASSWORD	Country	City	PostaCode	StreetName	StreetNo

Supplier Delivery Product relationship
M:N relationship



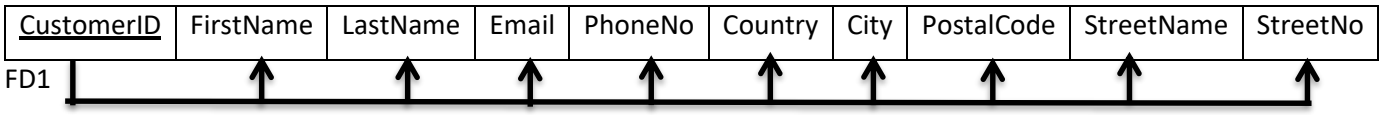
For each multivalued attribute new relation is created. These are Book_Author, Movies_Genre and Electronics_Specifications for the multivalued attributes Author, Genre and Specifications respectively

Multiple relations – Superclass and Subclasses


Customer
CID
FNAME
LNAME
PHONE
EMAIL
PASSWORD
Country
City
Postal Code
Street Name
StreetNo
DELIVERY
CID
SID
DATE
Item
Supplier
SID
SNAME
PHONE
EMAIL
PASSWORD
Country
City
Postal Code
Street Name
StreetNo
Product
PID
NAME
TYPE
DESCRIPTION
QUANTITY
SELLING PRICE
COST PRICE
YEAR
DATE
SID
IN STORE
Image
Book
PID
Book_Author
PID
AUTHOR
Movies
PID
Movies_Genre
PID
GENRE
Electronics
PID
Elctronics_Specifications
PID
SPECIFICATIONS
Order
ORDER NUMBER
CID
SID
PID
ORDER DATE
PROFIT
Cart
CART ID
Quantity
CID
PID

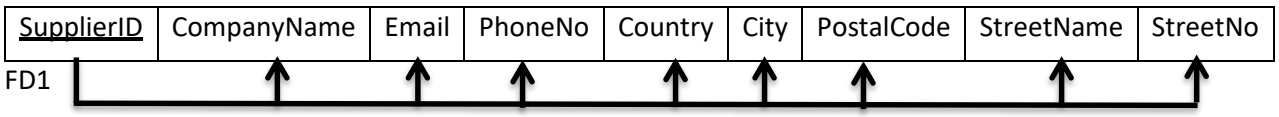
Functional Dependency and Normalization

Customer



A tuple in the Customer schema represents a single supplier. Each attribute has atomic value. There are no candidate keys in addition to primary key (Supplier ID). Also there is no transitivity dependency between the attributes. As a result, it is normalized up to third normal form.

Supplier



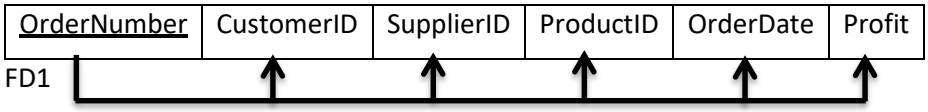
A tuple in the Supplier schema represents a single customer. Each attribute has atomic value. There are no candidate keys in addition to primary key (Customer ID). Also there is no transitivity dependency between the attributes. Therefore, it is normalized up to third normal form.

Product

A tuple in the Product schema represents a single product. As it is shown in the mapping Product is superclass. Because the subclasses have multivalued attributes, table is created for each of them to keep the atomicity of the attributes value.

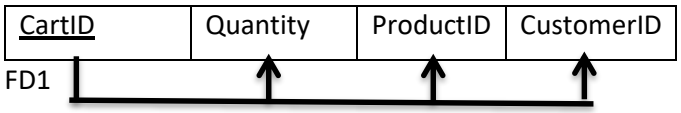
In this schema each attribute has atomic value. There are no candidate keys in addition to primary key (Product ID). Also there is no transitivity dependency between the attributes. Therefore, it is normalized up to third normal form.

Order



A tuple in the Order schema represents a single order. Each attribute has only one value, therefore the schema is in first normal form. The keys CustomerID, SupplierID and ProductID are not candidate keys here, because there is no attribute that depend up on one of them. As a result, the Order schema is in second normal form. There is no transitivity dependency between in the schema, therefore the schema is in third normal form.

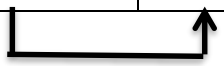
Cart



A tuple in the Cart schema represents a single cart. Each attribute has only one value, therefore the schema is in first normal form. The keys CustomerID and ProductID are not candidate keys here, because there is no attribute that depend up on one of them. As a result, the Order schema is in second normal form. There is no transitivity dependency between in the schema, therefore the schema is in third normal form.

Book_Author

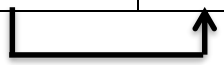
ProductID	Author

FD1 

A tuple in the schema Book_Author represent a single author. This table is created to keep the atomicity of the values of the attribute Author. Since the tuple has one key and attribute the schema is normalize up to third normal form.

Movie_Genre

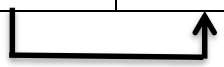
ProductID	Genre

FD1 

A tuple in the schema Movie_Genre represent a single genre. This table is created to keep the atomicity of the values of the attribute Author. Since the tuple has one key and attribute the schema is normalized up to third normal form.

Electronics_Specifications

ProductID	Specifications

FD1 

A tuple in the schema Electronics_Specifications represent a single electronic device. This table is created to keep the atomicity of the values of the attribute Author. Since the tuple has one key and attribute the schema is normalized up to third normal form.

Delivery

CustomerID	SupplierID	Date	Item

All the schemas are normalized up to third normal form.