Nora's Bagel Bin Database Blueprints

Part A

First Normal Form (1NF)

BAGEL ORDER	
PK	Bagel Order ID
PK	Bagel ID
	Order Date
	First Name
	Last Name
	Address 1
	Address 2
	City
	State
	Zip
	Mobile Phone
	Delivery Fee
	Bagel Name
	Bagel Description
	Bagel Price
	Bagel Quantity
	Special Notes

Second Normal Form (2NF)

BAGEL ORDER	
PK	BagelOrderID
	OrderDate
	FirstName
	LastName
	Address1
	Address2
	City
	State
	Zip
	MobilePhone
	DeliveryFee
	SpecialNotes

1:M

BAGEL ORDER LINE ITEM	
PK / FK	BagelOrderID
PK / FK	BagelID
	BagelQuantity

M:1

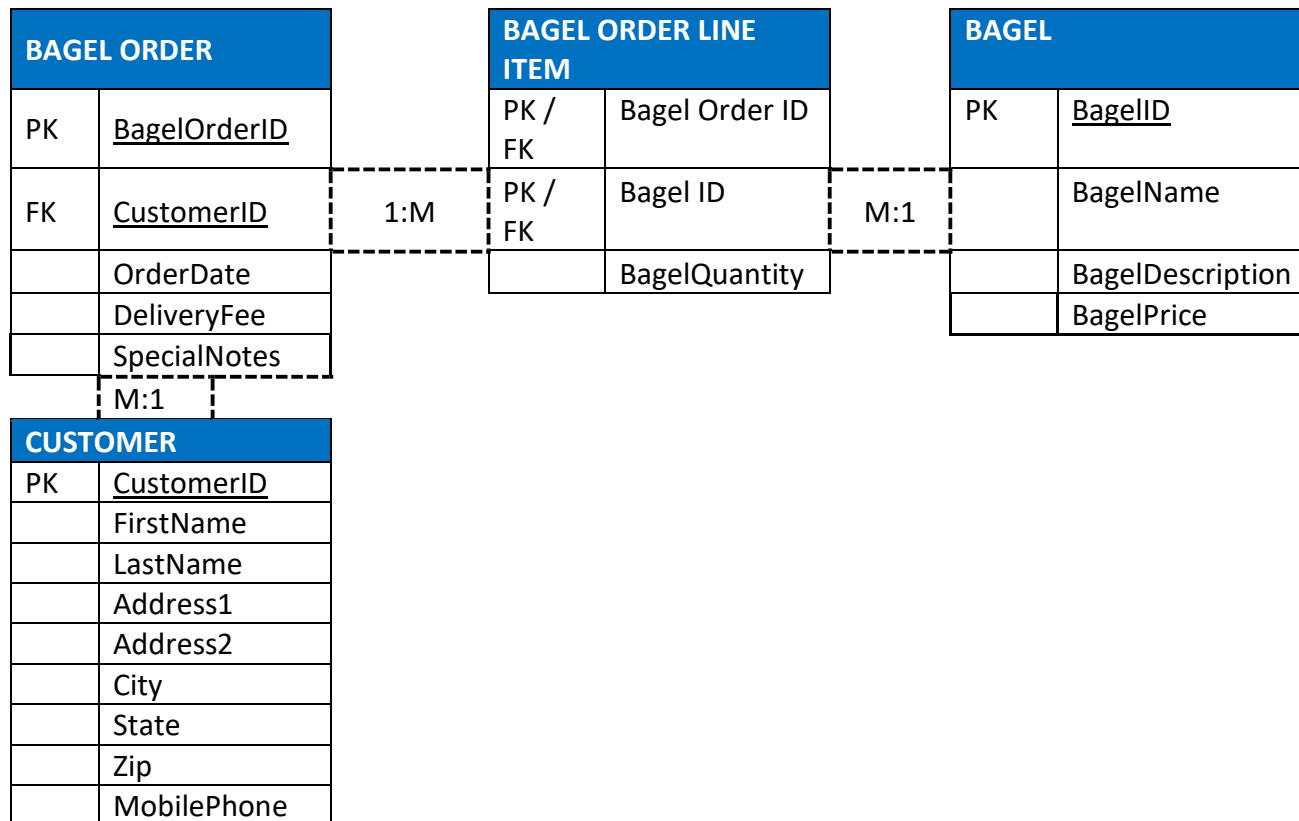| BAGEL	
PK	BagelID
	BagelName
	BagelDescription
	BagelPrice
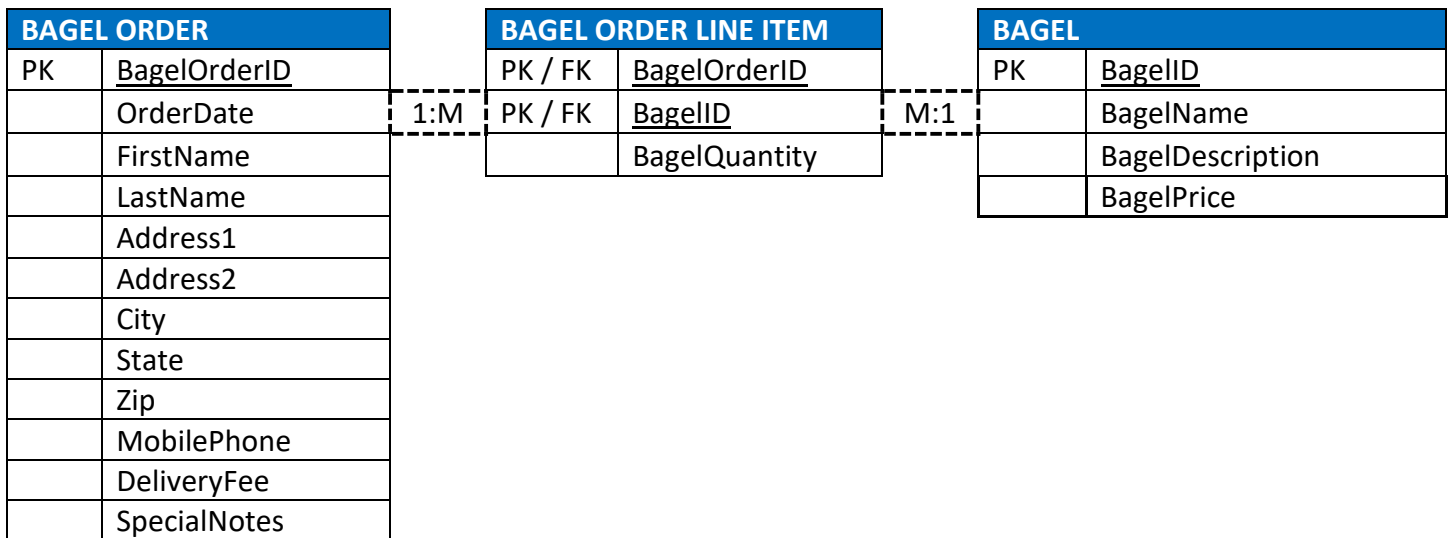
Explanation

A single BAGEL ORDER may have more than one individual "bagel item" and a BagelOrderID in the line item for bagel orders belongs to only one single order ID. This makes the relation one-to-many (1:M).

One bagel item in the line item for bagel order though belongs to only a single bagel ID. Additionally, a bagel item can be ordered by more than a single order. That makes this relation many-to-one (M:1).

For each attribute assigned in the table, we considered partial dependency in the first normal form. The two sets of dependency are as follows. First, the order date, first name, last name, address1, address2, city, state, zip code, mobile phone number, delivery fee, and any special notes depend on the BagelOrderID. Second, the bagel name, bagel description, and bagel price depend on the BagelID. I assigned all attributes based on the dependencies indicated.

Third Normal Form (3NF)

BAGEL ORDER		
PK	BagelOrderID	
FK	CustomerID	
	OrderDate	
	DeliveryFee	
	SpecialNotes	

1:M

BAGEL ORDER LINE ITEM		
PK / FK	Bagel Order ID	
PK / FK	Bagel ID	
	BagelQuantity	

M:1

BAGEL		
PK	BagelID	
	BagelName	
	BagelDescription	
	BagelPrice	

M:1

CUSTOMER	
PK	CustomerID
	FirstName
	LastName
	Address1
	Address2
	City
	State
	Zip
	MobilePhone

Explanation

I separated out the repeating data into a new table labeled "Customer". The primary key for the newly created table is "CustomerID", which also serves as the foreign key for the existing table, "Bagel Order". Since customers can place more than one order, and an order can only be placed by one customer, the relation for this is man-to-one (M:1).

Final Physical Database Model

BAGELORDER

PK	BagelOrderID	INT
FK	CustomerID	INT
	OrderDate	TIMESTAMP
	DeliveryFee	NUMERIC(10,2)
	SpecialNotes	VARCHAR(100)

M:1

CUSTOMER

PK	CustomerID	INT
	FirstName	VARCHAR(100)
	LastName	VARCHAR(100)
	Address1	VARCHAR(100)
	Address2	VARCHAR(100)
	City	VARCHAR(100)
	State	VARCHAR(100)
	Zip	VARCHAR(10)
	MobilePhone	VARCHAR(10)

1:M

BAGELORDERLINEITEM

PK / FK	BagelOrderID	INT
PK / FK	BagelID	CHAR(2)
	BagelQuantity	INT

M:1

BAGEL

PK	BagelID	CHAR(2)
	BagelName	VARCHAR(100)
	BagelDescription	VARCHAR(200)
	BagelPrice	NUMERIC(10,2)