VHT2: Normalization and Database Design

Section A: Construct a normalized physical database model to represent the ordering process for Nora's Bagel Bin:

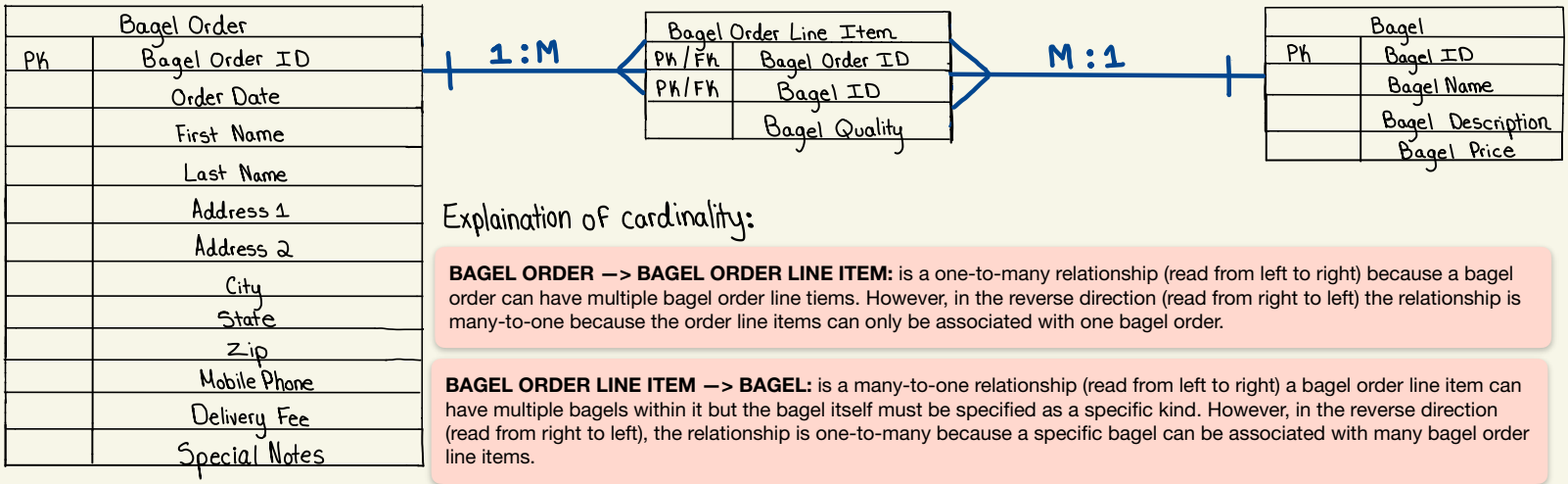
Initial 1NF Table: Nora's Bagel Bin Database Blueprints in First Normal Form (1NF)

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

A1A. 1NF table attributes placed into 2NF.

A1B. Label the relationships between 2NF tables.

A1C. Explain attributes and Cardinality of 2NF tables.



Explaination of cardinality:

BAGEL ORDER —> BAGEL ORDER LINE ITEM: is a one-to-many relationship (read from left to right) because a bagel order can have multiple bagel order line tiems. However, in the reverse direction (read from right to left) the relationship is many-to-one because the order line items can only be associated with one bagel order.

BAGEL ORDER LINE ITEM —> BAGEL: is a many-to-one relationship (read from left to right) a bagel order line item can have multiple bagels within it but the bagel itself must be specified as a specific kind. However, in the reverse direction (read from right to left), the relationship is one-to-many because a specific bagel can be associated with many bagel order line items.

Explaination of attributes:

My thought process for sorting the attributes from the given 1NF table into the 2NF table was to sort them based on relation to the table names. The balgel order table contains all attributes related to that specific order. The bagel order line contains the bagel order ID, the bagel ID, and the bagel quantity, which specifies the items ordered. The bagel table specifies the bagel ID, the bagel name, the bagel price, and the bagel description.

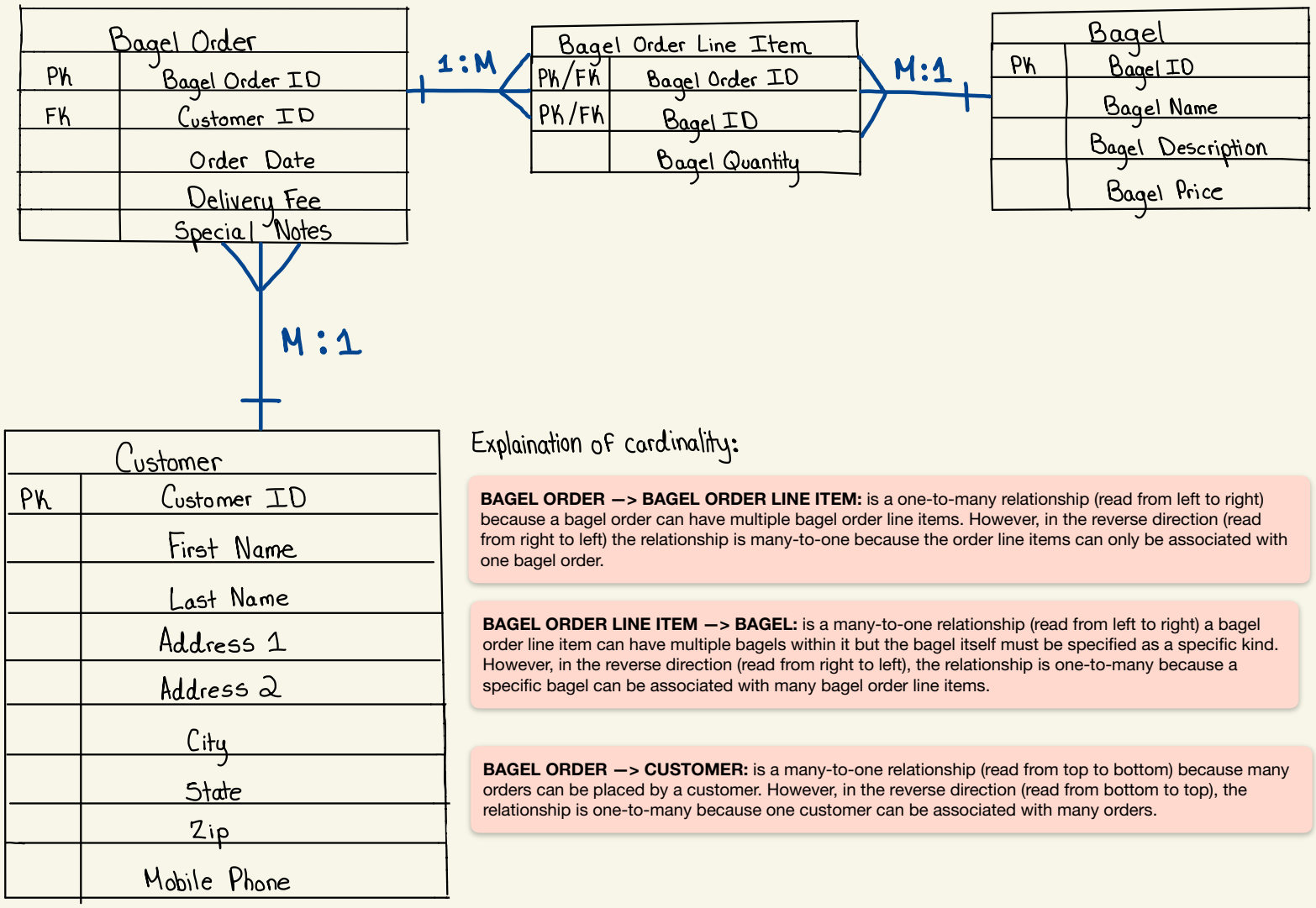
A2A. 2NF table attributes placed into 3NF.

A2B. Provide a name for each 3NF table that reflects its content.

A2C. Create a new field that will be used as a key linking the 3NF tables.

A2D. Label the relationships between 3NF tables.

A2E. Explanation of Attributes and Cardinality of 3NF tables.



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BAGEL ORDER LINE ITEM —> BAGEL: is a many-to-one relationship (read from left to right) a bagel order line item can have multiple bagels within it but the bagel itself must be specified as a specific kind. However, in the reverse direction (read from right to left), the relationship is one-to-many because a specific bagel can be associated with many bagel order line items.

BAGEL ORDER —> CUSTOMER: is a many-to-one relationship (read from top to bottom) because many orders can be placed by a customer. However, in the reverse direction (read from bottom to top), the relationship is one-to-many because one customer can be associated with many orders.

Explaination of attributes:

As you move further down the normalization process the goal is to arrange the data to be more structured and precise in accordance to the tables it is meant to relate to. From transitioning from 2NF to 3NF the data must better align with the table names. Within the Bagel Order 2NF table there were attributes that didn't necessarlity pertain to the order but rather a person and so it was necessary to introduce a new table that I decided to name "Customer". The attributes that were unfit to be in the 3NF version of the Bagel Order that were better suited for the new Customer table were as followed: Customer ID, First Name, Last Name, Address 1, Address 2, City, State, Zip, and Mobile Phone. All these attributes better relate to a customer rather than the details of a bagel order.

A3A. Copy the table names and cardinality from 3NF tables and place them into "Final Physical Database Model".

A3B. Assign 1 of 5 data types to each attribute in the 3NF tables and each data type is used at least once.