# Nora's Bagel Bin Database Blueprints

**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 |

# Nora's Bagel Bin Database Blueprints *(continued)*

**Second Normal Form (2NF)**

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

1:M

| BAGEL ORDER LINE ITEM | |
|---|---|
| PK / FK | Bagel Order ID |
| PK / FK | Bagel ID |
| | Bagel Quantity |

1:M

| BAGEL | |
|---|---|
| PK | Bagel ID |
| | Bagel Name |
| | Bagel Description |
| | Bagel Price |

Explanation: The Bagel Order Table was separated into 3 separated tables based on functional dependency. For the Bagel Table: Bagel Name, Description, and Price, are all functionally dependent on Bagel ID, which is the determinant or primary key. In the Bagel Order Table, Bagel Order ID is the determinant, everything listed is functionally dependent on this primary key. The intermediary table has Bagel Order ID and Bagel ID as a composite key; both foreign keys are combined to be a unique key. Bagel quantity is functionally dependent on Bagel Order ID because the order will list out how many bagels were ordered. The bagel order and line item have a one-to-many relationship because there can only be one bagel order, while there can be many line items. For the relationship between the bagel and line item table, it would be a one- to-many because you can have many types of bagels, while one line item may exist at one time, separate from the bagel orders.

# Nora's Bagel Bin Database Blueprints *(continued)*

**Third Normal Form (3NF)**

| BAGEL ORDER | |
|---|---|
| PK | Bagel Order ID |
| FK | Customer ID |
| | Order Date |
| | Delivery Fee |
| | Special Notes |

1:M

| BAGEL ORDER LINE ITEM | |
|---|---|
| PK / FK | Bagel Order ID |
| PK / FK | Bagel ID |
| | Bagel Quantity |

1:M

| BAGEL | |
|---|---|
| PK | Bagel ID |
| | Bagel Name |
| | Bagel Description |
| | Bagel Price |

1:M

| CUSTOMER | |
|---|---|
| PK | Customer ID |
| | First Name |
| | Last Name |
| | Address 1 |
| | Address 2 |
| | City |
| | State |
| | Zip |
| | Mobile Phone |

Explanation: To get to third normal form, a new table for Customer information had to be added. The primary key used for this table is Customer ID. The customers information including First Name, Last Name, Addresses, and Phone, were all transitive dependencies in 2nd normal form, which means they were attributes that depended on another attribute that was a non-key (Customer ID). This reduced data redundancy. The cardinality for the added table is a one-to-many relationship. One customer can have many orders, but each order will be associated with one customer.

# Nora's Bagel Bin Database Blueprints *(continued)*

**Final Physical Database Model**

| BAGEL ORDER | | |
|---|---|---|
| PK | bagel_order_id | INT |
| FK | customer_id | INT |
| | order_date | TIMESTAMP |
| | Delivery Fee | NUMERIC(4,2) |
| | Special Notes | VARCHAR(255) |

1:M

| CUSTOMER | | |
|---|---|---|
| PK | customer_id | INT |
| | first_name | VARCHAR(255) |
| | last_name | VARCHAR(255) |
| | address_1 | VARCHAR(255) |
| | address_2 | VARCHAR(255) |
| | city | VARCHAR(255) |
| | state | VARCHAR(255) |
| | zip | CHAR(5) |
| | mobile_phone | CHAR(10) |

1:M

| BAGEL ORDER LINE ITEM | | |
|---|---|---|
| PK / FK | bagel_order_id | INT |
| PK / FK | bagel_id | CHAR(2) |
| | bagel_quantity | INT |

1:M

| BAGEL | | |
|---|---|---|
| PK | bagel_id | CHAR(2) |
| | bagel_name | VARCHAR(255) |
| | bagel_description | VARCHAR(255) |
| | bagel_price | NUMERIC(4,2) |