**Nora’s Bagel Bin**

**Part A**

**1 a, b) 2NF Table**

**Second Normal Form (2NF)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **BAGEL ORDER** | |  | **BAGEL ORDER LINE ITEM** | |  | **BAGEL** | |
| PK | Bagel Order ID |  | PK / FK | Bagel Order ID |  | PK | Bagel ID |
|  | Order Date | 1:M | PK / FK | Bagel ID | M:1 |  | Bagel Name |
|  | First Name |  |  | Bagel Quantity |  |  | Bagel Description |
|  | Last Name |  |  |  |  |  | Bagel Price |
|  | Address 1 |  |  |  |  |  |  |
|  | Address 2 |  |  |  |  |  |  |
|  | City |  |  |  |  |  |  |
|  | State |  |  |  |  |  |  |
|  | Zip |  |  |  |  |  |  |
|  | Mobile Phone |  |  |  |  |  |  |
|  | Delivery Fee |  |  |  |  |  |  |
|  | Special Notes |  |  |  |  |  |  |

**1 C) Explanation**

* Bagel Order Table Attributes:
  + Bagel Order ID is the PK and is how this table relates to the Bagel Order Line Item Table
  + Order Date, First Name, Last Name, Address 1 & 2, State, City, Zip Mobile Phone, Delivery Fee, and Special Notes are attributes that are all dependent on each individual bagel order
* Bagel Table Attributes:
  + Bagel ID is the PK and is how the table relates to the Bagel Order Line Table Item
  + Bagel Name, Bagel Description, and Bagel Price are attributes that are all dependent upon each individual bagel
* Bagel Order Line Item Table Attributes:
  + Bagel Order ID and Bagel ID was the composite PK of the 1NF table, thus remain part of the original 1NF table
  + Bagel Quantity is a dependent attribute but it solely depends upon the Composite Key instead of one of a singular PK
* Cardinality
  + Bagel Order 🡪 Bagel Order Line Item
    - Each Bagel Order belongs to 1 Bagel Order Line Item
    - Bagel Line Item can contain many Bagel Orders
  + Bagel Order Line Item 🡪 Bagel
    - Each Bagel Line Item references one Bagel
    - Each Bagel can reference many Bagel Line Items

**2 a, b, c, d) 3NF Table**

**Third Normal Form (3NF)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bagel Order** | | |  | **BAGEL ORDER LINE ITEM** | |  | **BAGEL** | |
| PK | Bagel Order ID | |  | PK / FK | Bagel Order ID |  | PK | Bagel ID |
| FK | Customer ID | | 1:M | PK / FK | Bagel ID | M:1 |  | Bagel Price |
|  | Delivery Fee | |  |  | Bagel Quantity |  |  | Bagel Name |
|  | Order Date | |  |  |  |  |  | Bagel Description |
|  | Special Notes | |  |  |  |  |  |  |
|  | M:1 |  |  |  |  |  |  |  |
| **Customer** | | |  |  |  |  |  |  |
| PK | Customer ID | |  |  |  |  |  |  |
|  | First Name | |  |  |  |  |  |  |
|  | Last Name | |  |  |  |  |  |  |
|  | Address 1 | |  |  |  |  |  |  |
|  | Address 2 | |  |  |  |  |  |  |
|  | City | |  |  |  |  |  |  |
|  | State | |  |  |  |  |  |  |
|  | Zip | |  |  |  |  |  |  |
|  | Mobile Phone | |  |  |  |  |  |  |

**2 e) Explanation**

Attributes:

* The explanation for the attributes in the Bagel Order Line Item and the Bagel tables remain the same as the 2NF answer as nothing changed
* The Bagel Order table in 2NF needed to be broken down even further when going to 3NF
  + The First Name, Last Name, Address 1&2, City, State, Zip, and Mobile Phone are all attributes that are dependent on the customer, therefore they needed to be separated into their own table. For this reason, Customer ID became the PK of the Customer Table and the FK of the Bagel Order Table
* Cardinality:
  + Bagel Order Line Item 🡪 Bagel
    - Each Bagel Line Item references one Bagel
    - Each Bagel can reference many Bagel Line Items
  + Bagel Order 🡪 Bagel Order Line Item
    - Each Bagel Order belongs to 1 Bagel Order Line Item
    - Bagel Line Item can contain many Bagel Orders
  + Bagel Order 🡪 Customer
    - Each Bagel Order has 1 customer
    - Each customer can have many Bagel Orders

**Nora’s Bagel Bin Database Blueprints *(continued)***

**3. Final Physical Database Model**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | **BAGEL ORDER LINE ITEM** | | |  | **BAGEL** | |  |
| PK | Bagel\_order\_id | INT |  | PK / FK | bagel\_order\_id | INT |  | PK | Bagel\_id | CHAR(2) |
| FK | Customer\_id | INT | 1:M | PK / FK | bagel\_id | CHAR(2) | M:1 |  | Bagel\_name | VARCHAR(25) |
|  | Delivery\_fee | NUMERIC(3,2) |  |  | Bagel\_quantity | INT |  |  | Bagel\_description | VARCHAR(200) |
|  | Order\_date | TIMESTAMP |  |  |  |  |  |  | Bagel\_price | NUMERIC(2,2) |
|  | Special\_notes | VARCHAR(200) |  |  |  |  |  |  |  |  |
|  | M:1 |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |
| PK | Customer\_id | INT |  |  |  |  |  |  |  |  |
|  | First\_name | VARCHAR(25) |  |  |  |  |  |  |  |  |
|  | Last\_name | VARCHAR(25) |  |  |  |  |  |  |  |  |
|  | Address\_1 | VARCHAR(150) |  |  |  |  |  |  |  |  |
|  | Address\_2 | VARCHAR(150) |  |  |  |  |  |  |  |  |
|  | City | VARCHAR(50) |  |  |  |  |  |  |  |  |
|  | State | CHAR(2) |  |  |  |  |  |  |  |  |
|  | Zip | INT |  |  |  |  |  |  |  |  |
|  | Mobile\_phone | CHAR(11) |  |  |  |  |  |  |  |  |

**Jaunty Coffee Co**

**Part B**

1. **Create Table Statements**
2. **SQL Code & b) Create Table Response**

**Graphical user interface, application, Teams

Description automatically generated**CREATE TABLE coffee\_shop (

Shop\_id INT,

Shop\_name VARCHAR(50),

City VARCHAR(50),

State CHAR(2),

PRIMARY KEY (shop\_id)

);

Graphical user interface, application, Teams

Description automatically generated

CREATE TABLE supplier (

Supplier\_id INT,

Company\_name VARCHAR(50),

Country VARCHAR(30),

Sales\_contact\_name VARCHAR(60),

Email VARCHAR(50) NOT NULL,

PRIMARY KEY (supplier\_id)

);

Graphical user interface, application, Teams

Description automatically generated

CREATE TABLE employee (

Employee\_id INT,

First\_name VARCHAR(30),

Last\_name VARCHAR(30),

Hire\_date DATE,

Job\_title VARCHAR(30),

Shop\_id INT,

PRIMARY KEY (employee\_id),

FOREIGN KEY (shop\_id) REFERENCES coffee\_shop (shop\_id)

);

Graphical user interface, application, Teams

Description automatically generated

CREATE TABLE coffee (

Coffee\_id INT,

Shop\_id INT,

Supplier\_id INT,

Coffee\_name VARCHAR(30),

Price\_per\_pound NUMERIC(5,2),

PRIMARY KEY (coffee\_id),

FOREIGN KEY (shop\_id) REFERENCES coffee\_shop (shop\_id),

FOREIGN KEY (supplier\_id) REFERENCES supplier (supplier\_id)

);

1. **Table Population**
2. **SQL Code**
3. **Statement response**

**Graphical user interface, application, Teams

Description automatically generated**

**Graphical user interface, text, application, Teams

Description automatically generated**

**Graphical user interface, text, application

Description automatically generated**

**Graphical user interface, text, application, Teams

Description automatically generated**

1. **Create Views**
2. **SQL Code**
3. **Statement Response**

**Graphical user interface, application, Teams

Description automatically generated**

1. **Create Index**
2. **SQL Code**
3. **Index Response**

**Graphical user interface, application

Description automatically generated**

1. **Create SFW Query**
2. **SQL Code**
3. **Query Response**

**Graphical user interface, text, application

Description automatically generated**

1. **Create Join Query**
2. **SQL Code**
3. **Join Query Response**

**Graphical user interface, application, Teams

Description automatically generated**