**Section A.1:**

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

**A.1.a-b)**

**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 |  |  |  |  |  |  |

**A.1.c )**

**Q:** *Explain how you assigned attributes to the 2NF tables and determined the cardinality of the relationships between your 2NF tables*.

**A:** The “Bagel Order” table contains all the information related to the order, based on the information presented in the “Bagel Order Form.” The intersection table contains the foreign key, “Bagel Order ID”, that links to the primary key, “Bagel Order ID”, in the “Bagel Order” table. The cardinality of this relationship is one-to-many; moreover, one order can have many bagel line items. The “Bagel ID” foreign key links to the primary key, “Bagel ID”, in the “Bagel Table.” The cardinality of this relationship is many-to-one; many bagel order line items have one bagel type. Furthermore, this leads to needing a “Bagel Quantity” attribute in the “Bagel Order Line Item” table to allow us to quantify the bagel types per order. Lastly, the “Bagel” table contains all information related to the bagel, minus the bagel quantity.

**Section A.2:**

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

**A.2.a-d )**

**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 Name |
|  | Order Date | |  |  | Bagel Quantity |  |  | Bagel Description |
|  | Delivery Fee | |  |  |  |  |  | Bagel Price |
|  | Special Notes | |  |  |  |  |  |  |
|  | M:1 |  |  |  |  |  |  |  |
| **CUSTOMER** | | |  |  |  |  |  |  |
| PK | Customer ID | |  |  |  |  |  |  |
|  | First Name | |  |  |  |  |  |  |
|  | Last Name | |  |  |  |  |  |  |
|  | Address 1 | |  |  |  |  |  |  |
|  | Address 2 | |  |  |  |  |  |  |
|  | City | |  |  |  |  |  |  |
|  | State | |  |  |  |  |  |  |
|  | Zip | |  |  |  |  |  |  |
|  | Mobile Phone | |  |  |  |  |  |  |

**A.2.e )**

**Q:** *Explain how you assigned attributes to the 3NF tables and determined the cardinality of the relationships between your 3NF tables.*

**A:** The “Bagel Order” table, “Bagel Order Line Item” table, and “Bagel” table have the exact same relationships as 2NF. The main difference is that the customer attributes were extracted from the “Bagel Order” table and a new “Customer” table was created. This created a new many-to-one relationship between the “Bagel Order” table and the “Customer” table; one customer can have many orders.

**Section A.3:**

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

**A.3.a-b )**

**Final Physical Database Model**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BAGEL\_ORDER** | | |  | **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(30) |
|  | order\_date | TIMESTAMP |  |  | bagel\_quantity | INT |  |  | bagel\_description | VARCHAR(30) |
|  | delivery\_fee | NUMERIC |  |  |  |  |  |  | bagel\_price | NUMERIC |
|  | special\_notes | VARCHAR(30) |  |  |  |  |  |  |  |  |
|  | M:1 |  |  |  |  |  |  |  |  |  |
| **CUSTOMER** | | |  |  |  |  |  |  |  |  |
| PK | customer\_id | INT |  |  |  |  |  |  |  |  |
|  | first\_name | VARCHAR(15) |  |  |  |  |  |  |  |  |
|  | last\_name | VARCHAR(30) |  |  |  |  |  |  |  |  |
|  | address\_1 | VARCHAR(30) |  |  |  |  |  |  |  |  |
|  | address\_2 | VARCHAR(30) |  |  |  |  |  |  |  |  |
|  | city | VARCHAR(30) |  |  |  |  |  |  |  |  |
|  | state | CHAR(2) |  |  |  |  |  |  |  |  |
|  | zip | VARCHAR(10) |  |  |  |  |  |  |  |  |
|  | mobile\_phone | VARCHAR(10) |  |  |  |  |  |  |  |  |