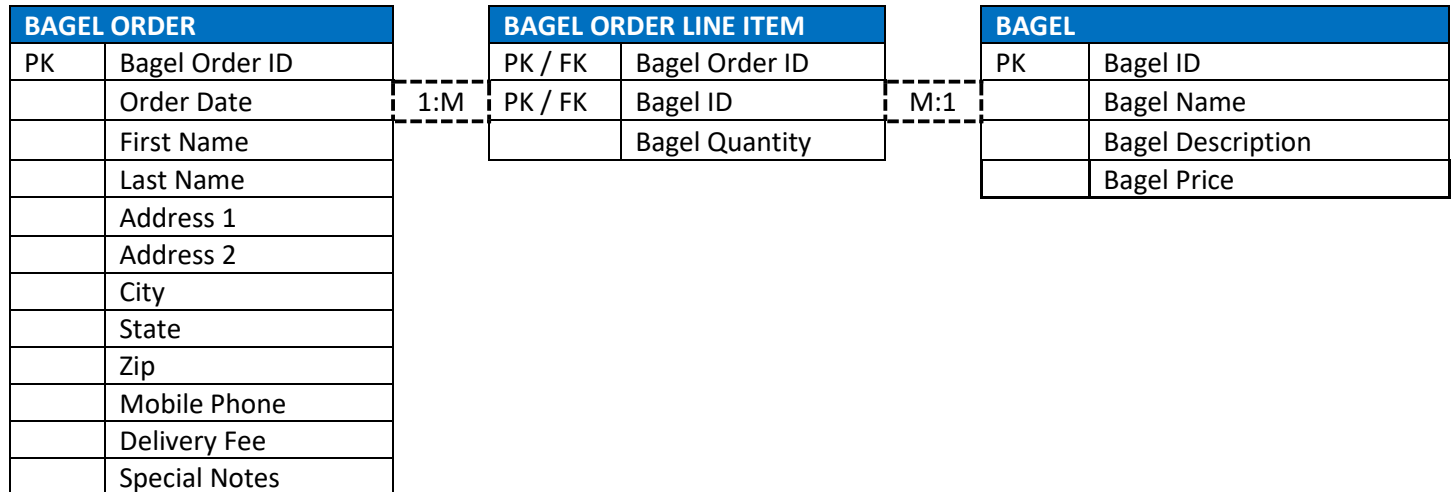


VHT2

A.1

Second Normal Form (2NF)



A.1.c – 2NF Explanation

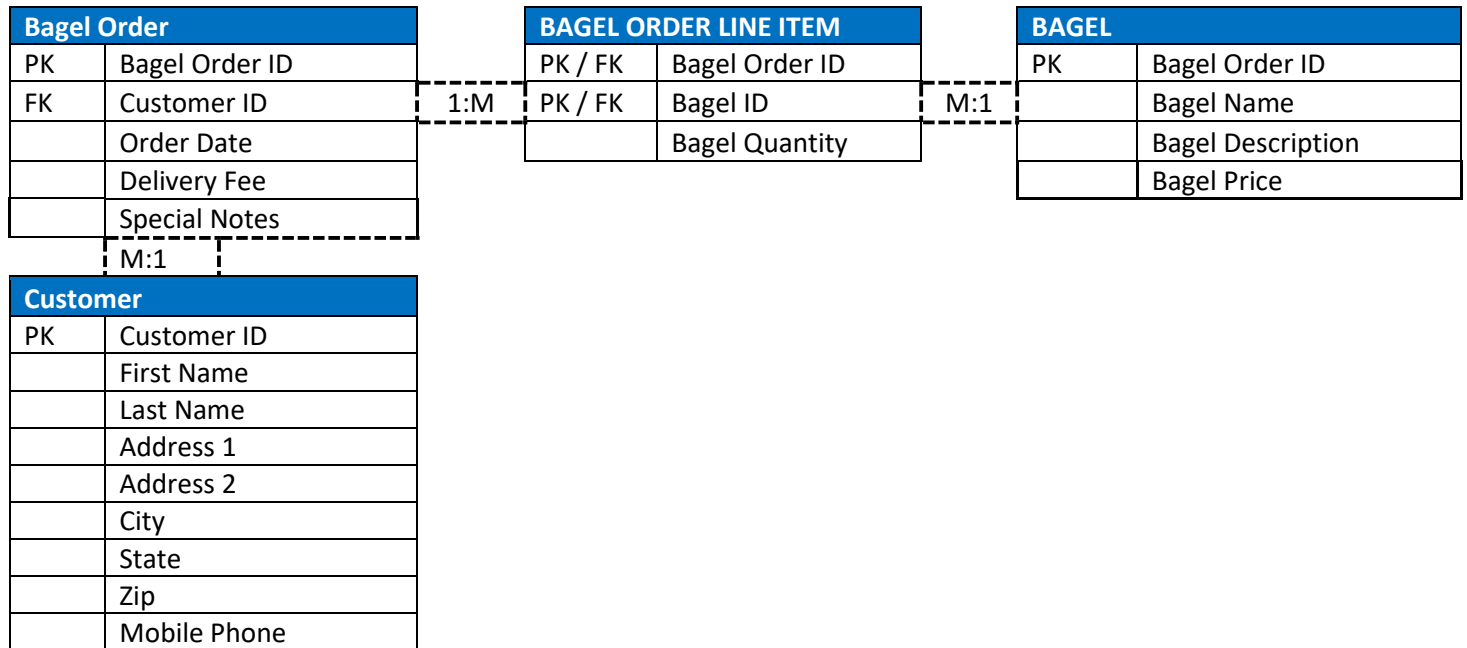
I placed Bagel Name, Description, and Price into the Bagel table because they're all unique and dependent on the individual bagel, described by the Bagel ID, which is the primary key for the table as it's simple, stable, and relatively meaningless if it's not corresponding to these other data points.

The Bagel Order Line Item table has a M:1 relationship with the Bagel table because while there may be many line items, each bagel order line item can only correspond to one particular bagel. This table includes two keys, and one other data item that doesn't really fit anywhere else, Bagel Quantity. This is the best place for Bagel Quantity because it is unique, not necessarily to the bagel, but to the Bagel Order Line Item which denotes, the intended bagel.

In the Bagel Order table, we have everything else, the information is all specific to the order and this is the only logical place to put the remaining data from the order form. This table has a 1:M relationship with Bagel Order Line Item, this is because one order may have many line items.

A.2

Third Normal Form (3NF)




A.2.e – 3NF Explanation


Here we have split the Bagel Order table into two parts, one still named Bagel Order, and one named Customer. This makes sense because usually, you'll have an account with your personal information already saved to a profile. This way when you place an order, you don't need to fill out all your personal details each time. A new key needed to be created though, to link the customer table with the order table. This new key is named Customer ID. This is the best option because it's relatively useless otherwise and should never change.

Bagel Order is now a concise table with only information relevant to the bagel order within it. It also includes, as a foreign key, the Customer ID key. This way, we can link the two tables together. The Bagel Order table has a many-to-one relationship with the Customer table because many orders may be placed by one customer. The bagel Order table also has a 1:M relationship with the Bagel Order Line Item table because one order may contain many line items.

The Bagel Order Line Item table has a M:1 relationship with the Bagel table because while there may be many line items, each bagel order line item can only correspond to one particular bagel. This table includes two keys, and one other data item that doesn't really fit anywhere else, Bagel Quantity. This is the best place for Bagel Quantity because it is unique, not necessarily to the bagel, but to the Bagel Order Line Item which denotes, the intended bagel. The data within each cell of the other two tables, Bagel Order Line Item and Bagel, are all exactly the same as they were in the 2NF diagram. These two tables remain unchanged.

B.1 – Create Tables

 Database: MySQL v5.7 ▾

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Schema SQL ●


```
1 CREATE TABLE COFFEE_SHOP (  
2   shop_id int NOT NULL,  
3   shop_name VARCHAR(50),  
4   city VARCHAR(50),  
5   state char(2),  
6   PRIMARY KEY (shop_id)  
7 )ENGINE = InnoDB;  
8  
9  
10 CREATE TABLE EMPLOYEE (  
11   employee_id int NOT NULL,  
12   first_name VARCHAR(30),  
13   last_name VARCHAR(30),  
14   hire_date DATE,  
15   job_title VARCHAR(30),  
16   shop_id int NOT NULL,  
17   PRIMARY KEY (employee_id),  
18   FOREIGN KEY (shop_id) REFERENCES COFFEE_SHOP(shop_id)  
19 )ENGINE = InnoDB;  
20  
21  
22 CREATE TABLE SUPPLIER (  
23   supplier_id int,  
24   company_name VARCHAR(50),  
25   country VARCHAR(30),  
26   sales_contact_name VARCHAR(60),  
27   email VARCHAR(50),  
28   PRIMARY KEY (supplier_id)  
29 )ENGINE = InnoDB;  
30  
31  
32 CREATE TABLE COFFEE (  
33   coffee_id int,  
34   shop_id int,  
35   supplier_id int,  
36   coffee_name VARCHAR(30),  
37   price_per_pound NUMERIC(5,2),  
38   PRIMARY KEY (coffee_id),  
39   FOREIGN KEY (shop_id) REFERENCES COFFEE_SHOP(shop_id),  
40   FOREIGN KEY (supplier_id) REFERENCES SUPPLIER(supplier_id)  
41 )ENGINE = InnoDB;  
42  
43  
44
```

Query successfully executed in 10ms ✕


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B.2.a – SQL Code

 Database: MySQL v5.7 ▼

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 Collaborate

Query successfully executed in 42ms ✕

Schema SQL ●

```
58
59
60 INSERT INTO COFFEE_SHOP VALUES
61 (1, 'Midnight Fuel', 'Los Angeles', 'CA'),
62 (2, 'Square Bucks', 'New York', 'NY'),
63 (3, 'Circle Cents', 'Boston', 'MA')
64 ;
65
66 INSERT INTO EMPLOYEE VALUES
67 (1, 'James', 'Bosch', '2017-12-19', 'Barista', 1),
68 (2, 'Nikki', 'Valentine', '2012-09-12', 'Manager', 2),
69 (3, 'Harold', 'Noochi', '2014-06-12', 'Maintenance', 3)
70 ;
71
72 INSERT INTO SUPPLIER VALUES
73 (001, 'Implicit Beans', 'USA', 'Jannet Jones', 'jj@ib.net'),
74 (002, 'Hot Beans', 'Canada', 'Bob Ulemeer', 'bobu@HotBeans.com'),
75 (003, 'Cool Beans', 'Colombia', 'Connie Lingus', 'connie@CB.net')
76 ;
77
78 INSERT INTO COFFEE VALUES
79 (0001, 3, 002, 'Breakfast Blend', 9.16),
80 (0002, 1, 003, 'French Blend', 6.22),
81 (0003, 2, 001, 'Light Roast', 8.49)
82 ;
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
---
```

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B.2.b - Results

Database: MySQL v5.7

Run

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Results

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Query #1

Execution time: 0ms

employee_id	first_name	last_name	hire_date	job_title	shop_id
1	James	Bosch	2017-12-19	Barista	3
2	Nikki	Valentine	2012-09-12	Manager	1
3	Harold	Noochi	2014-06-12	Maintenance	2

Query #2

Execution time: 1ms

shop_id	shop_name	city	state
1	Midnight Fuel	Los Angeles	CA
2	Square Bucks	New York	NY
3	Circle Cents	Boston	MA

Query #3

Execution time: 0ms

coffee_id	shop_id	supplier_id	coffee_name	price_per_pound
1	3	2	Breakfast Blend	9.10
2	1	3	French Blend	6.22
3	2	1	Light Roast	8.49

Query #4

Execution time: 0ms

supplier_id	company_name	country	sales_contact_name	email
1	Implot Beans	USA	Jannet Jones	jj@b.net
2	Hot Beans	Canada	Bob Uamear	bobu@HotBeans.com
3	Cool Beans	Colombia	Connie Lingus	connie@CB.net

B.3 – Create A View

Database: MySQL v5.7

Run

Update

Fork

Load Example

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Octopus Deploy

DEPLOY

Schema SQL

81 (0003, 2, 001, 'Light Roast', 8.49)
82 ;
83
84
85
86
87
88
89 CREATE VIEW EMPLOYEE_INFO AS SELECT
employee_id, CONCAT(first_name, ' ',
last_name) AS employee_full_name,
hire_date, job_title, shop_id FROM EMPLOYEE
90 ;
91
92
93
94
95
96
97

Text to DDL

Query SQL

1 SELECT * FROM EMPLOYEE_INFO

Query successfully executed in 39ms

Results

Copy as Markdown

Query #1 Execution time: 1ms

employee_id	employee_full_name	hire_date	job_title	shop_id
1	James Bosch	2017-12-19	Barista	3
2	Nikki Valentine	2012-09-12	Manager	1
3	Harold Noochi	2014-06-12	Maintenance	2

B.4 – Create An Index On Coffee Table

Database: MySQL v5.7

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Fiddle Description

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Schema SQL

124 CREATE INDEX COFFEE_NAME_INDEX ON COFFEE (coffee_name);

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

Query SQL

1 SHOW INDEX FROM COFFEE

Query successfully executed in 64ms

Results

Copy as Markdown

Query #1 Execution time: 0ms


Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type	Comment	Index_comment
COFFEE	0	PRIMARY	1	coffee_id	A	3	null	null		BTREE		
COFFEE	1	shop_id	1	shop_id	A	3	null	null	YES	BTREE		
COFFEE	1	supplier_id	1	supplier_id	A	3	null	null	YES	BTREE		
COFFEE	1	COFFEE_NAME_INDEX	1	coffee_name	A	3	null	null	YES	BTREE		

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B.5 – Select From Where Query

 Database: MySQL v5.7 ▾

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Schema SQL ●

125
126
127
128
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130
131
132
133
134
135
136
137
138
139
140
141
142
143
144

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Query SQL ●

1 [SELECT](#) coffee_name, price_per_pound
2 [FROM](#) COFFEE
3 [WHERE](#) Price_per_pound > 6.25;


Query successfully executed in 57ms

Results

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Query #1 [Execution time: 0ms](#)

coffee_name	price_per_pound
Breakfast Blend	9.16
Light Roast	8.49


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B.6 – 3 Table Join

Database: MySQL v5.7

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Fiddle Description

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Schema SQL

```
80 (0002, 1, 003, 'French Blend', 6.22),
81 (0003, 2, 001, 'Light Roast', 8.49)
82 ;
83
84
85
86
87
88 CREATE VIEW EMPLOYEE_INFO AS SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name,
89 hire_date, job_title, shop_id FROM EMPLOYEE
90 ;
91
92
93
94
95
96
97
98
99
100
101
```

Query SQL


Query successfully executed in 103ms

```
1
2
3
4
5 SELECT EMPLOYEE_INFO.employee_full_name, COFFEE_SHOP.shop_name, COFFEE.coffee_name
6
7 FROM ((EMPLOYEE_INFO
8 INNER JOIN COFFEE_SHOP ON EMPLOYEE_INFO.shop_id = COFFEE_SHOP.shop_id)
9 INNER JOIN COFFEE ON EMPLOYEE_INFO.shop_id = COFFEE.shop_id)
10 ;
11
```

Results

Query #1 Execution time: 2ms

employee_full_name	shop_name	coffee_name
James Bosch	Circle Cents	Breakfast Blend
Nikki Valentine	Midnight Fuel	French Blend
Harold Noochi	Square Bucks	Light Roast



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employee_full_name	shop_name	coffee_name
James Bosch	Circle Cents	Breakfast Blend
Nikki Valentine	Midnight Fuel	French Blend
Harold Noochi	Square Bucks	Light Roast