Louie Sanchez

Data Management - Applications

Normalization & Database Design

A.1.a & **A.1.b**

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

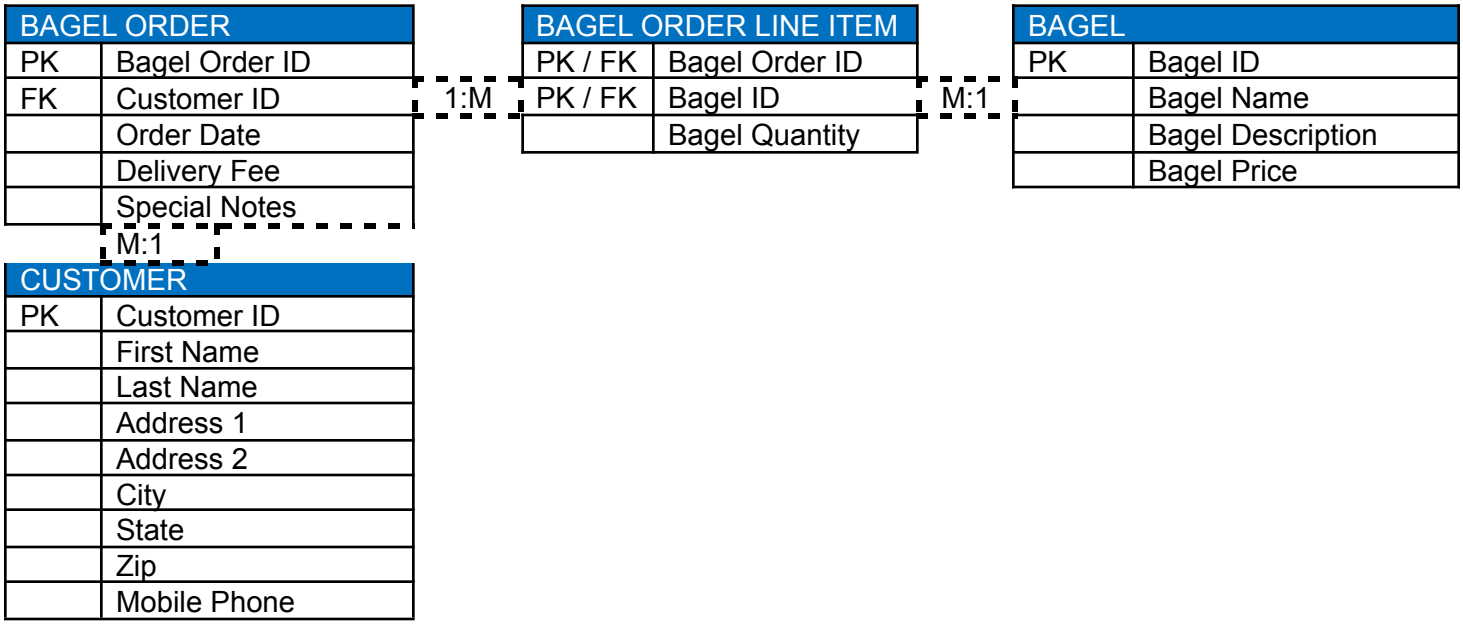
BAGEL ORDER LINE ITEM	
PK / FK	Bagel Order ID
PK / FK	Bagel ID
	Bagel Quantity

M:1

BAGEL	
PK	Bagel ID
	Bagel Name
	Bagel Description
	Bagel Price

A.2.a - A.2.d

Third Normal Form (3NF)



A.3.a & A.3.b

Final Physical Database Model

BAGEL ORDER		
PK	bagel_order_id	INTEGER
FK	customer_id	INTEGER
	order_date	TIMESTAMP
	delivery_fee	NUMERIC(5,2)
	special_notes	VARCHAR(255)

1:M

BAGEL ORDER LINE ITEM		
PK / FK	bagel_order_id	INTEGER
PK / FK	bagel_id	INTEGER
	bagel_quantity	INTEGER

M:1

BAGEL		
PK	bagel_order_id	INTEGER
	bagel_name	VARCHAR(30)
	bagel_description	VARCHAR(255)
	bagel_price	NUMERIC(5,2)

M:1

CUSTOMER		
PK	customer_id	INTEGER
	first_name	VARCHAR(30)
	last_name	VARCHAR(30)
	address1	VARCHAR(70)
	address2	VARCHAR(70)
	city	VARCHAR(20)
	state	CHAR(2)
	zip	NUMERIC(5,0)
	mobile_phone	NUMERIC(10,0)

B.1.a

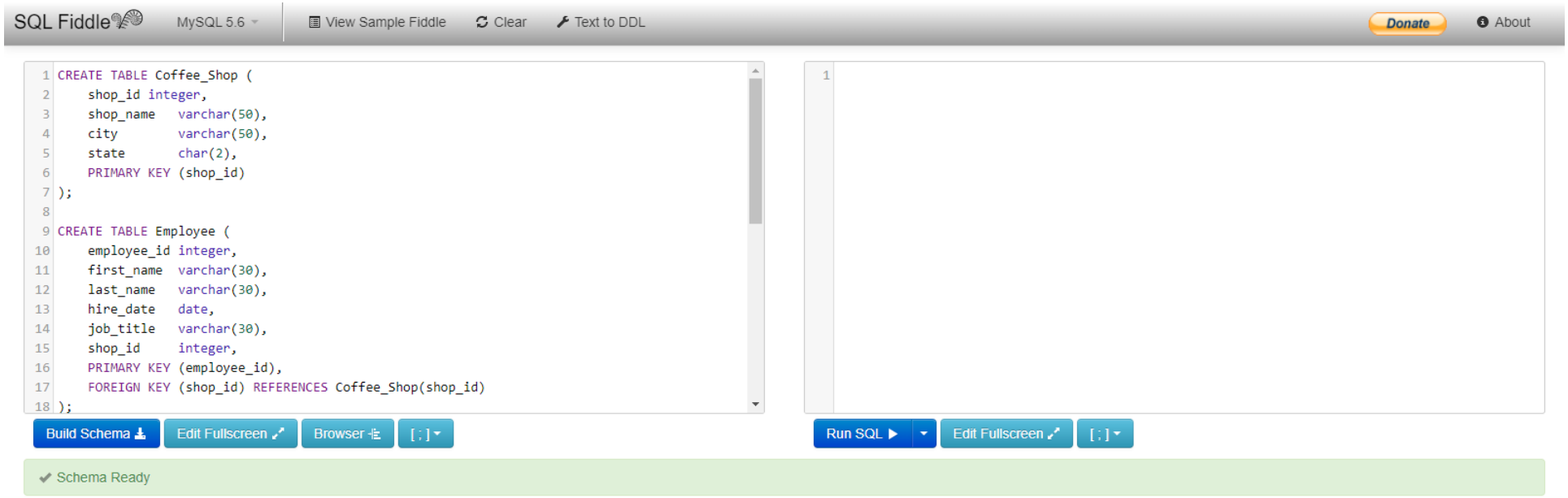
SQL Fiddle

Exit Fullscreen Schema Editor

```
CREATE TABLE Coffee_Shop (
    shop_id integer,
    shop_name   varchar(50),
    city        varchar(50),
    state       char(2),
    PRIMARY KEY (shop_id)
);
CREATE TABLE Employee (
    employee_id integer,
    first_name  varchar(30),
    last_name   varchar(30),
    hire_date   date,
    job_title   varchar(30),
    shop_id     integer,
    PRIMARY KEY (employee_id),
    FOREIGN KEY (shop_id) REFERENCES Coffee_Shop(shop_id)
);
CREATE TABLE Supplier (
    supplier_id         integer,
    company_name    varchar(50),
    country         varchar(30),
    sales_contact_name  varchar(60),
    email           varchar(50) NOT NULL,
    PRIMARY KEY (supplier_id)
);
CREATE TABLE Coffee (
    coffee_id       integer,
    shop_id         integer,
    supplier_id         integer,
    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)
);

```

```
CREATE TABLE Coffee_Shop (
        shop_id integer,
        shop_name       varchar(50),
        city            varchar(50),
        state           char(2),
        PRIMARY KEY (shop_id)
);

CREATE TABLE Employee (
        employee_id     integer,
        first_name      varchar(30),
        last_name       varchar(30),
        hire_date       date,
        job_title varchar(30),
        shop_id         integer,
        PRIMARY KEY (employee_id),
        FOREIGN KEY (shop_id) REFERENCES Coffee_Shop(shop_id)
);

CREATE TABLE Supplier (
        supplier_id             integer,
        company_name varchar(50),
        country         varchar(30),
        sales_contact_name      varchar(60),
        email                   varchar(50) NOT NULL,
        PRIMARY KEY (supplier_id)
);

CREATE TABLE Coffee (
        coffee_id               integer,
        shop_id                 integer,
        supplier_id             integer,
        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)
);
```

B.1.b


SQL Fiddle
MySQL 5.6
View Sample Fiddle
Clear
Text to DDL
Donate
About
CREATE TABLE Coffee_Shop (
shop_id integer,
shop_name varchar(50),
city varchar(50),
state char(2),
PRIMARY KEY (shop_id)
);
CREATE TABLE Employee (
employee_id integer,
first_name varchar(30),
last_name varchar(30),
hire_date date,
job_title varchar(30),
shop_id integer,
PRIMARY KEY (employee_id),
FOREIGN KEY (shop_id) REFERENCES Coffee_Shop(shop_id)
);
Build Schema
Edit Fullscreen
Browser
[;]
Run SQL
Edit Fullscreen
[;]
Schema Ready

B.2.a

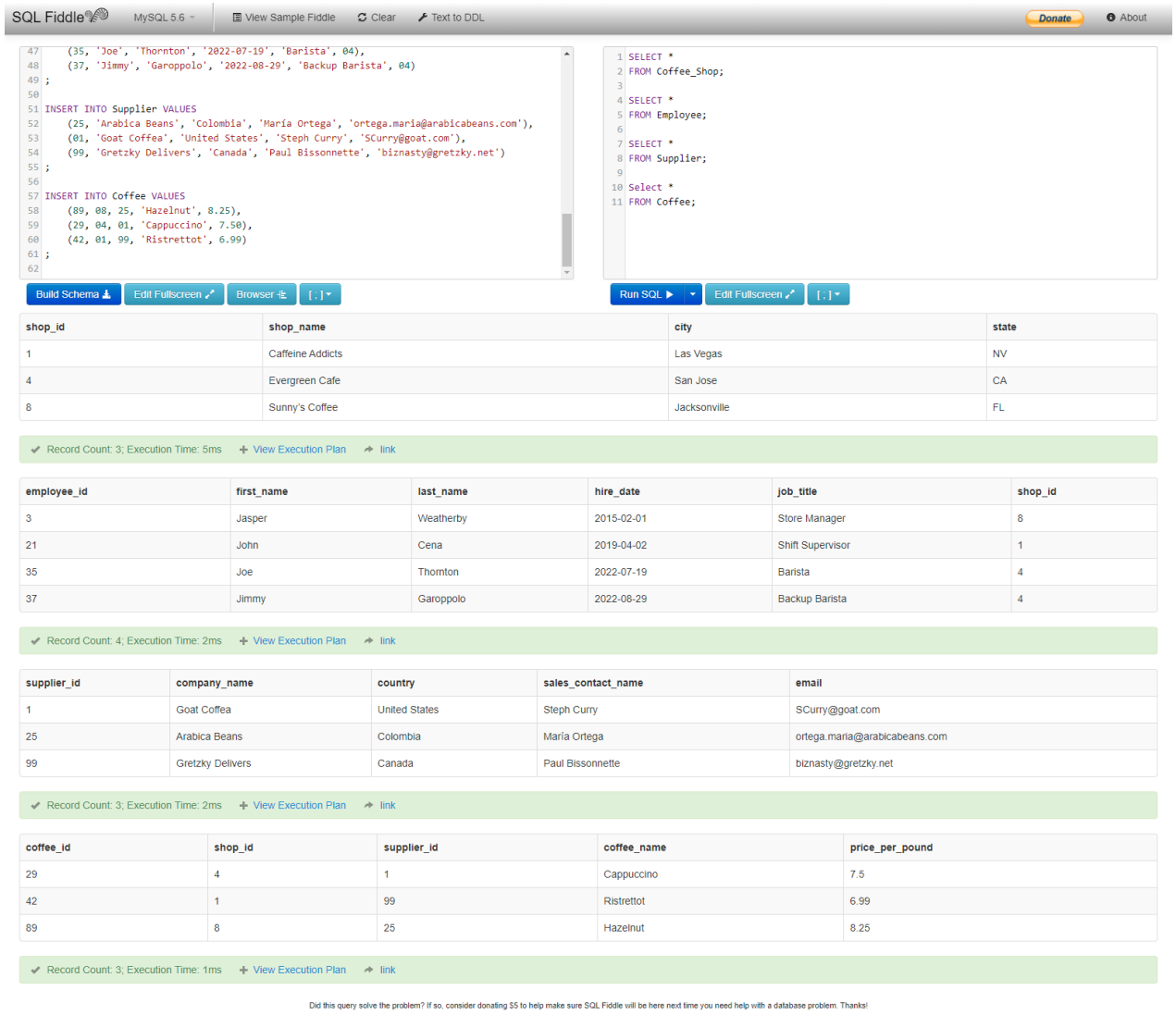
SQL Fiddle

Exit Fullscreen Schema Editor

```
    supplier_id         integer,
    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)
);

INSERT INTO Coffee_Shop VALUES
    (04, 'Evergreen Cafe', 'San Jose', 'CA'),
    (01, 'Caffeine Addicts', 'Las Vegas', 'NV'),
    (08, 'Sunny's Coffee', 'Jacksonville', 'FL')
;
INSERT INTO Employee VALUES
    (03, 'Jasper', 'Weatherby', '2015-02-01', 'Store Manager', 08),
    (21, 'John', 'Cena', '2019-04-02', 'Shift Supervisor', 01),
    (35, 'Joe', 'Thornton', '2022-07-19', 'Barista', 04),
    (37, 'Jimmy', 'Garropolo', '2022-08-29', 'Backup Barista', 04)
;
INSERT INTO Supplier VALUES
    (25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
    (01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
    (99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
;
INSERT INTO Coffee VALUES
    (89, 08, 25, 'Hazelnut', 8.25),
    (29, 04, 01, 'Cappuccino', 7.50),
    (42, 01, 99, 'Ristrettot', 6.99)
;
```

```
INSERT INTO Coffee_Shop VALUES
	(04, 'Evergreen Cafe', 'San Jose', 'CA'),
	(01, 'Caffeine Addicts', 'Las Vegas', 'NV'),
	(08, 'Sunny's Coffee', 'Jacksonville', 'FL')
;
INSERT INTO Employee VALUES
	(03, 'Jasper', 'Weatherby', '2015-02-01', 'Store Manager', 08),
	(21, 'John', 'Cena', '2019-04-02', 'Shift Supervisor', 01),
	(35, 'Joe', 'Thornton', '2022-07-19', 'Barista', 04),
	(37, 'Jimmy', 'Garoppolo', '2022-08-29', 'Backup Barista', 04)
;

INSERT INTO Supplier VALUES
	(25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
	(01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
	(99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
;

INSERT INTO Coffee VALUES
	(89, 08, 25, 'Hazelnut', 8.25),
	(29, 04, 01, 'Cappuccino', 7.50),
	(42, 01, 99, 'Ristrettot', 6.99)
;
```

B.2.b


SQL Fiddle
MySQL 5.6
View Sample Fiddle
Clear
Text to DDL
Donate
About
(35, 'Joe', 'Thornton', '2022-07-19', 'Barista', 04),
(37, 'Jimmy', 'Garoppolo', '2022-08-29', 'Backup Barista', 04)
;
INSERT INTO Supplier VALUES
(25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
(01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
(99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
;
INSERT INTO Coffee VALUES
(89, 08, 25, 'Hazelnut', 8.25),
(29, 04, 01, 'Cappuccino', 7.50),
(42, 01, 99, 'Ristrettot', 6.99)
;
SELECT *
FROM Coffee_Shop;
SELECT *
FROM Employee;
SELECT *
FROM Supplier;
Select *
FROM Coffee;
Build Schema
Edit Fullscreen
Browser
Run SQL
Edit Fullscreen
shop_id | shop_name | city | state
1 | Caffeine Addicts | Las Vegas | NV
4 | Evergreen Cafe | San Jose | CA
8 | Sunny's Coffee | Jacksonville | FL
Record Count: 3; Execution Time: 5ms
View Execution Plan
link
employee_id | first_name | last_name | hire_date | job_title | shop_id
3 | Jasper | Weatherby | 2015-02-01 | Store Manager | 8
21 | John | Cena | 2019-04-02 | Shift Supervisor | 1
35 | Joe | Thornton | 2022-07-19 | Barista | 4
37 | Jimmy | Garoppolo | 2022-08-29 | Backup Barista | 4
Record Count: 4; Execution Time: 2ms
View Execution Plan
link
supplier_id | company_name | country | sales_contact_name | email
1 | Goat Coffea | United States | Steph Curry | SCurry@goat.com
25 | Arabica Beans | Colombia | María Ortega | ortega.maria@arabicabeans.com
99 | Gretzky Delivers | Canada | Paul Bissonnette | biznasty@gretzky.net
Record Count: 3; Execution Time: 2ms
View Execution Plan
link
coffee_id | shop_id | supplier_id | coffee_name | price_per_pound
29 | 4 | 1 | Cappuccino | 7.5
42 | 1 | 99 | Ristrettot | 6.99
89 | 8 | 25 | Hazelnut | 8.25
Record Count: 3; Execution Time: 1ms
View Execution Plan
link
Did this query solve the problem? If so, consider donating $5 to help make sure SQL Fiddle will be here next time you need help with a database problem. Thanks!

B.3.a

SQL Fiddle

Exit Fullscreen Schema Editor

```
    PRIMARY KEY (coffee_id),
    FOREIGN KEY(shop_id) REFERENCES Coffee_Shop(shop_id),
    FOREIGN KEY(supplier_id) REFERENCES Supplier(supplier_id)
);

INSERT INTO Coffee_Shop VALUES
    (04, 'Evergreen Cafe', 'San Jose', 'CA'),
    (01, 'Caffeine Addicts', 'Las Vegas', 'NV'),
    (08, 'Sunny's Coffee', 'Jacksonville', 'FL')
;
INSERT INTO Employee VALUES
    (03, 'Jasper', 'Weatherby', '2015-02-01', 'Store Manager', 08),
    (21, 'John', 'Cena', '2019-04-02', 'Shift Supervisor', 01),
    (35, 'Joe', 'Thornton', '2022-07-19', 'Barista', 04),
    (37, 'Jimmy', 'Garoppolo', '2022-08-29', 'Backup Barista', 04)
;

INSERT INTO Supplier VALUES
    (25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
    (01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
    (99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
;

INSERT INTO Coffee VALUES
    (89, 08, 25, 'Hazelnut', 8.25),
    (29, 04, 01, 'Cappuccino', 7.50),
    (42, 01, 99, 'Ristrettot', 6.99)
;

CREATE VIEW employee_view AS
SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name, hire_date, job_title, shop_id
FROM Employee
```

CREATE VIEW employee_view AS

SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name, hire_date, job_title, shop_id

FROM Employee;

B.3.b

SQL Fiddle | MySQL 5.6 | View Sample Fiddle | Clear | Text to DDL | Donate | About

```
51
52 INSERT INTO Supplier VALUES
53     (25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
54     (01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
55     (99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
56 ;
57
58 INSERT INTO Coffee VALUES
59     (89, 08, 25, 'Hazelnut', 8.25),
60     (29, 04, 01, 'Cappuccino', 7.50),
61     (42, 01, 99, 'Ristrettot', 6.99)
62 ;
63
64 CREATE VIEW employee_view AS
65 SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name, hire_date, job
66 FROM Employee
67
```

Build Schema | Edit Fullscreen | Browser | [;]

```
1 SELECT *
2 FROM employee_view
```

Run SQL | Edit Fullscreen | [;]

employee_id	employee_full_name	hire_date	job_title	shop_id
3	Jasper Weatherby	2015-02-01	Store Manager	8
21	John Cena	2019-04-02	Shift Supervisor	1
35	Joe Thornton	2022-07-19	Barista	4
37	Jimmy Garoppolo	2022-08-29	Backup Barista	4

Record Count: 4; Execution Time: 17ms | View Execution Plan | link

Did this query solve the problem? If so, consider donating $5 to help make sure SQL Fiddle will be here next time you need help with a database problem. Thanks!

B.4.a

CREATE INDEX index_coffee_name

ON Coffee(coffee_name);

B.4.b

SQL Fiddle MySQL 5.6 View Sample Fiddle Clear Text to DDL Donate About

```
;

INSERT INTO Coffee VALUES
    (89, 08, 25, 'Hazelnut', 8.25),
    (29, 04, 01, 'Cappuccino', 7.50),
    (42, 01, 99, 'Ristrettot', 6.99)
;

CREATE VIEW employee_view AS
SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name, hire_date, job
FROM Employee;

CREATE INDEX index_coffee_name
ON Coffee(coffee_name);
```

Build Schema Edit Fullscreen Browser [;]

```
SHOW INDEX FROM Coffee;
```

Run SQL Edit Fullscreen [;]

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	index_coffee_name	1	coffee_name	A	3	(null)	(null)	YES	BTREE		

Record Count: 4; Execution Time: 11ms link

Did this query solve the problem? If so, consider donating $5 to help make sure SQL Fiddle will be here next time you need help with a database problem. Thanks!

B.5.a

```
SELECT *
FROM employee_view
WHERE shop_id = 4;
```

B.5.b

SQL Fiddle | MySQL 5.6 | View Sample Fiddle | Clear | Text to DDL | Donate | About

```
    (25, 'Arabica Beans', 'Colombia', 'María Ortega', 'ortega.maria@arabicabeans.com'),
    (01, 'Goat Coffea', 'United States', 'Steph Curry', 'SCurry@goat.com'),
    (99, 'Gretzky Delivers', 'Canada', 'Paul Bissonnette', 'biznasty@gretzky.net')
;

INSERT INTO Coffee VALUES
    (89, 08, 25, 'Hazelnut', 8.25),
    (29, 04, 01, 'Cappuccino', 7.50),
    (42, 01, 99, 'Ristrettot', 6.99)
;

CREATE VIEW employee_view AS
SELECT employee_id, CONCAT(first_name, ' ', last_name) AS employee_full_name, hire_date, job
FROM Employee;

CREATE INDEX index_coffee_name
ON Coffee(coffee_name);
```

Build Schema | Edit Fullscreen | Browser | [;]

```
SELECT *
FROM employee_view
WHERE shop_id = 4;
```

Run SQL | Edit Fullscreen | [;]

employee_id	employee_full_name	hire_date	job_title	shop_id
35	Joe Thornton	2022-07-19	Barista	4
37	Jimmy Garoppolo	2022-08-29	Backup Barista	4

Record Count: 2; Execution Time: 2ms | View Execution Plan | link

Did this query solve the problem? If so, consider donating $5 to help make sure SQL Fiddle will be here next time you need help with a database problem. Thanks!

B.6.a

```
SELECT shop_name, coffee_name, company_name
FROM Coffee_Shop s INNER JOIN Coffee c ON s.shop_id = c.shop_id
        INNER JOIN Supplier n ON n.supplier_id = c.supplier_id;
```

B.6.b