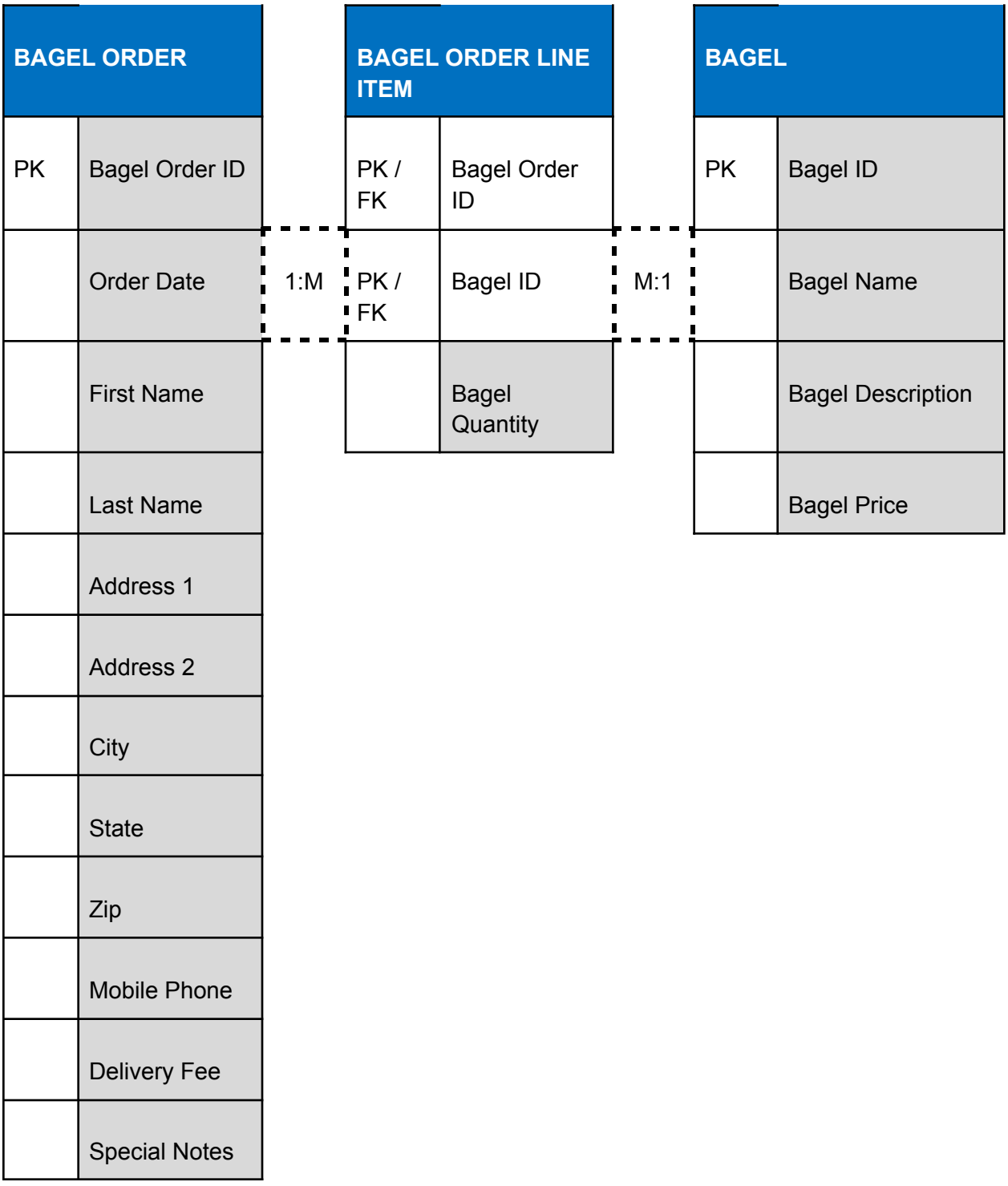
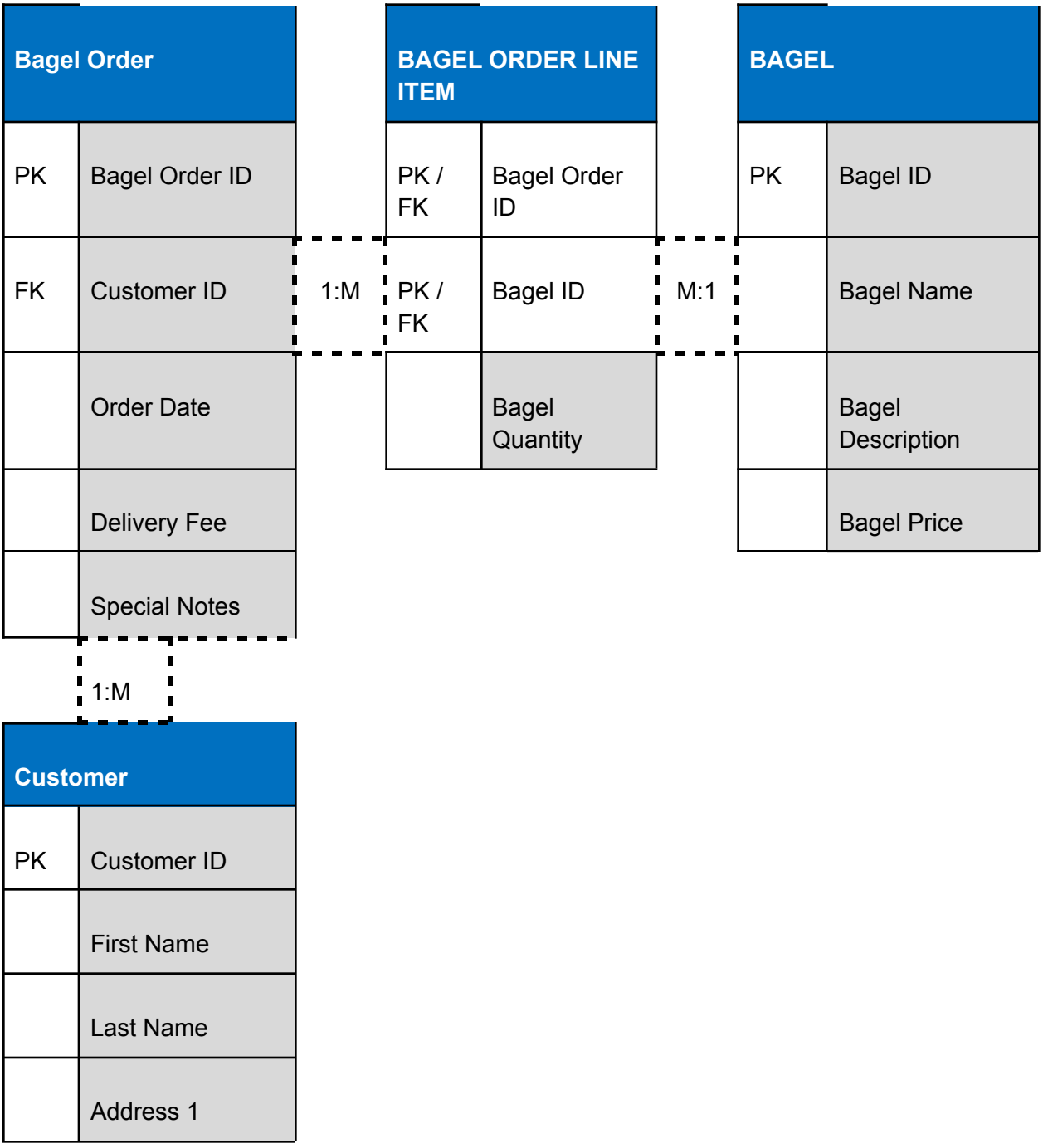
# Part 1

**Second Normal Form (2NF)**



All the attributes in the Bagel Order table are specific to the order itself and the attributes in the Bagel table are specific to the Bagel itself. The only attribute left to go into the Line Item Table is the bagel quantity attribute because it deals with both the order and the bagel. The cardinality between Bagel Order and Bagel Order Line Item is one to many because there can be many items in an order and but only one order. The cardinality between the line item and the bagel is many to one because there can be many lines of bagels but only one bagel per line.

**Third Normal Form (3NF)**

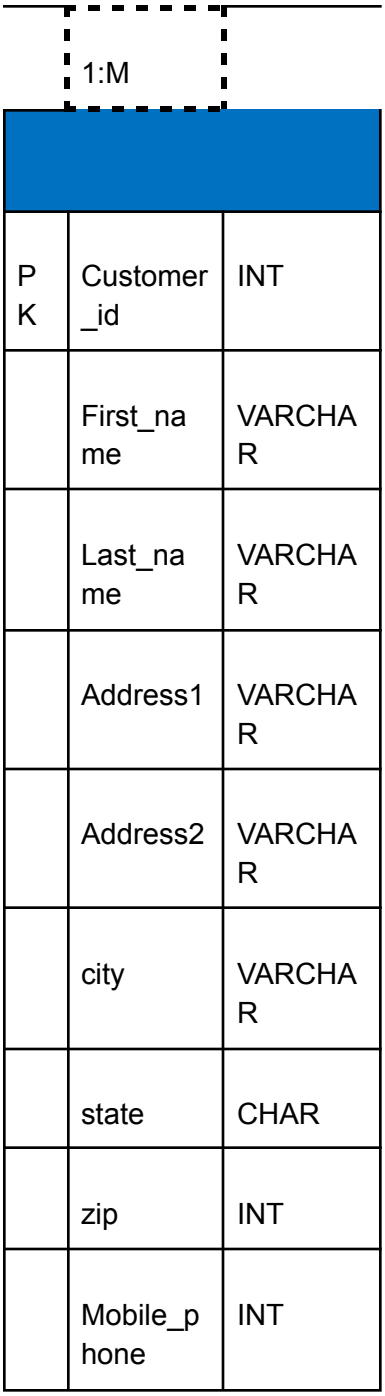


| | |
|---|---|
| | Address 2 |
| | City |
| | State |
| | Zip |
| | Mobile Phone |

I labeled the new table customer because most of the attributes in the Order table were specific to the customer and created the customer id attribute to be the primary key. The relationship between customer and order is one to many because there can only be one customer to an order, but that customer can make multiple orders.

**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 | M: M | | PK / FK | bagel_id | CHAR(2) | M: 1 | | Bagel_name | VarChar() |
| | Order_date | TIMESTAMP | | | | bagel_quanity | INT | | | Bagel_description | VARCHAR |
| | Delivery_fee | NUMERIC() | | | | | | | | Bagel_price | NUMERIC |
| | Special_notes | VARCHAR | | | | | | | | | |




| | | |
|---|---|---|
| PK | Customer_id | INT |
| | First_name | VARCHAR |
| | Last_name | VARCHAR |
| | Address1 | VARCHAR |
| | Address2 | VARCHAR |
| | city | VARCHAR |
| | state | CHAR |
| | zip | INT |
| | Mobile_phone | INT |

# Part 2

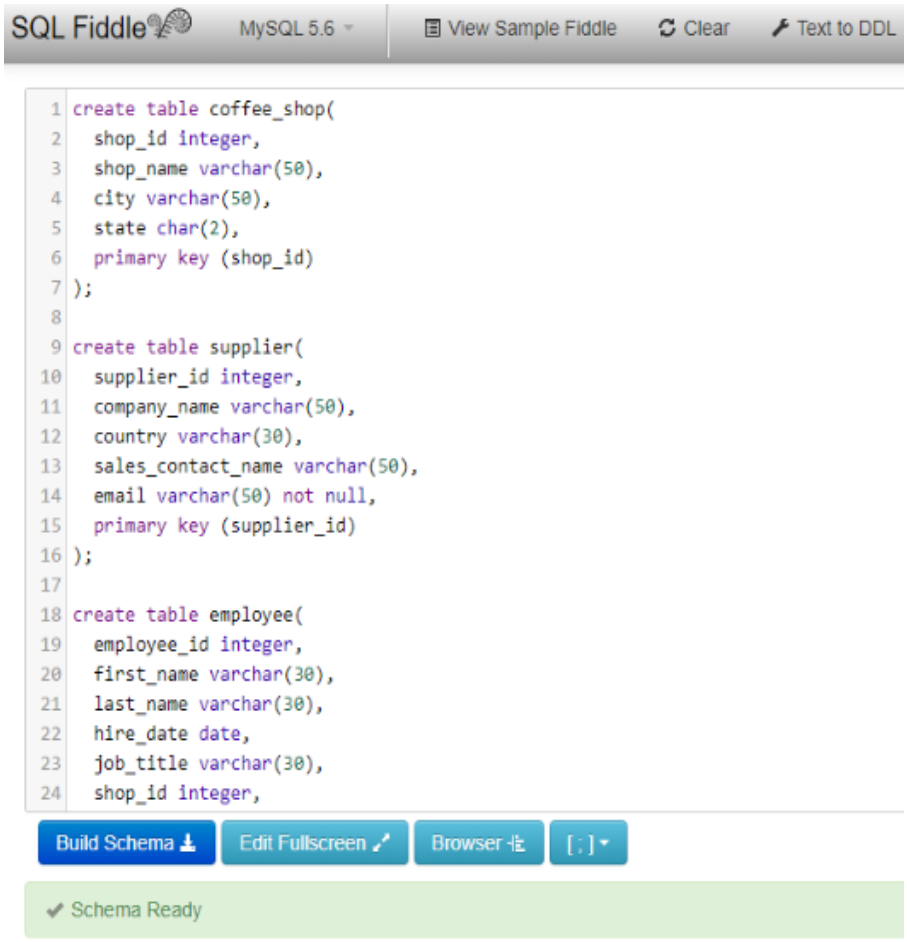
Below is the SQL code used to build the schema

```
create table coffee_shop(
  shop_id integer,
  shop_name varchar(50),
  city varchar(50),
  state char(2),
  primary key (shop_id)
);

create table supplier(
  supplier_id integer,
  company_name varchar(50),
  country varchar(30),
  sales_contact_name varchar(50),
  email varchar(50) not null,
  primary key (supplier_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 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)
);

insert into coffee_shop values ('1', 'coffee house', 'houston', 'tx');
insert into coffee_shop values ('2', 'coffee spot', 'dallas', 'tx');
insert into coffee_shop values ('3', 'coffee place', 'houston', 'tx');

insert into supplier values ('1', 'coffee guys', 'USA', 'david', 'email@email.com');
```

```
insert into supplier values ('2', 'coffee dudes', 'USA', 'daniel', 'email@email.com');
insert into supplier values ('3', 'coffee boys', 'USA', 'dalton', 'email@email.com');

insert into employee values ('1', 'dalton', 'riley', '2000-01-01', 'barista', '1');
insert into employee values ('2', 'dalton', 'riley', '2000-01-01', 'barista', '2');
insert into employee values ('3', 'dalton', 'riley', '2000-01-01', 'barista', '3');

insert into coffee values('1', '1', '1', 'light', '2.50');
insert into coffee values('2', '2', '2', 'medium', '2.50');
insert into coffee values('3', '3', '3', 'dark', '2.50');

create view employees as
select employee_id, (first_name || ' ' || last_name) "employee_full_name",
hire_date, job_title, shop_id
from employee;

create index coffeename
on Coffee (coffee_name);
```

# B1


SQL Fiddle
MySQL 5.6
View Sample Fiddle
Clear
Text to DDL
create table coffee_shop(
shop_id integer,
shop_name varchar(50),
city varchar(50),
state char(2),
primary key (shop_id)
);
create table supplier(
supplier_id integer,
company_name varchar(50),
country varchar(30),
sales_contact_name varchar(50),
email varchar(50) not null,
primary key (supplier_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,
Build Schema
Edit Fullscreen
Browser
[ ; ]
Schema Ready

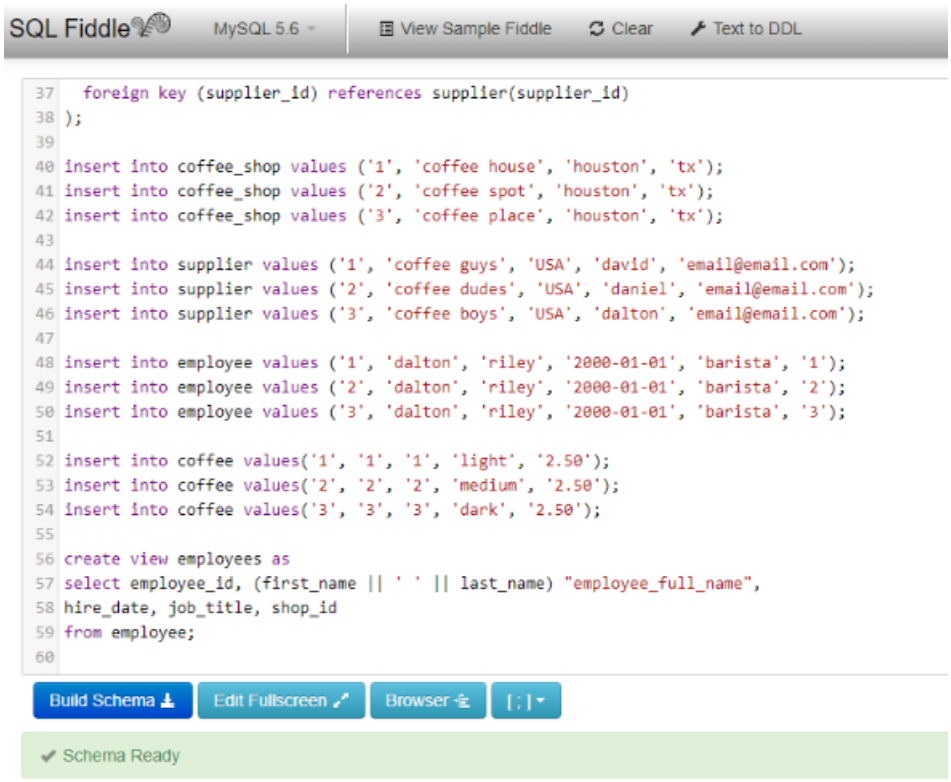
# B2

```
  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)
);

insert into coffee_shop values ('1', 'coffee house', 'houston', 'tx');
insert into coffee_shop values ('2', 'coffee spot', 'houston', 'tx');
insert into coffee_shop values ('3', 'coffee place', 'houston', 'tx');

insert into supplier values ('1', 'coffee guys', 'USA', 'david', 'email@email.com');
insert into supplier values ('2', 'coffee dudes', 'USA', 'daniel', 'email@email.com');
insert into supplier values ('3', 'coffee boys', 'USA', 'dalton', 'email@email.com');

insert into employee values ('1', 'dalton', 'riley', '2000-01-01', 'barista', '1');
insert into employee values ('2', 'dalton', 'riley', '2000-01-01', 'barista', '2');
insert into employee values ('3', 'dalton', 'riley', '2000-01-01', 'barista', '3');

insert into coffee values('1', '1', '1', 'light', '2.50');
insert into coffee values('2', '2', '2', 'medium', '2.50');
insert into coffee values('3', '3', '3', 'dark', '2.50');
```

Build Schema | Edit Fullscreen | Browser | [ ; ]

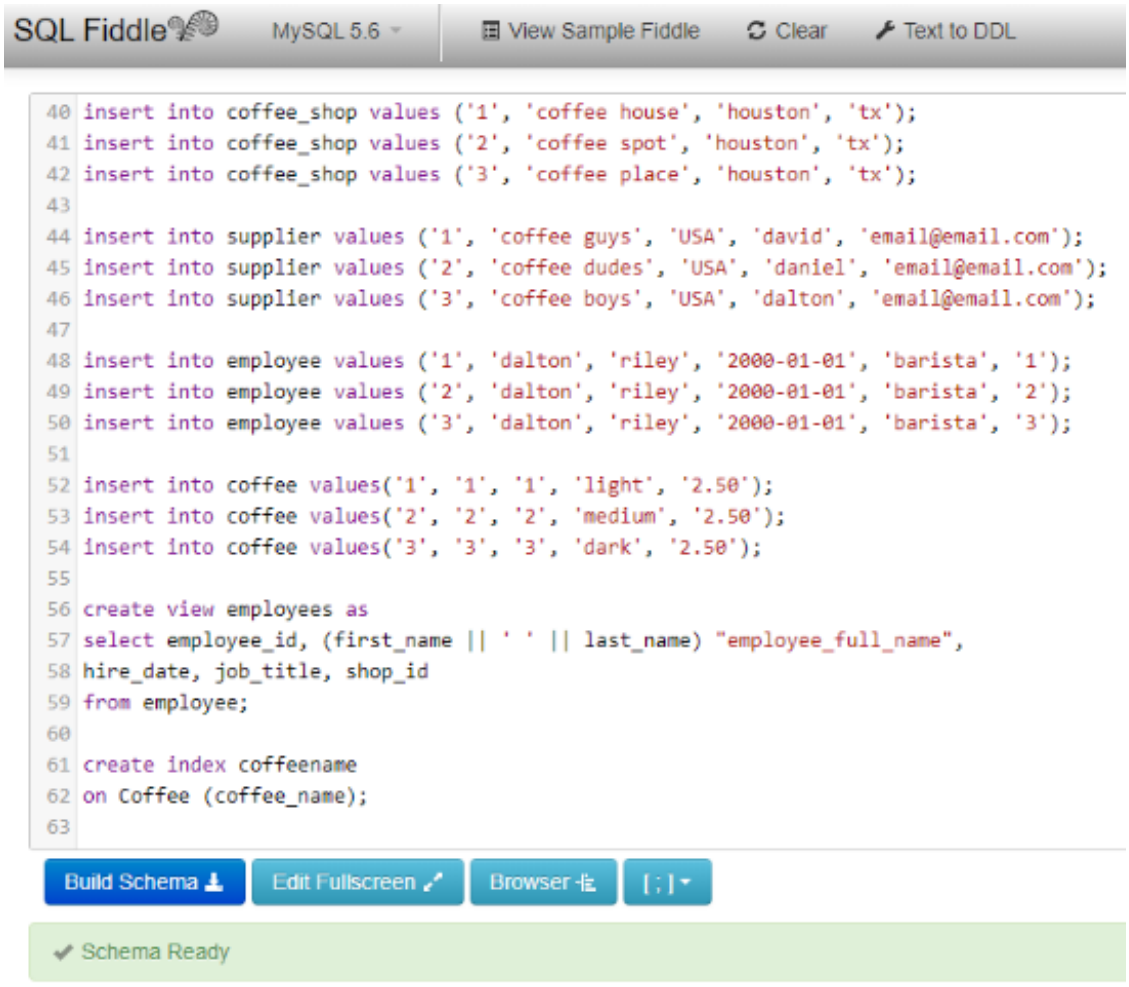
✔ Schema Ready

# B3




```
  foreign key (supplier_id) references supplier(supplier_id)
);

insert into coffee_shop values ('1', 'coffee house', 'houston', 'tx');
insert into coffee_shop values ('2', 'coffee spot', 'houston', 'tx');
insert into coffee_shop values ('3', 'coffee place', 'houston', 'tx');

insert into supplier values ('1', 'coffee guys', 'USA', 'david', 'email@email.com');
insert into supplier values ('2', 'coffee dudes', 'USA', 'daniel', 'email@email.com');
insert into supplier values ('3', 'coffee boys', 'USA', 'dalton', 'email@email.com');

insert into employee values ('1', 'dalton', 'riley', '2000-01-01', 'barista', '1');
insert into employee values ('2', 'dalton', 'riley', '2000-01-01', 'barista', '2');
insert into employee values ('3', 'dalton', 'riley', '2000-01-01', 'barista', '3');

insert into coffee values('1', '1', '1', 'light', '2.50');
insert into coffee values('2', '2', '2', 'medium', '2.50');
insert into coffee values('3', '3', '3', 'dark', '2.50');

create view employees as
select employee_id, (first_name || ' ' || last_name) "employee_full_name",
hire_date, job_title, shop_id
from employee;

```

# B4


SQL Fiddle
MySQL 5.6
View Sample Fiddle
Clear
Text to DDL
40 insert into coffee_shop values ('1', 'coffee house', 'houston', 'tx');
41 insert into coffee_shop values ('2', 'coffee spot', 'houston', 'tx');
42 insert into coffee_shop values ('3', 'coffee place', 'houston', 'tx');
43
44 insert into supplier values ('1', 'coffee guys', 'USA', 'david', 'email@email.com');
45 insert into supplier values ('2', 'coffee dudes', 'USA', 'daniel', 'email@email.com');
46 insert into supplier values ('3', 'coffee boys', 'USA', 'dalton', 'email@email.com');
47
48 insert into employee values ('1', 'dalton', 'riley', '2000-01-01', 'barista', '1');
49 insert into employee values ('2', 'dalton', 'riley', '2000-01-01', 'barista', '2');
50 insert into employee values ('3', 'dalton', 'riley', '2000-01-01', 'barista', '3');
51
52 insert into coffee values('1', '1', '1', 'light', '2.50');
53 insert into coffee values('2', '2', '2', 'medium', '2.50');
54 insert into coffee values('3', '3', '3', 'dark', '2.50');
55
56 create view employees as
57 select employee_id, (first_name || ' ' || last_name) "employee_full_name",
58 hire_date, job_title, shop_id
59 from employee;
60
61 create index coffeename
62 on Coffee (coffee_name);
63
Build Schema
Edit Fullscreen
Browser
[ ; ]
Schema Ready

# B5

```sql
select shop_name, city
from coffee_shop
where city='dallas';
```

```sql
create table coffee_shop(
  shop_id integer,
  shop_name varchar(50),
  city varchar(50),
  state char(2),
  primary key (shop_id)
);

create table supplier(
  supplier_id integer,
  company_name varchar(50),
  country varchar(30),
  sales_contact_name varchar(50),
  email varchar(50) not null,
  primary key (supplier_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,
```

Build Schema | Edit Fullscreen | Browser | [ : ]

```sql
select shop_name, city
from coffee_shop
where city='dallas';
```

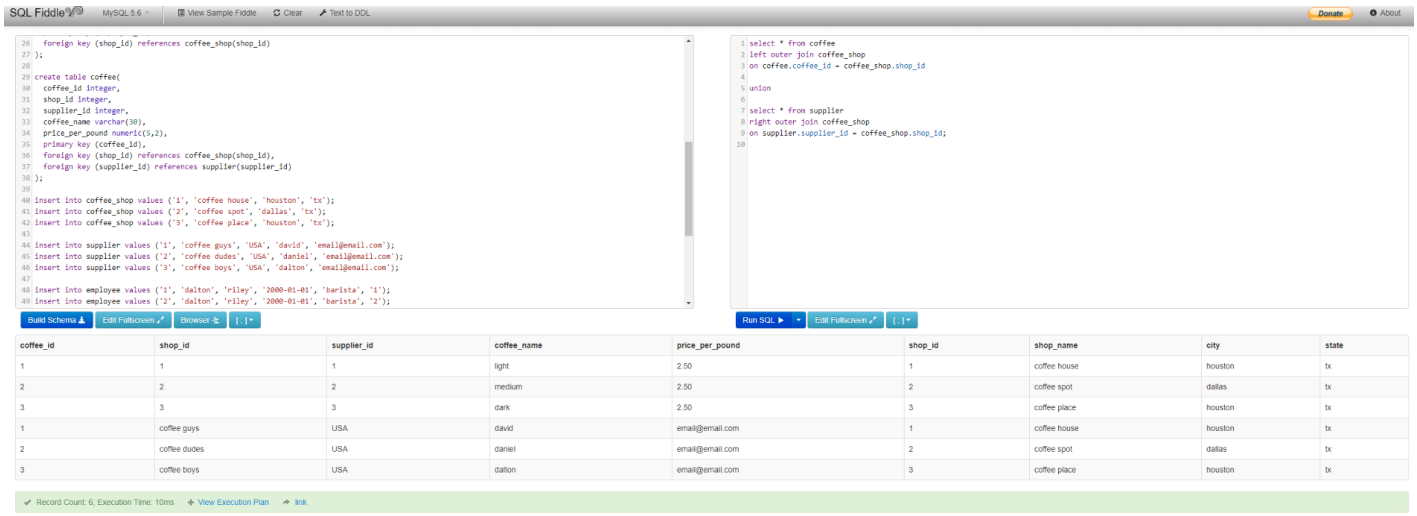
Run SQL | Edit Fullsc

| shop_name |
| --- |
| coffee spot |

Record Count: 1; Execution Time: 22ms + View Execution Plan link

# B6

```sql
select * from coffee
left outer join coffee_shop
on coffee.coffee_id = coffee_shop.shop_id

union

select * from supplier
right outer join coffee_shop
on supplier.supplier_id = coffee_shop.shop_id;
```



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

```sql
  foreign key (shop_id) references coffee_shop(shop_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)
);

insert into coffee_shop values ('1', 'coffee house', 'houston', 'tx');
insert into coffee_shop values ('2', 'coffee spot', 'dallas', 'tx');
insert into coffee_shop values ('3', 'coffee place', 'houston', 'tx');

insert into supplier values ('1', 'coffee guys', 'USA', 'david', 'email@email.com');
insert into supplier values ('2', 'coffee dudes', 'USA', 'daniel', 'email@email.com');
insert into supplier values ('3', 'coffee boys', 'USA', 'dalton', 'email@email.com');

insert into employee values ('1', 'dalton', 'riley', '2000-01-01', 'barista', '1');
insert into employee values ('2', 'dalton', 'riley', '2000-01-01', 'barista', '2');
```

Build Schema | Edit Fullscreen | Browser | [ , ]

```sql
select * from coffee
left outer join coffee_shop
on coffee.coffee_id = coffee_shop.shop_id

union

select * from supplier
right outer join coffee_shop
on supplier.supplier_id = coffee_shop.shop_id;
```

Run SQL | Edit Fullscreen | [ , ]

| coffee_id | shop_id | supplier_id | coffee_name | price_per_pound | shop_id | shop_name | city | state |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | light | 2.50 | 1 | coffee house | houston | tx |
| 2 | 2 | 2 | medium | 2.50 | 2 | coffee spot | dallas | tx |
| 3 | 3 | 3 | dark | 2.50 | 3 | coffee place | houston | tx |
| 1 | coffee guys | USA | david | email@email.com | 1 | coffee house | houston | tx |
| 2 | coffee dudes | USA | daniel | email@email.com | 2 | coffee spot | dallas | tx |
| 3 | coffee boys | USA | dalton | email@email.com | 3 | coffee place | houston | tx |

Record Count: 6, Execution Time: 10ms | View Execution Plan | link