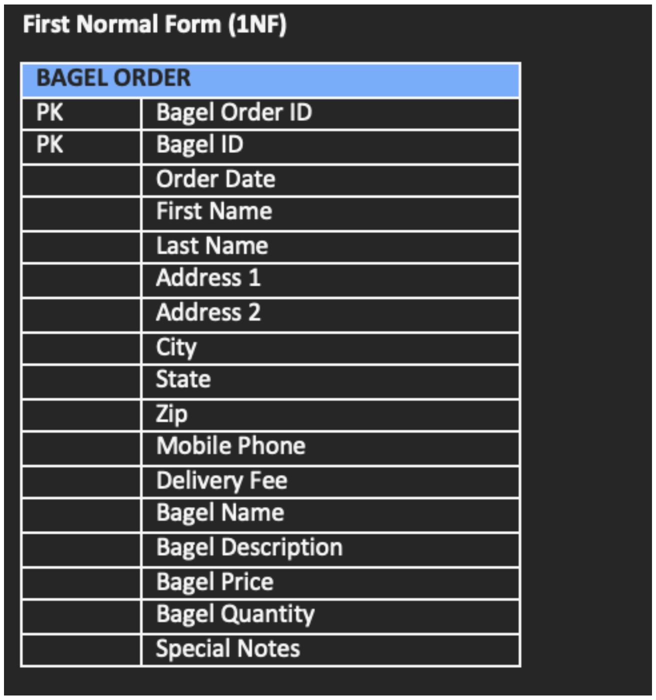
Alexandria Lim
C170
10/26/2021

Nora's Bagel Bin

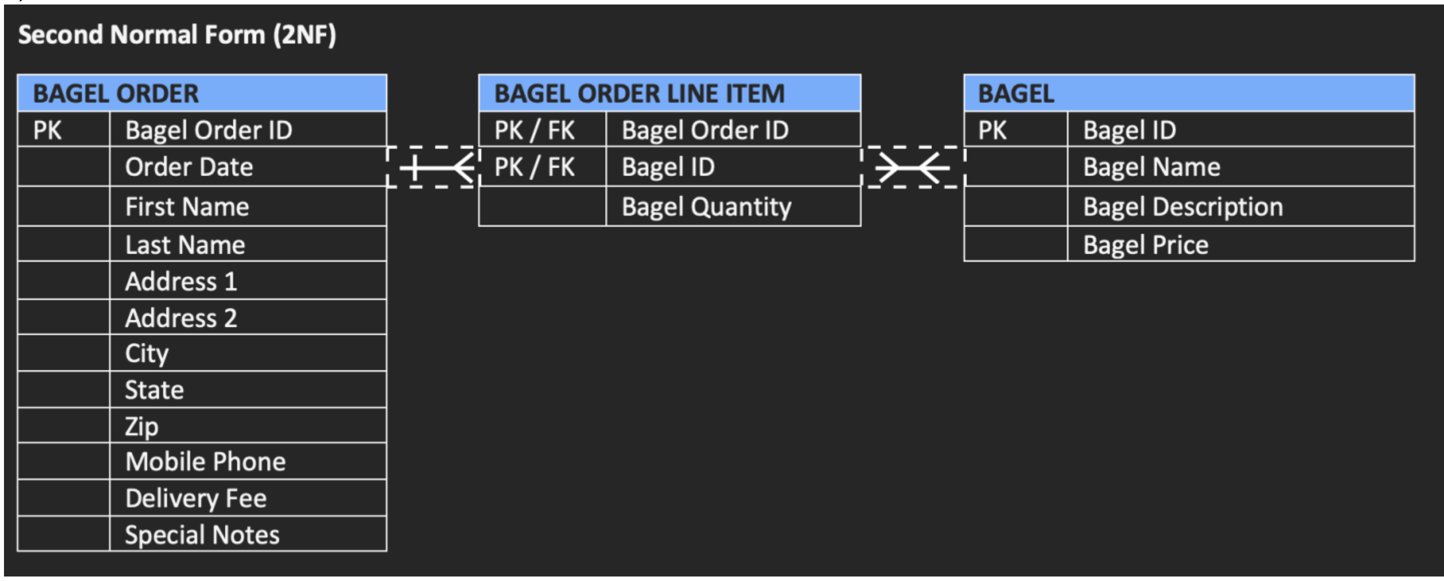


First Normal Form (1NF)

BAGEL ORDER	
PK	Bagel Order ID
PK	Bagel ID
	Order Date
	First Name
	Last Name
	Address 1
	Address 2
	City
	State
	Zip
	Mobile Phone
	Delivery Fee
	Bagel Name
	Bagel Description
	Bagel Price
	Bagel Quantity
	Special Notes

Part A)

A) 1)



Second Normal Form (2NF)

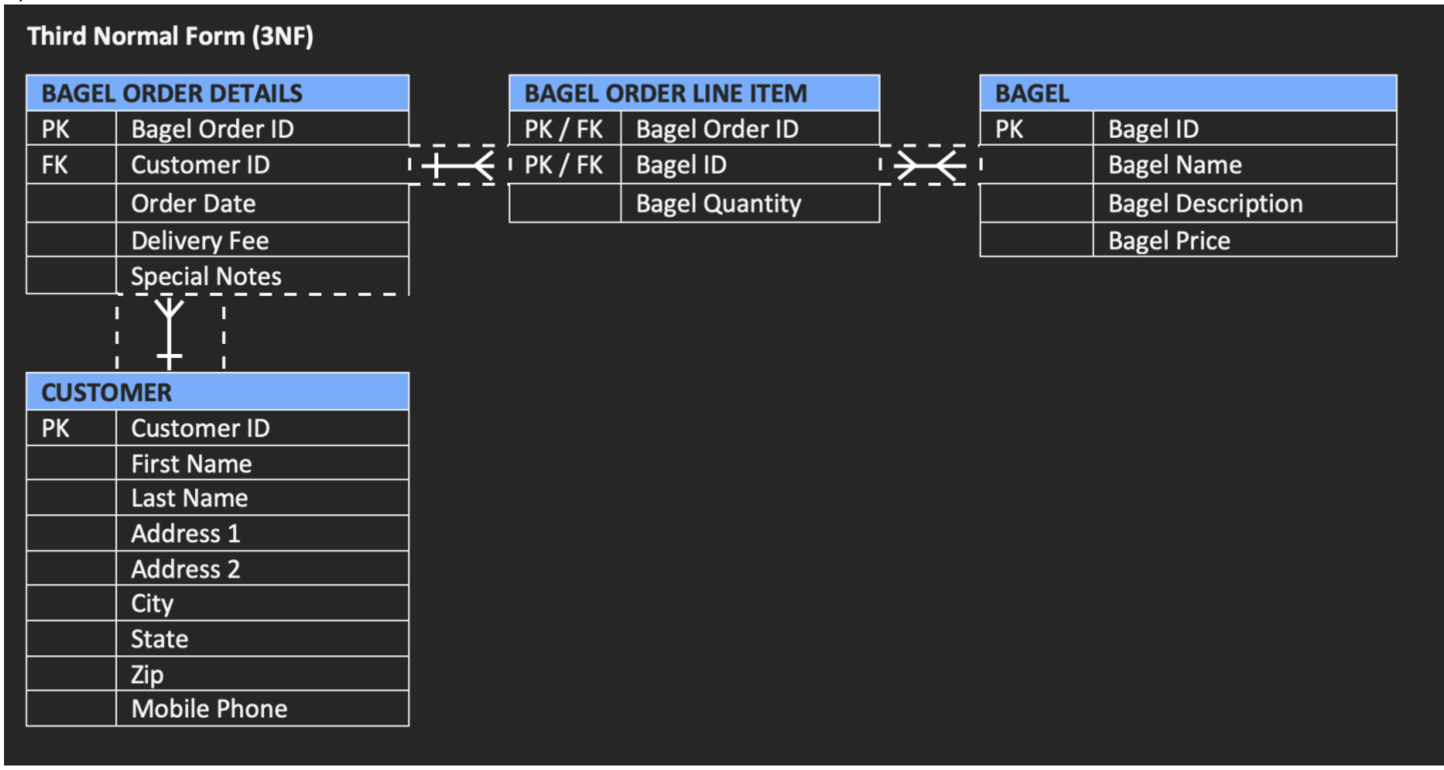
BAGEL ORDER	
PK	Bagel Order ID
	Order Date
	First Name
	Last Name
	Address 1
	Address 2
	City
	State
	Zip
	Mobile Phone
	Delivery Fee
	Special Notes

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

BAGEL	
PK	Bagel ID
	Bagel Name
	Bagel Description
	Bagel Price

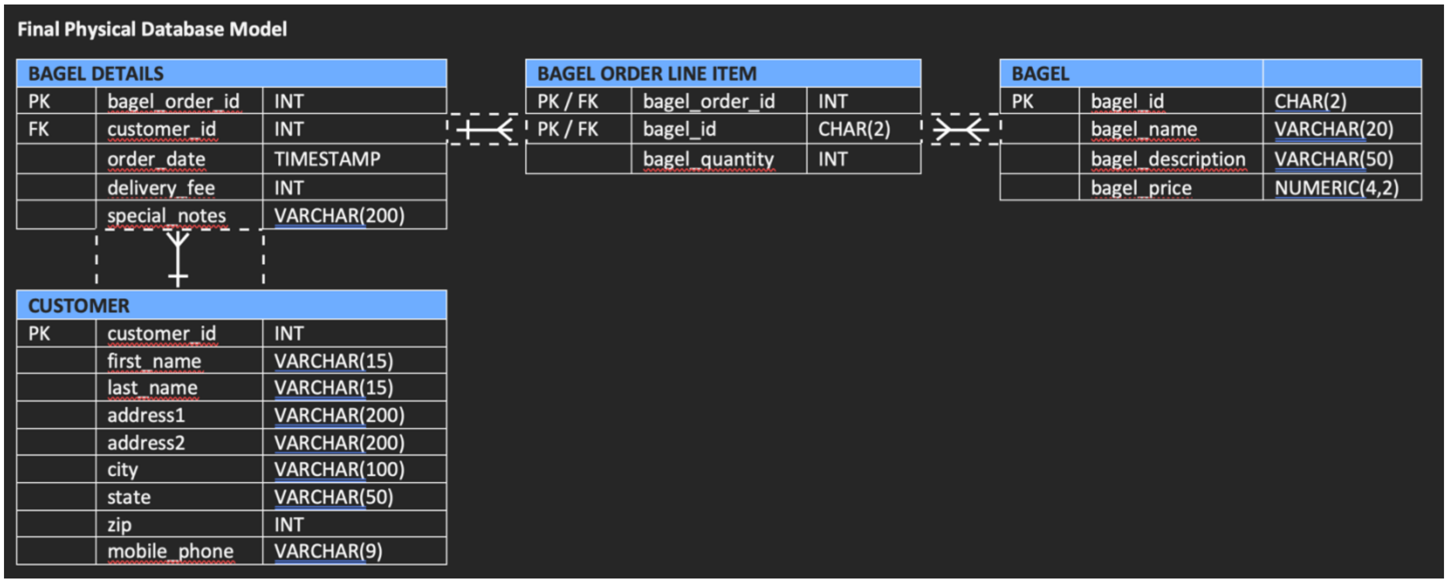
Based on 1NF, I was able to categorize each entity into the corresponding attribute. I mainly used the Bagel Order Form to give me clues as to how the data was being used in the bagel shop. Since 2 PK/FK's were given, I was able to determine what values had to be PKs for the other 2 tables. Then, I sectioned out the customer info and other bagel order information from the 1NF table. I decided to move customer info to bagel order due to how the bagel receipt example displayed customer info separate from each order line. For the cardinality I determined that 1 bagel order can have many bagel order line items (1:M). Each of those bagel order line items can have many bagels (M:M) as displayed on the first customer receipt (Bagel Order Form).

A) 2)



Based on 2NF's structure, I kept 'Bagel Order Line Item' and 'Bagel' as is. Then modified 'Bagel Order' into 2 different tables, 'BAGEL ORDER DETAILS' and 'Customer'. I placed all the customer information under 'Customer' and placed the remaining bagel entities under 'Bagel Order Details'. I decided to create a new attribute called 'Customer' because there was a list of customer entities. Doing this would be able to separate customer info from any bagel related information. For the cardinality, I kept it the same between 'Bagel Order Line Item' and 'Bagel', along with 'Bagel Order Line Item' and 'Bagel Order' from 2NF. When adding 'customer' I set it to 1:M because there will be 1 customer who can make many orders

3)


Final Physical Database Model

BAGEL DETAILS		
PK	bagel_order_id	INT
FK	customer_id	INT
	order_date	TIMESTAMP
	delivery_fee	INT
	special_notes	VARCHAR(200)

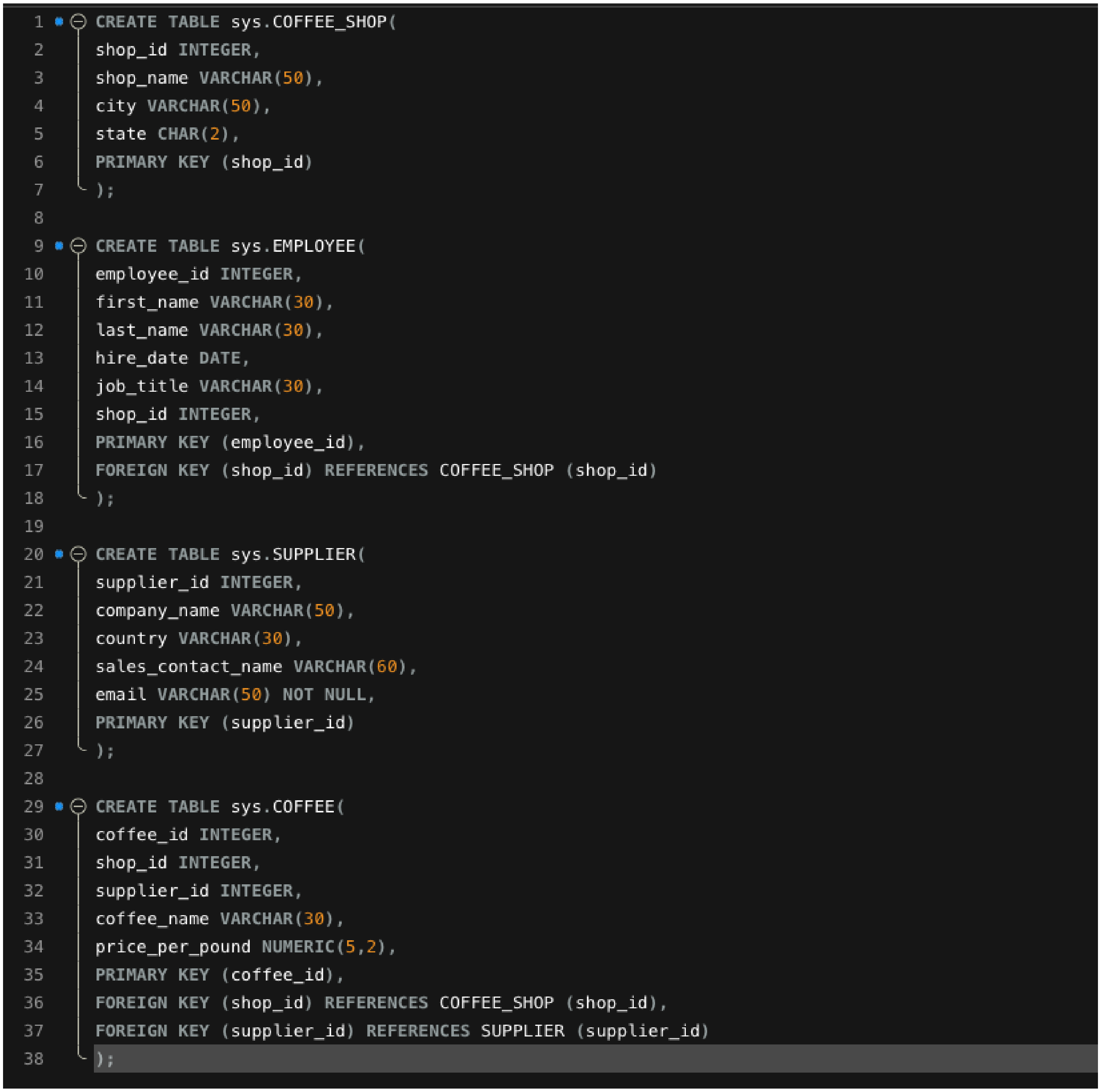
BAGEL ORDER LINE ITEM		
PK / FK	bagel_order_id	INT
PK / FK	bagel_id	CHAR(2)
	bagel_quantity	INT

BAGEL		
PK	bagel_id	CHAR(2)
	bagel_name	VARCHAR(20)
	bagel_description	VARCHAR(50)
	bagel_price	NUMERIC(4,2)

CUSTOMER		
PK	customer_id	INT
	first_name	VARCHAR(15)
	last_name	VARCHAR(15)
	address1	VARCHAR(200)
	address2	VARCHAR(200)
	city	VARCHAR(100)
	state	VARCHAR(50)
	zip	INT
	mobile_phone	VARCHAR(9)

Part B.

B) 1a)



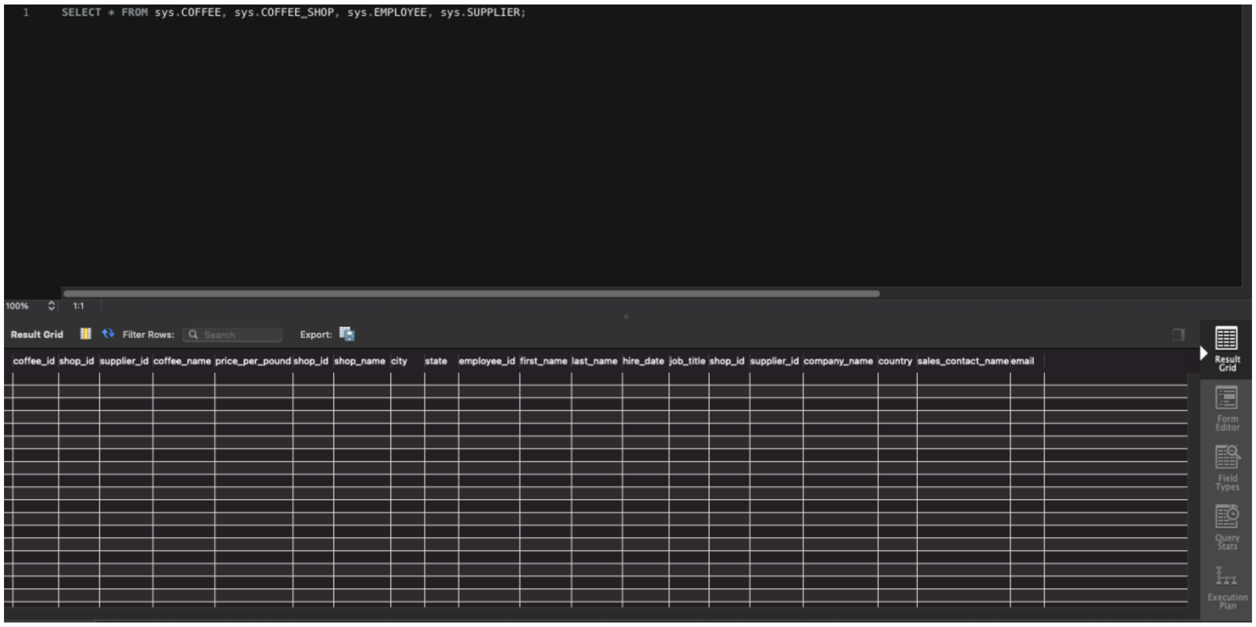
```
CREATE TABLE sys.COFFEE_SHOP(
shop_id INTEGER,
shop_name VARCHAR(50),
city VARCHAR(50),
state CHAR(2),
PRIMARY KEY (shop_id)
);

CREATE TABLE sys.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 sys.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 sys.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)
);
```

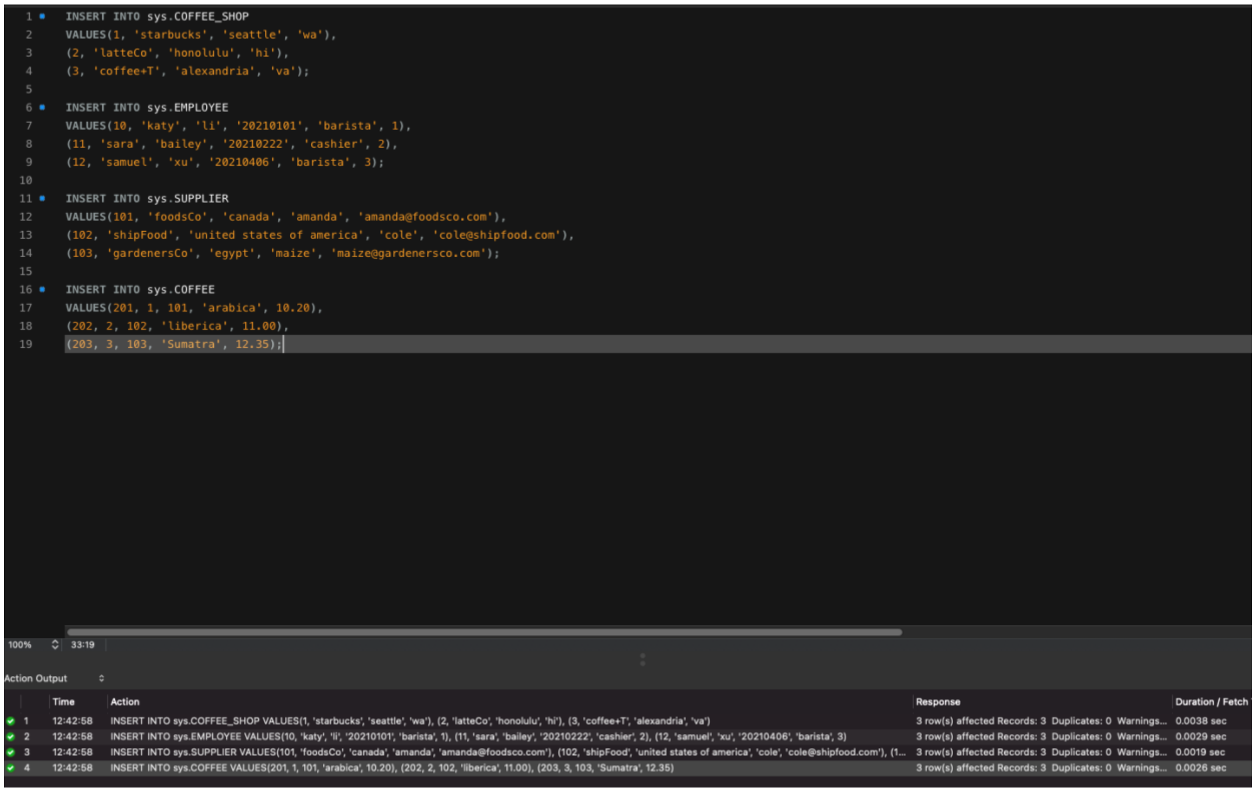
B) 1b)



```
SELECT * FROM sys.COFFEE, sys.COFFEE_SHOP, sys.EMPLOYEE, sys.SUPPLIER;
```

coffee_id	shop_id	supplier_id	coffee_name	price_per_pound	shop_id	shop_name	city	state	employee_id	first_name	last_name	hire_date	job_title	shop_id	supplier_id	company_name	country	sales_contact_name	email

B) 2a)



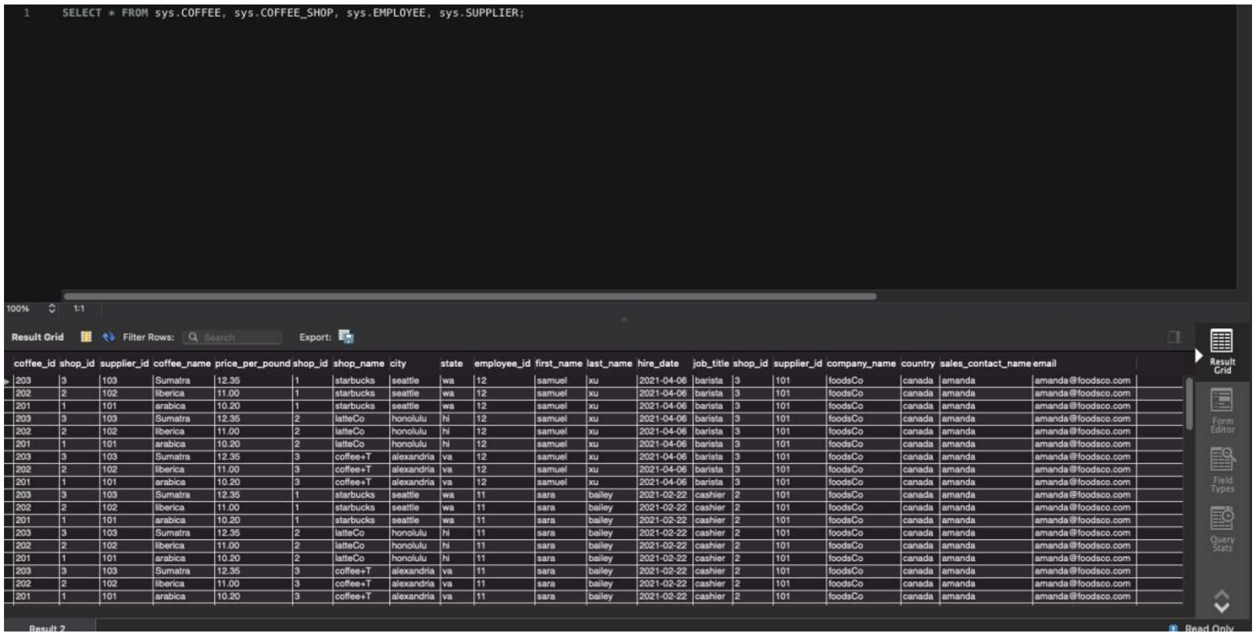
```
INSERT INTO sys.COFFEE_SHOP
VALUES(1, 'starbucks', 'seattle', 'wa'),
(2, 'latteCo', 'honolulu', 'hi'),
(3, 'coffee+T', 'alexandria', 'va');

INSERT INTO sys.EMPLOYEE
VALUES(10, 'katy', 'li', '20210101', 'barista', 1),
(11, 'sara', 'bailey', '20210222', 'cashier', 2),
(12, 'samuel', 'xu', '20210406', 'barista', 3);

INSERT INTO sys.SUPPLIER
VALUES(101, 'foodsCo', 'canada', 'amanda', 'amanda@foodsco.com'),
(102, 'shipFood', 'united states of america', 'cole', 'cole@shipfood.com'),
(103, 'gardenersCo', 'egypt', 'maize', 'maize@gardenersco.com');

INSERT INTO sys.COFFEE
VALUES(201, 1, 101, 'arabica', 10.20),
(202, 2, 102, 'liberica', 11.00),
(203, 3, 103, 'Sumatra', 12.35);
```

```
Action Output
   Time      Action                                                                                                                                                       Response                                                         Duration / Fetch
1  12:42:58  INSERT INTO sys.COFFEE_SHOP VALUES(1, 'starbucks', 'seattle', 'wa'), (2, 'latteCo', 'honolulu', 'hi'), (3, 'coffee+T', 'alexandria', 'va')                 3 row(s) affected Records: 3  Duplicates: 0  Warnings...  0.0038 sec
2  12:42:58  INSERT INTO sys.EMPLOYEE VALUES(10, 'katy', 'li', '20210101', 'barista', 1), (11, 'sara', 'bailey', '20210222', 'cashier', 2), (12, 'samuel', 'xu', '20210406', 'barista', 3)   3 row(s) affected Records: 3  Duplicates: 0  Warnings...  0.0029 sec
3  12:42:58  INSERT INTO sys.SUPPLIER VALUES(101, 'foodsCo', 'canada', 'amanda', 'amanda@foodsco.com'), (102, 'shipFood', 'united states of america', 'cole', 'cole@shipfood.com'), (1...   3 row(s) affected Records: 3  Duplicates: 0  Warnings...  0.0019 sec
4  12:42:58  INSERT INTO sys.COFFEE VALUES(201, 1, 101, 'arabica', 10.20), (202, 2, 102, 'liberica', 11.00), (203, 3, 103, 'Sumatra', 12.35)                          3 row(s) affected Records: 3  Duplicates: 0  Warnings...  0.0026 sec
```



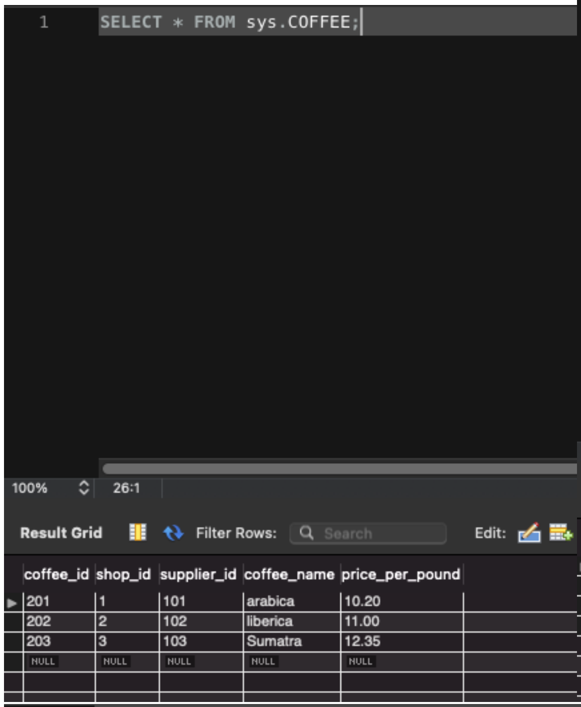
```sql
SELECT * FROM sys.COFFEE, sys.COFFEE_SHOP, sys.EMPLOYEE, sys.SUPPLIER;
```

Result Grid

coffee_id	shop_id	supplier_id	coffee_name	price_per_pound	shop_id	shop_name	city	state	employee_id	first_name	last_name	hire_date	job_title	shop_id	supplier_id	company_name	country	sales_contact_name	email
203	3	103	Sumatra	12.35	1	starbucks	seattle	wa	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	1	starbucks	seattle	wa	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	1	starbucks	seattle	wa	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
203	3	103	Sumatra	12.35	2	latteCo	honolulu	hi	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	2	latteCo	honolulu	hi	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	2	latteCo	honolulu	hi	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
203	3	103	Sumatra	12.35	3	coffee+T	alexandria	va	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	3	coffee+T	alexandria	va	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	3	coffee+T	alexandria	va	12	samuel	xu	2021-04-06	barista	3	101	foodsCo	canada	amanda	amanda@foodsco.com
203	3	103	Sumatra	12.35	1	starbucks	seattle	wa	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	1	starbucks	seattle	wa	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	1	starbucks	seattle	wa	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
203	3	103	Sumatra	12.35	2	latteCo	honolulu	hi	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	2	latteCo	honolulu	hi	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	2	latteCo	honolulu	hi	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
203	3	103	Sumatra	12.35	3	coffee+T	alexandria	va	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
202	2	102	liberica	11.00	3	coffee+T	alexandria	va	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com
201	1	101	arabica	10.20	3	coffee+T	alexandria	va	11	sara	bailey	2021-02-22	cashier	2	101	foodsCo	canada	amanda	amanda@foodsco.com

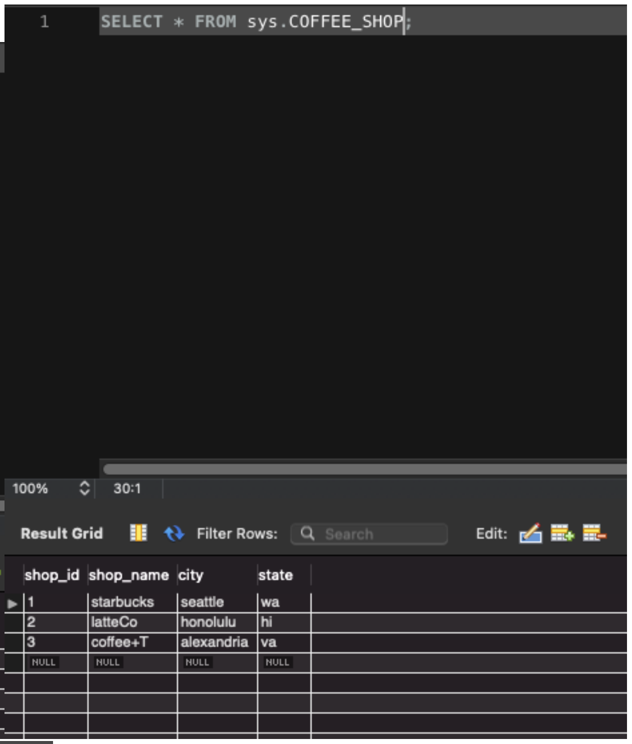
(all tables)

B) 2b) (individual table outputs on the next page)



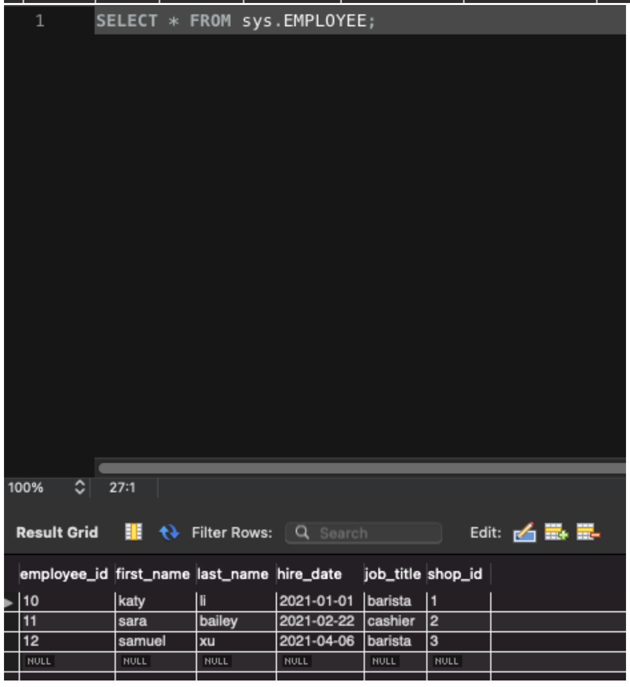
```sql
SELECT * FROM sys.COFFEE;
```

coffee_id	shop_id	supplier_id	coffee_name	price_per_pound
201	1	101	arabica	10.20
202	2	102	liberica	11.00
203	3	103	Sumatra	12.35
NULL	NULL	NULL	NULL	NULL



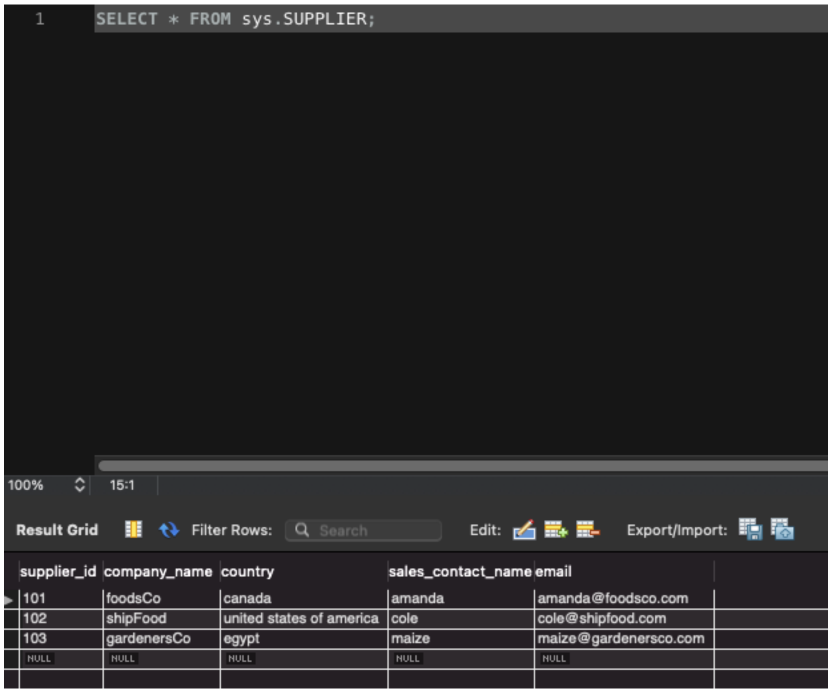
```sql
SELECT * FROM sys.COFFEE_SHOP;
```

shop_id	shop_name	city	state
1	starbucks	seattle	wa
2	latteCo	honolulu	hi
3	coffee+T	alexandria	va
NULL	NULL	NULL	NULL



```sql
SELECT * FROM sys.EMPLOYEE;
```

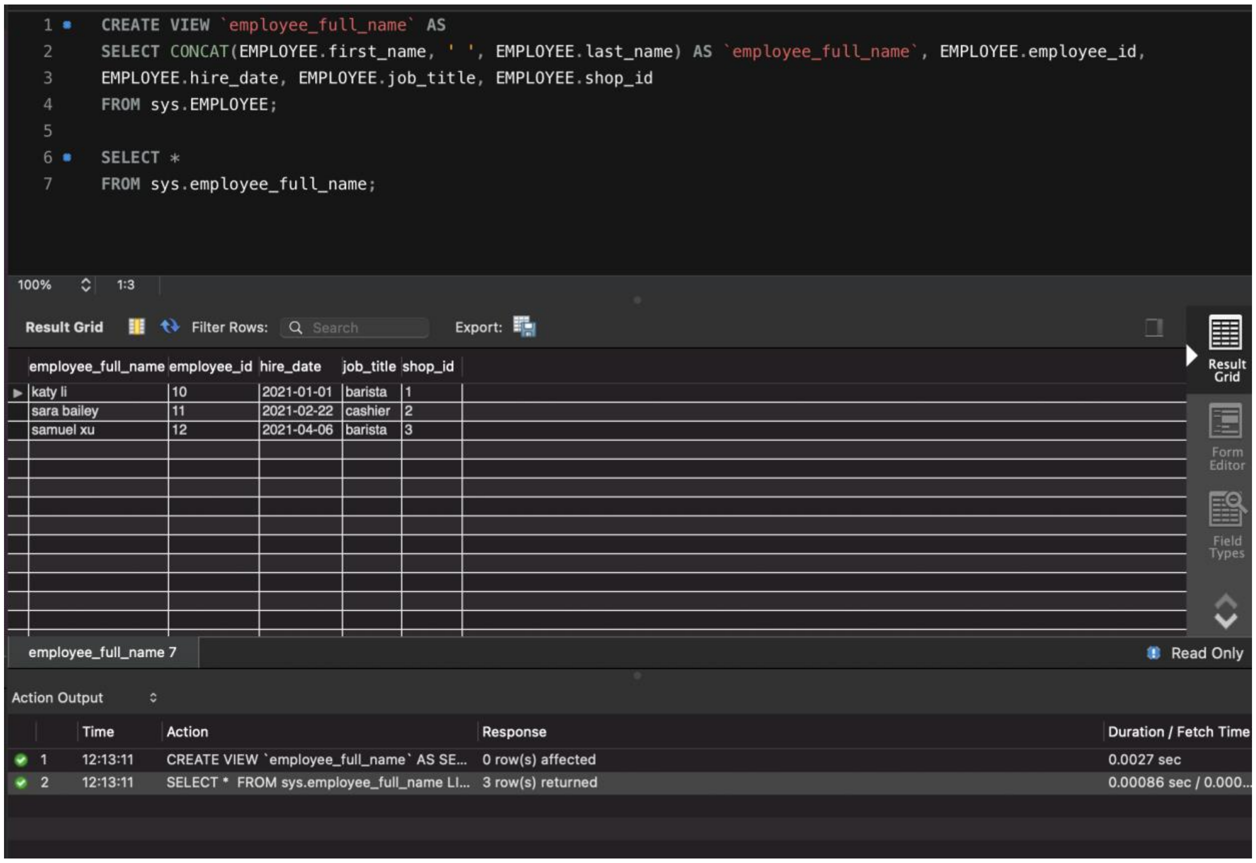
employee_id	first_name	last_name	hire_date	job_title	shop_id
10	katy	li	2021-01-01	barista	1
11	sara	bailey	2021-02-22	cashier	2
12	samuel	xu	2021-04-06	barista	3
NULL	NULL	NULL	NULL	NULL	NULL



```sql
SELECT * FROM sys.SUPPLIER;
```

supplier_id	company_name	country	sales_contact_name	email
101	foodsCo	canada	amanda	amanda@foodsco.com
102	shipFood	united states of america	cole	cole@shipfood.com
103	gardenersCo	egypt	maize	maize@gardenersco.com
NULL	NULL	NULL	NULL	NULL

B) 3a)



```sql
CREATE VIEW `employee_full_name` AS
SELECT CONCAT(EMPLOYEE.first_name, ' ', EMPLOYEE.last_name) AS `employee_full_name`, EMPLOYEE.employee_id,
EMPLOYEE.hire_date, EMPLOYEE.job_title, EMPLOYEE.shop_id
FROM sys.EMPLOYEE;

SELECT *
FROM sys.employee_full_name;
```

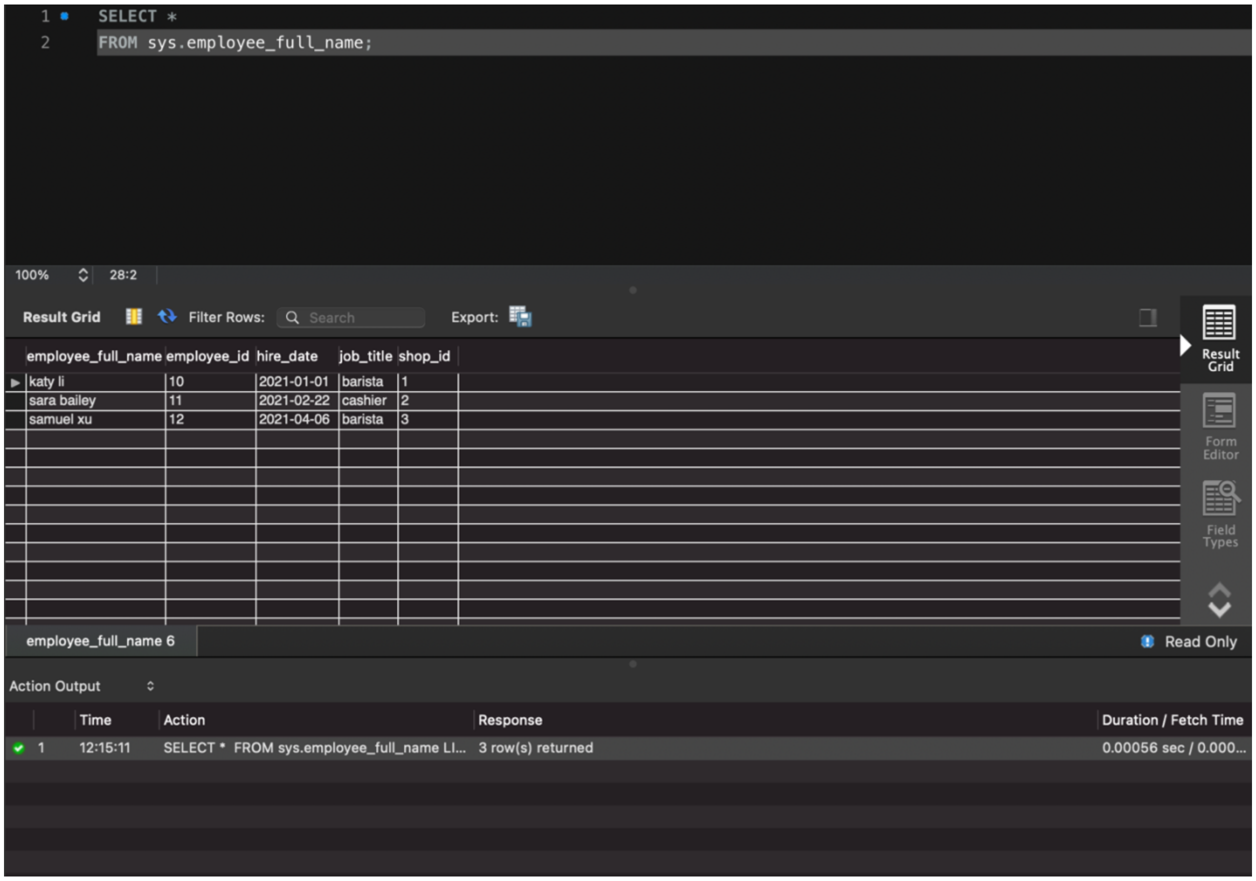
employee_full_name	employee_id	hire_date	job_title	shop_id
katy li	10	2021-01-01	barista	1
sara bailey	11	2021-02-22	cashier	2
samuel xu	12	2021-04-06	barista	3

employee_full_name 7 — Read Only

Action Output

	Time	Action	Response	Duration / Fetch Time
1	12:13:11	CREATE VIEW `employee_full_name` AS SE...	0 row(s) affected	0.0027 sec
2	12:13:11	SELECT * FROM sys.employee_full_name LI...	3 row(s) returned	0.00086 sec / 0.000...

B) 3b)



```
SELECT *
FROM sys.employee_full_name;
```

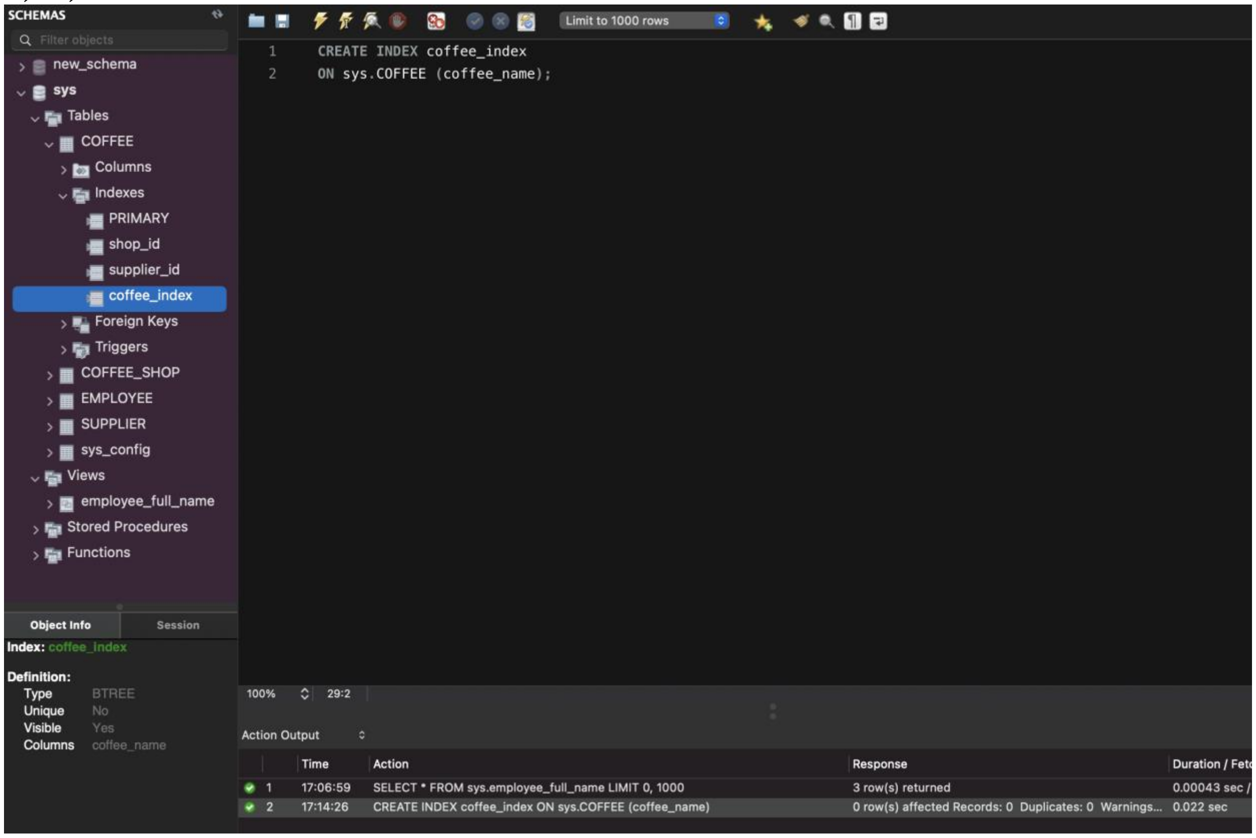
employee_full_name	employee_id	hire_date	job_title	shop_id
katy li	10	2021-01-01	barista	1
sara bailey	11	2021-02-22	cashier	2
samuel xu	12	2021-04-06	barista	3

employee_full_name 6   Read Only

Action Output

	Time	Action	Response	Duration / Fetch Time
1	12:15:11	SELECT * FROM sys.employee_full_name LI...	3 row(s) returned	0.00056 sec / 0.000...

B) 4a)



```sql
CREATE INDEX coffee_index
ON sys.COFFEE (coffee_name);
```

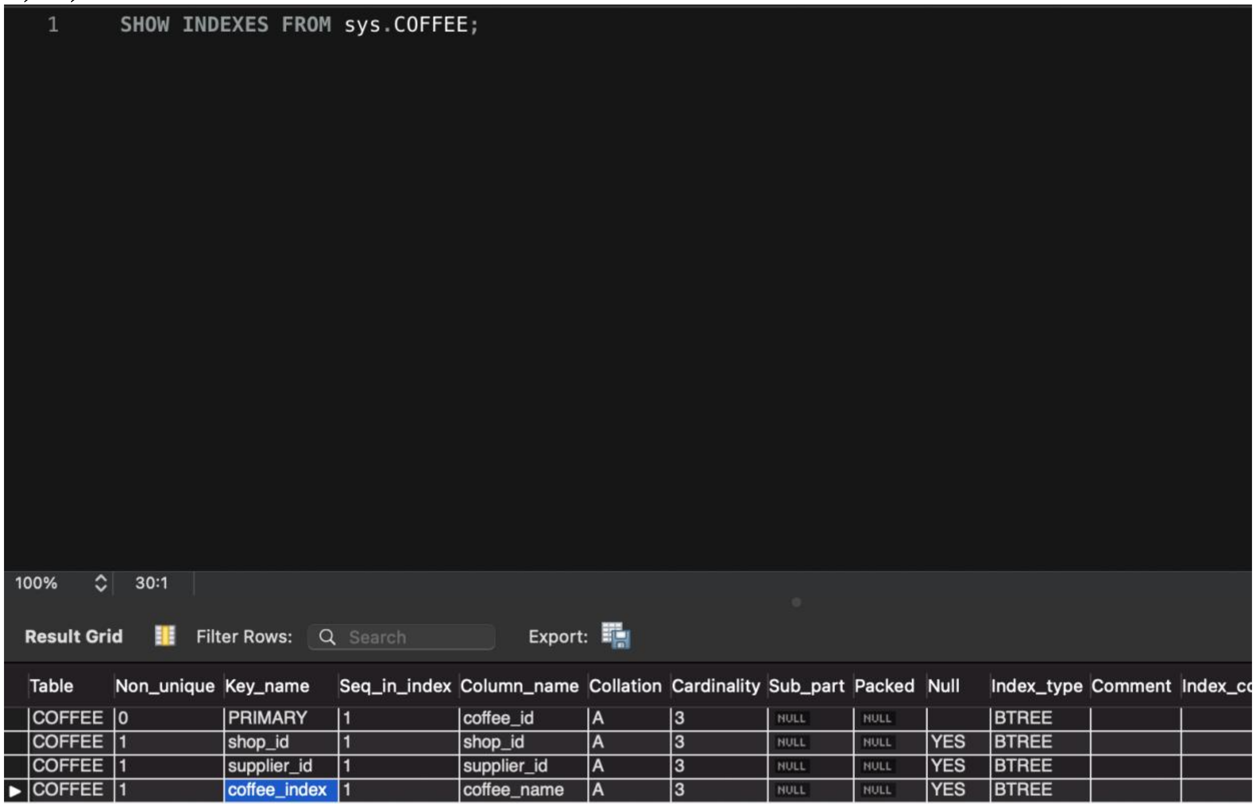
Index: coffee_index

Definition:

Type	BTREE
Unique	No
Visible	Yes
Columns	coffee_name

	Time	Action	Response	Duration / Fetc
1	17:06:59	SELECT * FROM sys.employee_full_name LIMIT 0, 1000	3 row(s) returned	0.00043 sec /
2	17:14:26	CREATE INDEX coffee_index ON sys.COFFEE (coffee_name)	0 row(s) affected Records: 0 Duplicates: 0 Warnings...	0.022 sec

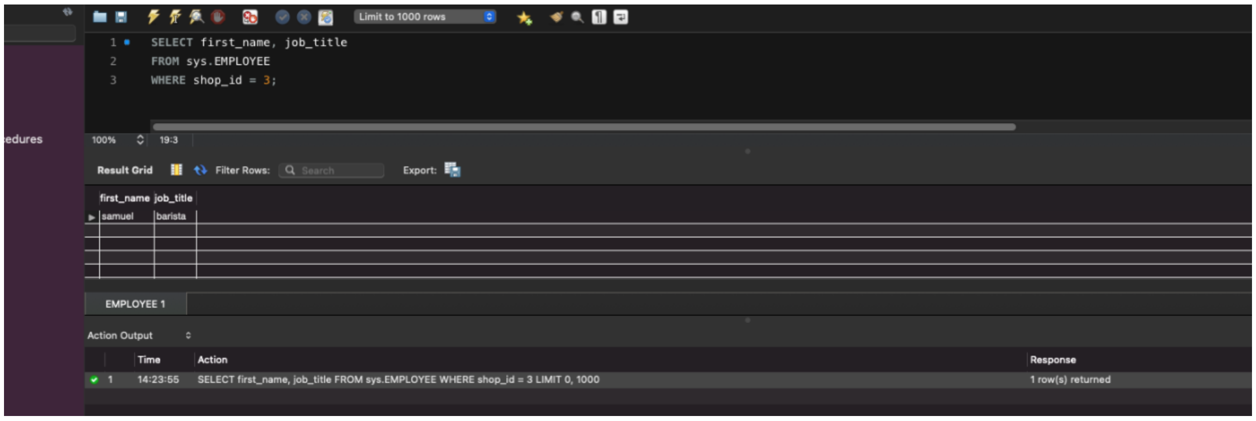
B) 4b)



```sql
SHOW INDEXES FROM sys.COFFEE;
```

Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type	Comment	Index_c
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_index	1	coffee_name	A	3	NULL	NULL	YES	BTREE		

B) 5)

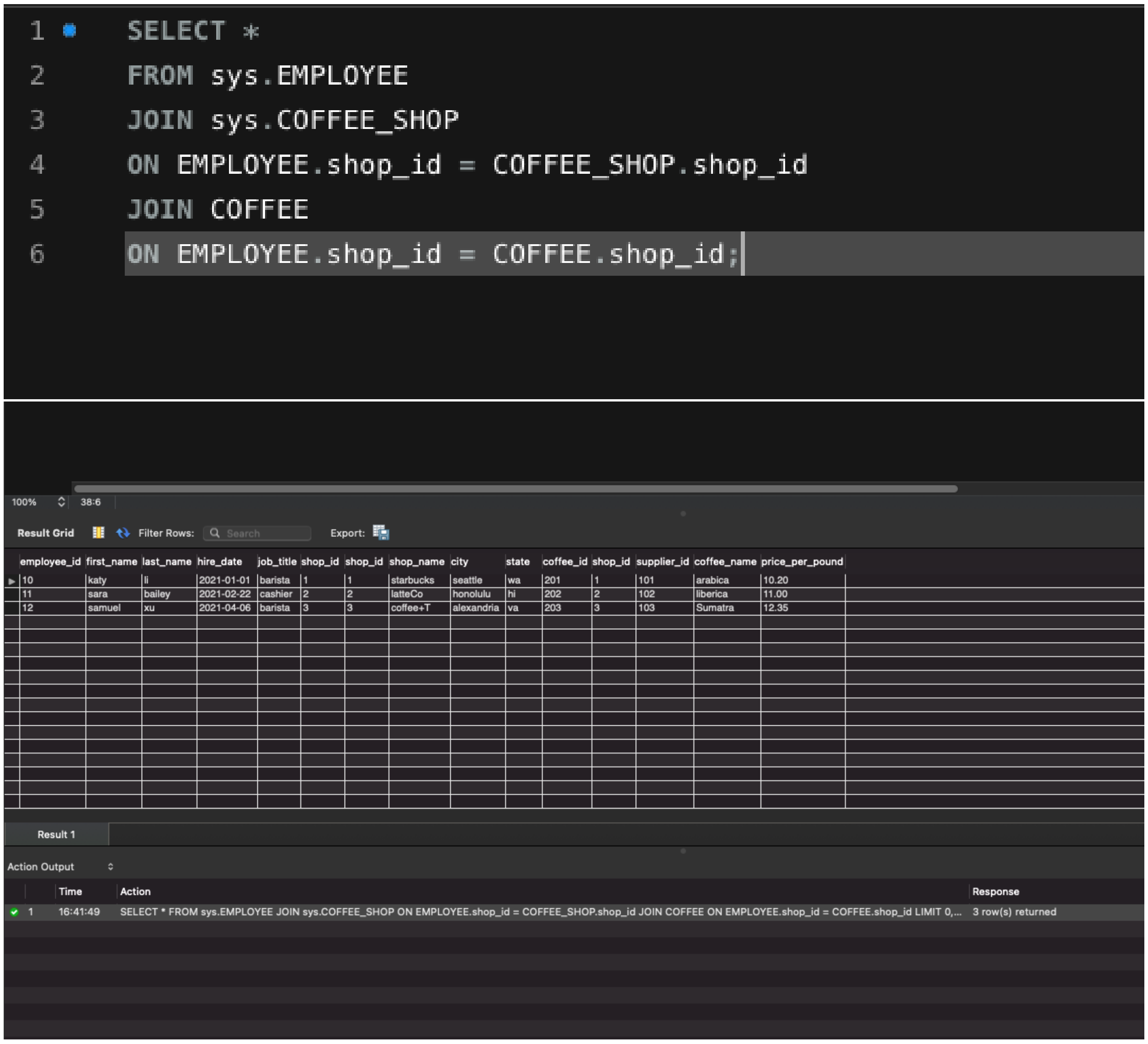


```
SELECT first_name, job_title
FROM sys.EMPLOYEE
WHERE shop_id = 3;
```

first_name	job_title
samuel	barista

```
Action Output
   Time      Action                                                                          Response
1  14:23:55  SELECT first_name, job_title FROM sys.EMPLOYEE WHERE shop_id = 3 LIMIT 0, 1000  1 row(s) returned
```

B) 6)



```sql
SELECT *
FROM sys.EMPLOYEE
JOIN sys.COFFEE_SHOP
ON EMPLOYEE.shop_id = COFFEE_SHOP.shop_id
JOIN COFFEE
ON EMPLOYEE.shop_id = COFFEE.shop_id;
```

100% 38:6

Result Grid Filter Rows: Export:

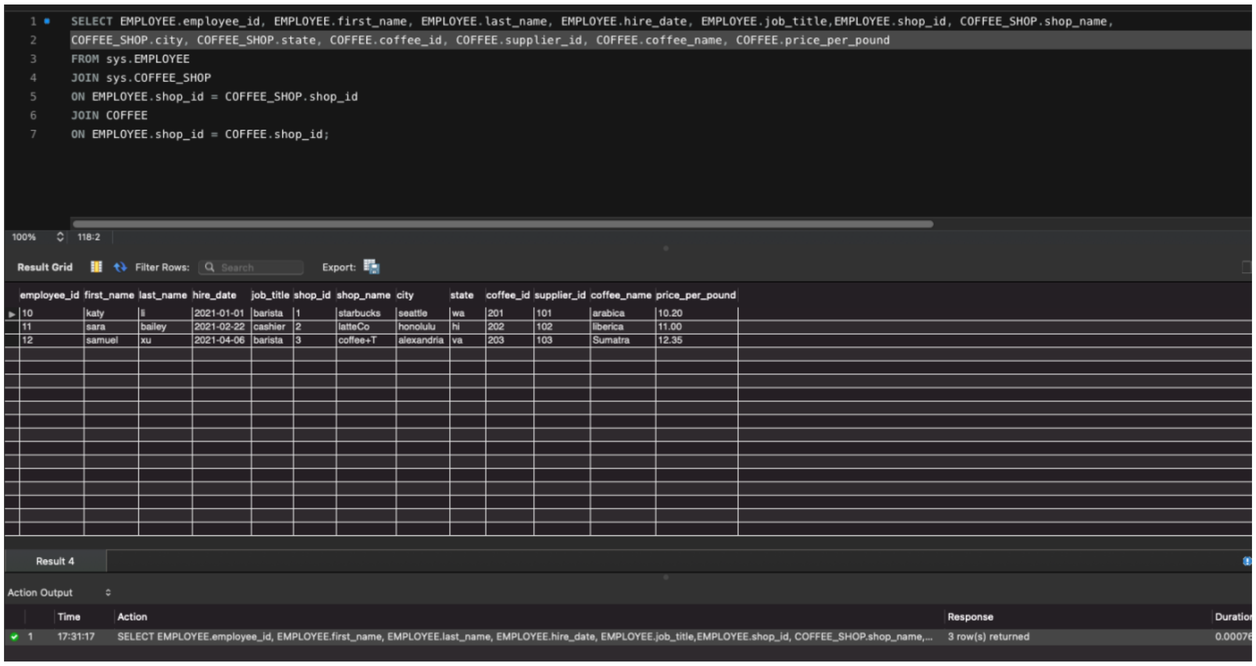
employee_id	first_name	last_name	hire_date	job_title	shop_id	shop_id	shop_name	city	state	coffee_id	shop_id	supplier_id	coffee_name	price_per_pound
10	katy	li	2021-01-01	barista	1	1	starbucks	seattle	wa	201	1	101	arabica	10.20
11	sara	bailey	2021-02-22	cashier	2	2	latteCo	honolulu	hi	202	2	102	liberica	11.00
12	samuel	xu	2021-04-06	barista	3	3	coffee+T	alexandria	va	203	3	103	Sumatra	12.35

Result 1

Action Output

```
   Time      Action                                                                                                                                      Response
1  16:41:49  SELECT * FROM sys.EMPLOYEE JOIN sys.COFFEE_SHOP ON EMPLOYEE.shop_id = COFFEE_SHOP.shop_id JOIN COFFEE ON EMPLOYEE.shop_id = COFFEE.shop_id LIMIT 0,...  3 row(s) returned
```

(multiples of shop_id listed)



```sql
SELECT EMPLOYEE.employee_id, EMPLOYEE.first_name, EMPLOYEE.last_name, EMPLOYEE.hire_date, EMPLOYEE.job_title,EMPLOYEE.shop_id, COFFEE_SHOP.shop_name,
COFFEE_SHOP.city, COFFEE_SHOP.state, COFFEE.coffee_id, COFFEE.supplier_id, COFFEE.coffee_name, COFFEE.price_per_pound
FROM sys.EMPLOYEE
JOIN sys.COFFEE_SHOP
ON EMPLOYEE.shop_id = COFFEE_SHOP.shop_id
JOIN COFFEE
ON EMPLOYEE.shop_id = COFFEE.shop_id;
```

employee_id	first_name	last_name	hire_date	job_title	shop_id	shop_name	city	state	coffee_id	supplier_id	coffee_name	price_per_pound
10	katy	li	2021-01-01	barista	1	starbucks	seattle	wa	201	101	arabica	10.20
11	sara	bailey	2021-02-22	cashier	2	latteCo	honolulu	hi	202	102	liberica	11.00
12	samuel	xu	2021-04-06	barista	3	coffee+T	alexandria	va	203	103	Sumatra	12.35

```
Action Output
    Time      Action                                                                                                                                        Response            Duratio
 1  17:31:17  SELECT EMPLOYEE.employee_id, EMPLOYEE.first_name, EMPLOYEE.last_name, EMPLOYEE.hire_date, EMPLOYEE.job_title,EMPLOYEE.shop_id, COFFEE_SHOP.shop_name,...  3 row(s) returned   0.00076
```

(with only 1 column of shop_id)