



DAD 220 Cardinality and Targeted Data Template

Replace the bracketed text in this template with your screenshots and responses. Then submit it to the Module Four Lab for submission, grading, and feedback. Screenshots should be sized to approximately one quarter of a page. Written responses should be in complete sentences. Rename this document by adding your last name to the file name before you submit.

1. Retrieve employee tuples and identify the number of employees in San Francisco and New York.

The screenshot shows a Codio SQL Lab environment with a terminal window. The terminal displays two MySQL queries and their results. The first query filters for employees in San Francisco, and the second query filters for employees in New York.

```
mysql> select firstName, lastName, jobTitle, offices.city from employees inner join
offices on employees.officeCode = offices.officeCode where state = 'CA';
+-----+-----+-----+-----+
| firstName | lastName | jobTitle | city |
+-----+-----+-----+-----+
| Diane     | Murphy  | President | San Francisco |
| Mary     | Patterson | VP Sales | San Francisco |
| Jeff      | Firrelli | VP Marketing | San Francisco |
| Anthony   | Bow     | Sales Manager (NA) | San Francisco |
| Leslie    | Jennings | Sales Rep | San Francisco |
| Leslie    | Thompson | Sales Rep | San Francisco |
+-----+-----+-----+-----+
6 rows in set (0.00 sec)

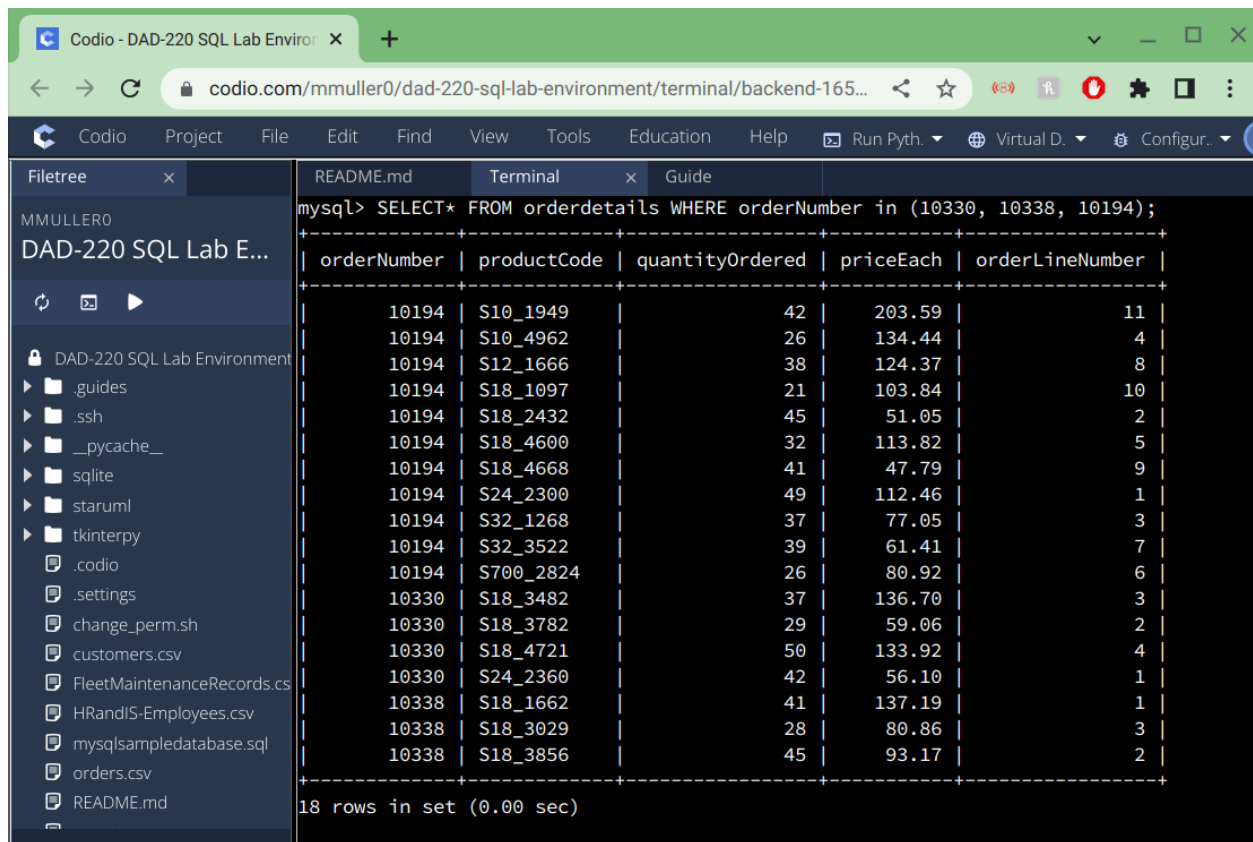
mysql> select firstName, lastName, jobTitle, offices.city from employees inner join
offices on employees.officeCode = offices.officeCode where state = 'NY';
+-----+-----+-----+-----+
| firstName | lastName | jobTitle | city |
+-----+-----+-----+-----+
| Foon Yue  | Tseng   | Sales Rep | NYC |
| George    | Vanauf  | Sales Rep | NYC |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

2. Retrieve order details for orderNumber 10330, 10338, and 10194 and identify what type of cardinality this represents in the entity relationship model.

The screenshot shows a Codio SQL Lab environment with a terminal window. The terminal displays a MySQL query that filters for orders with order numbers 10330, 10338, and 10194. The results show three rows of order details.

```
mysql> SELECT* FROM orders WHERE ordernumber in (10330, 10338, 10194);
+-----+-----+-----+-----+-----+-----+-----+
| orderNumber | orderDate | requiredDate | shippedDate | status | comments | customerNumber |
+-----+-----+-----+-----+-----+-----+-----+
| 10194       | 2003-11-25 | 2003-12-02   | 2003-11-26 | Shipped | NULL     | 146 |
| 10330       | 2004-11-16 | 2004-11-25   | 2004-11-21 | Shipped | NULL     | 385 |
| 10338       | 2004-11-22 | 2004-12-02   | 2004-11-27 | Shipped | NULL     | 381 |
+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```



The screenshot shows a terminal window in Codio with the following content:

```
mysql> SELECT* FROM orderdetails WHERE orderNumber in (10330, 10338, 10194);
```

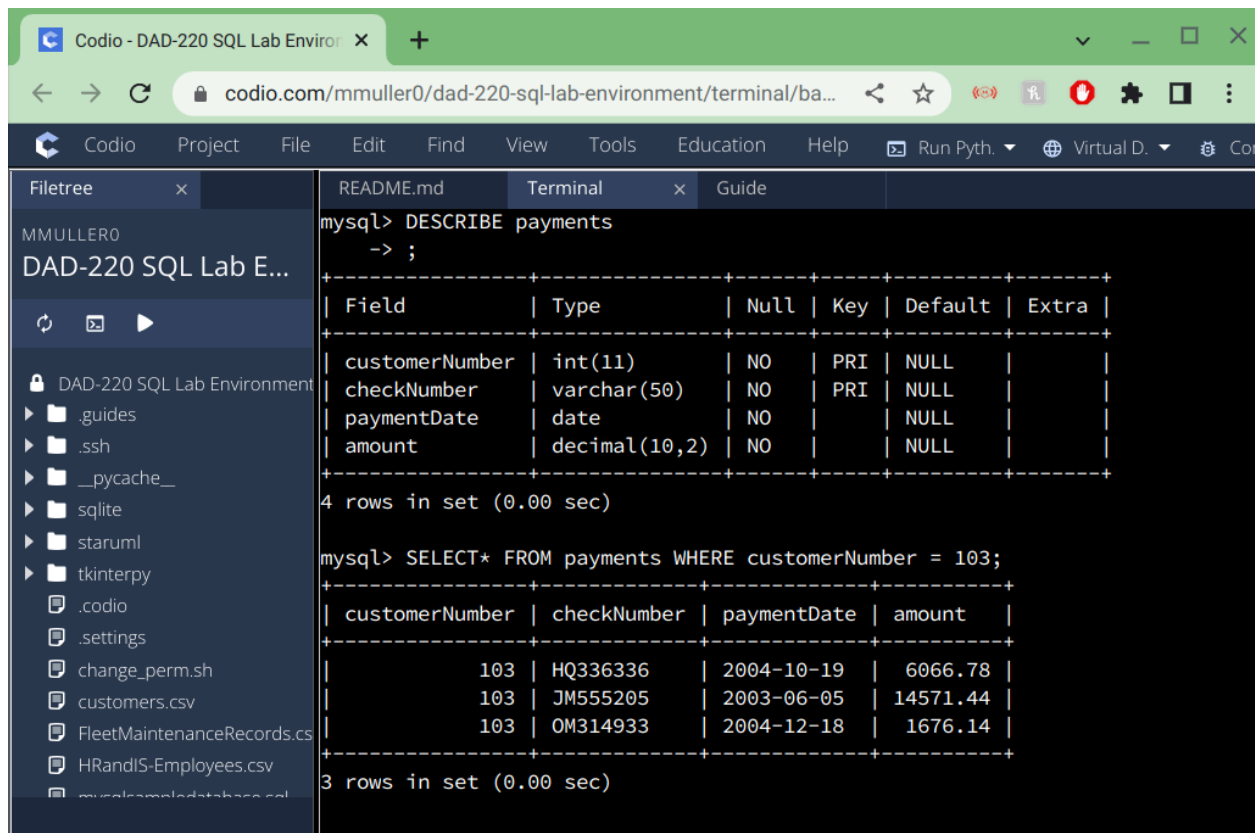
orderNumber	productCode	quantityOrdered	priceEach	orderLineNumber
10194	S10_1949	42	203.59	11
10194	S10_4962	26	134.44	4
10194	S12_1666	38	124.37	8
10194	S18_1097	21	103.84	10
10194	S18_2432	45	51.05	2
10194	S18_4600	32	113.82	5
10194	S18_4668	41	47.79	9
10194	S24_2300	49	112.46	1
10194	S32_1268	37	77.05	3
10194	S32_3522	39	61.41	7
10194	S700_2824	26	80.92	6
10330	S18_3482	37	136.70	3
10330	S18_3782	29	59.06	2
10330	S18_4721	50	133.92	4
10330	S24_2360	42	56.10	1
10338	S18_1662	41	137.19	1
10338	S18_3029	28	80.86	3
10338	S18_3856	45	93.17	2

18 rows in set (0.00 sec)

High cardinality as each orderNumber in the orders table is unique.

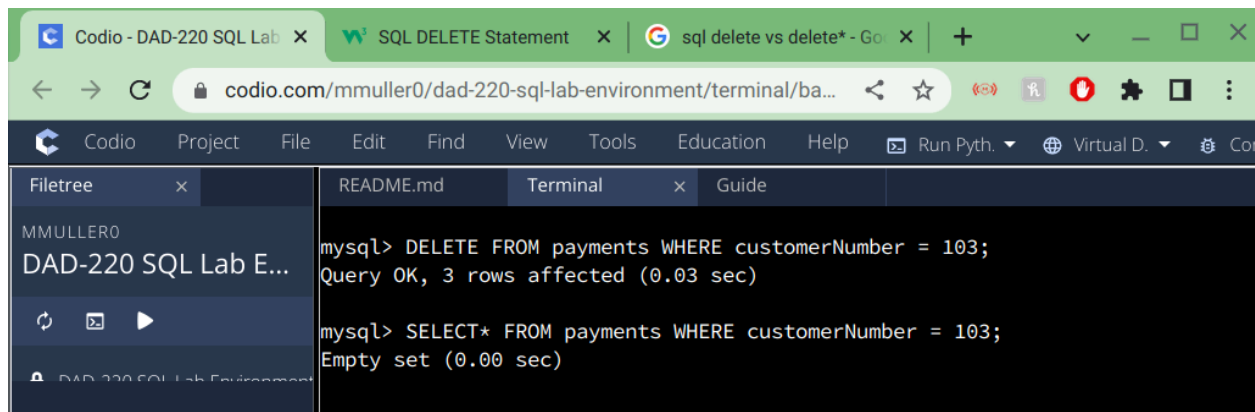
This relationship has One-to-Many cardinality as each unique orderNumber in the orders table can have multiple records in the orderdetails table.

3. **Delete records** from the payments table where the customer number equals 103.



```
mysql> DESCRIBE payments
-> ;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| customerNumber | int(11)        | NO   | PRI | NULL    |       |
| checkNumber    | varchar(50)    | NO   | PRI | NULL    |       |
| paymentDate    | date           | NO   |     | NULL    |       |
| amount         | decimal(10,2)  | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

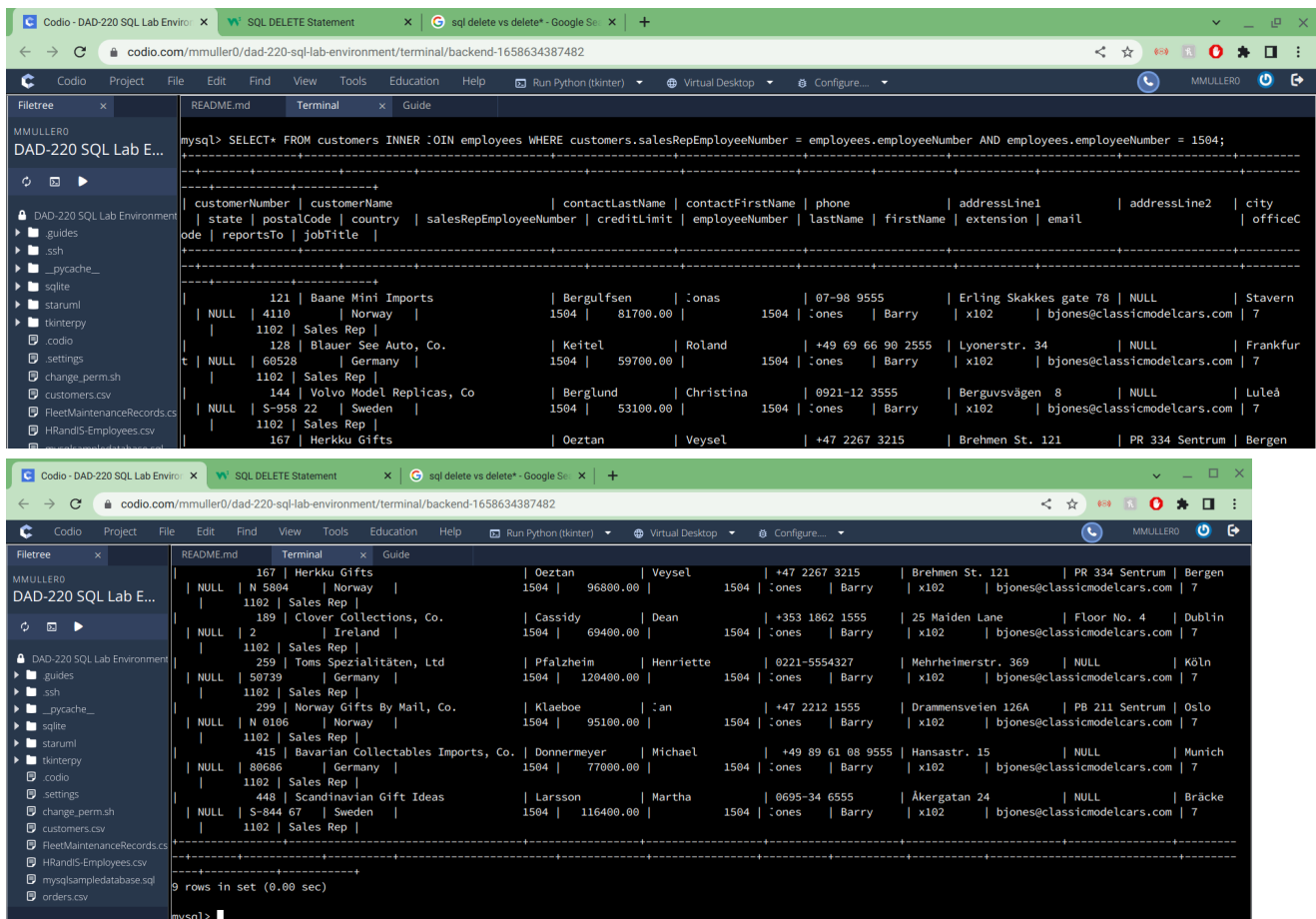
mysql> SELECT* FROM payments WHERE customerNumber = 103;
+-----+-----+-----+-----+-----+-----+
| customerNumber | checkNumber | paymentDate | amount |
+-----+-----+-----+-----+-----+-----+
| 103            | HQ336336   | 2004-10-19  | 6066.78 |
| 103            | JM555205   | 2003-06-05  | 14571.44 |
| 103            | OM314933   | 2004-12-18  | 1676.14 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```



```
mysql> DELETE FROM payments WHERE customerNumber = 103;
Query OK, 3 rows affected (0.03 sec)

mysql> SELECT* FROM payments WHERE customerNumber = 103;
Empty set (0.00 sec)
```

4. **Retrieve customer records** for sales representative Barry Jones and **identify** if the **relationships** are one-to-one or one-to-many.

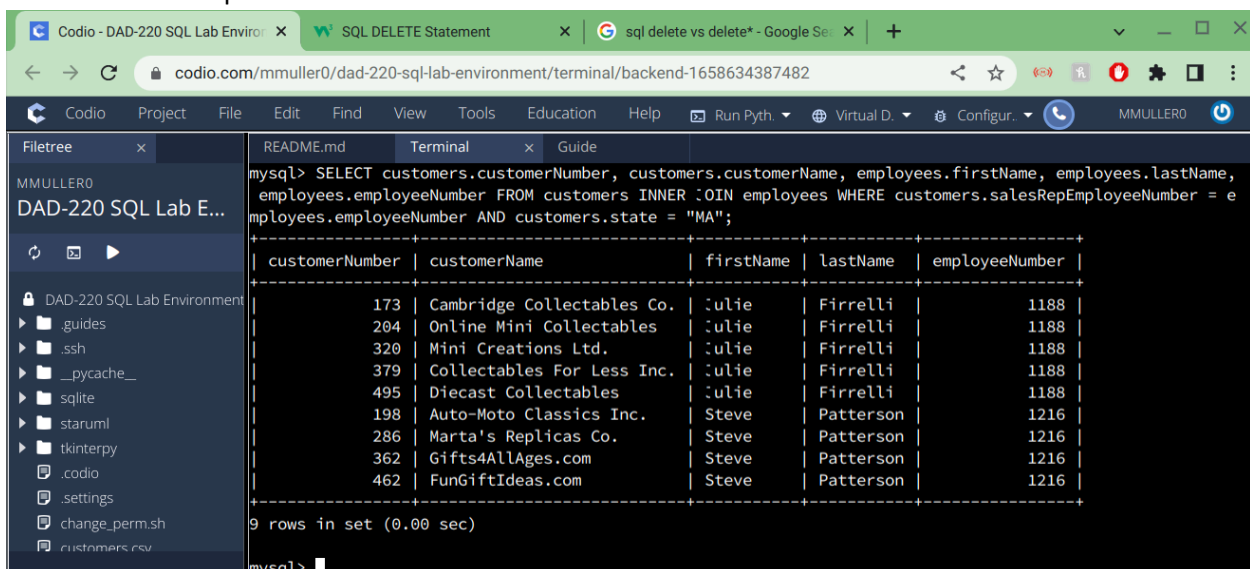


```
mysql> SELECT * FROM customers INNER JOIN employees WHERE customers.salesRepEmployeeNumber = employees.employeeNumber AND employees.employeeNumber = 1504;
```

customerNumber	customerName	contactLastName	contactFirstName	phone	addressLine1	addressLine2	city
121	Baane Mini Imports	Bergulfsen	Jonas	07-98 9555	Erling Skakkes gate 78	NULL	Stavern
4110	Norway	Jonas	Barry	1504	bjones@classicmodelcars.com	7	
1102	Sales Rep						
128	Blauer See Auto, Co.	Keitel	Roland	+49 69 66 90 2555	Lyonerstr. 34	NULL	Frankfur
60528	Germany	1504	1504	1504	1504	1504	7
1102	Sales Rep						
144	Volvo Model Replicas, Co	Berglund	Christina	0921-12 3555	Berguvsvägen 8	NULL	Luleå
S-958 22	Sweden	1504	1504	1504	1504	1504	7
1102	Sales Rep						
167	Herkku Gifts	Oeztan	Veyssel	+47 2267 3215	Brehmen St. 121	PR 334 Sentrum	Bergen

This represents a one-to-many relationship.

- Retrieve records for customers who reside in Massachusetts and identify their sales rep and the relationship of entities. Identify if these entities demonstrate one-to-one or many-to-many relationships.



```
mysql> SELECT customers.customerNumber, customers.customerName, employees.firstName, employees.lastName, employees.employeeNumber FROM customers INNER JOIN employees WHERE customers.salesRepEmployeeNumber = employees.employeeNumber AND customers.state = 'MA';
```

customerNumber	customerName	firstName	lastName	employeeNumber
173	Cambridge Collectables Co.	Julie	Firrelli	1188
204	Online Mini Collectables	Julie	Firrelli	1188
320	Mini Creations Ltd.	Julie	Firrelli	1188
379	Collectables For Less Inc.	Julie	Firrelli	1188
495	Diecast Collectables	Julie	Firrelli	1188
198	Auto-Moto Classics Inc.	Steve	Patterson	1216
286	Marta's Replicas Co.	Steve	Patterson	1216
362	Gifts4AllAges.com	Steve	Patterson	1216
462	FunGiftIdeas.com	Steve	Patterson	1216

These entities demonstrate a many-to-many relationship.



6. **Add one customer record** with your last name using an INSERT statement. You may use the name of a celebrity or fictional character if you don't use your own name.

The screenshot shows a terminal window in Codio with the following content:

```
mysql> INSERT INTO customers
-> VALUES (2032144, 'MM LLC', 'Muller', 'Matthew', '8608571496', '85 Voluntown Road', '44 Mystic Ave', 'Pawcatuck', 'CT', '06379', 'USA', 1216, 10000);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT* FROM customers WHERE contactLastName = 'Muller';
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| customerNumber | customerName | contactLastName | contactFirstName | phone          | addressLine1 | addressLine2 | city          | state | postalCode | country | salesRepEmployeeNumber | creditLimit |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 2032144 | MM LLC | Muller | Matthew | 8608571496 | 85 Voluntown Road | 44 Mystic Ave | Pawcatuck | CT | 06379 | USA | 1216 | 10000.00 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

7. Reflection

- Define how cardinality is applied** to the databases you've been working with and why different numbers of records returned from the different offices.
 - Cardinality has been applied to the databases that I've been working with through the relationships between the different tables in a database. Cardinality refers to how many instances of different entities are related to each other. The one-to-many cardinality between offices and employees is the reason why different numbers of records returned from the different offices. Every one office entity can have any number of employees attached to it.
- Compare and contrast** the different **queries** you ran and how cardinality applies to them.
 - The different queries that I ran on the database displayed the different levels of cardinality in the relationships between tables in the database. For example, the relationship between orders and orderdetails is one-to-many, which was exemplified by the query that returns the orderdetails of items with certain orderNumbers. This contrasts with the relationship between sales reps and customers, which is many-to-many.
- Describe two** of the crucial **benefits of cardinality** in this type of database.
 - Cardinality helps to link records in different tables together, providing improved ability to search the data.
 - It helps to tell us if values are unique or if they are duplicates.