DAD 220 Module Four Lab Template

Overview

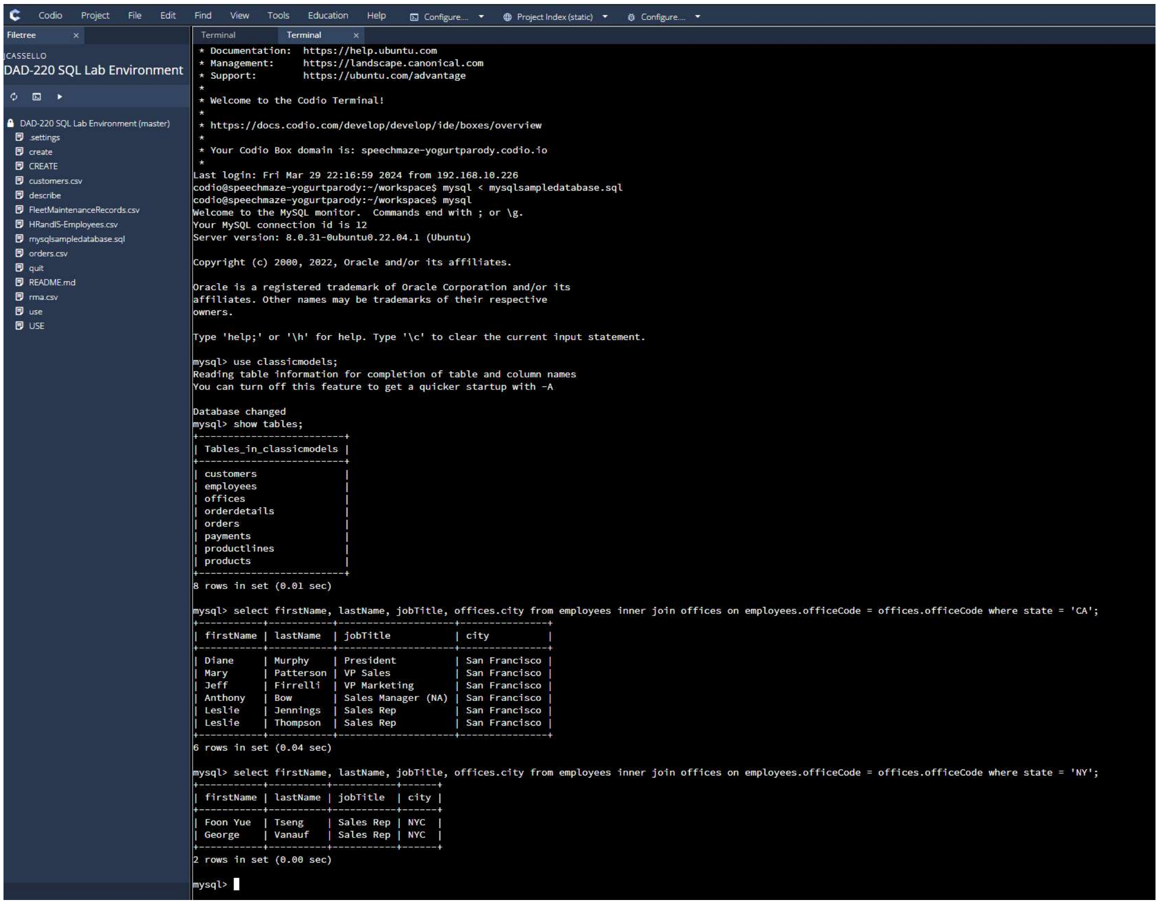
Begin by doing the following steps in the IDE (Codio):

- Load the classicmodels data set.
- Start a new terminal session and run this command: mysqlsampledatabase.sql
- Write commands to use the classicmodels database and show its tables to verify that you are in the right place.

Then perform the steps below to complete the lab. Manually enter any commands you are asked to write. At the end of each step, replace the bracketed text in this template with your screenshot, response, or both, as indicated. Submit your completed template for grading and feedback. Screenshots should be sized to about 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 it.

Identify Cardinality and Table Relationships

- **Retrieve employee tuples and identify the number of employees** in San Francisco and New York.
  - Command for San Francisco: select firstName, lastName, jobTitle, offices.city from employees inner join offices on employees.officeCode = offices.officeCode where state = 'CA'.
  - Write and run a command to return records from New York on your own.
  - Validate the completion of this step with a screenshot of these two tables.



```
 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage
 *
 * Welcome to the Codio Terminal!
 *
 * https://docs.codio.com/develop/develop/ide/boxes/overview
 *
 * Your Codio Box domain is: speechmaze-yogurtparody.codio.io
 *
Last login: Fri Mar 29 22:16:59 2024 from 192.168.10.226
codio@speechmaze-yogurtparody:~/workspace$ mysql < mysqlsampledatabase.sql
codio@speechmaze-yogurtparody:~/workspace$ mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.31-0ubuntu0.22.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use classicmodels;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+------------------------+
| Tables_in_classicmodels |
+------------------------+
| customers              |
| employees              |
| offices                |
| orderdetails           |
| orders                 |
| payments               |
| productlines           |
| products               |
+------------------------+
8 rows in set (0.01 sec)

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 (0.04 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)

mysql> █
```
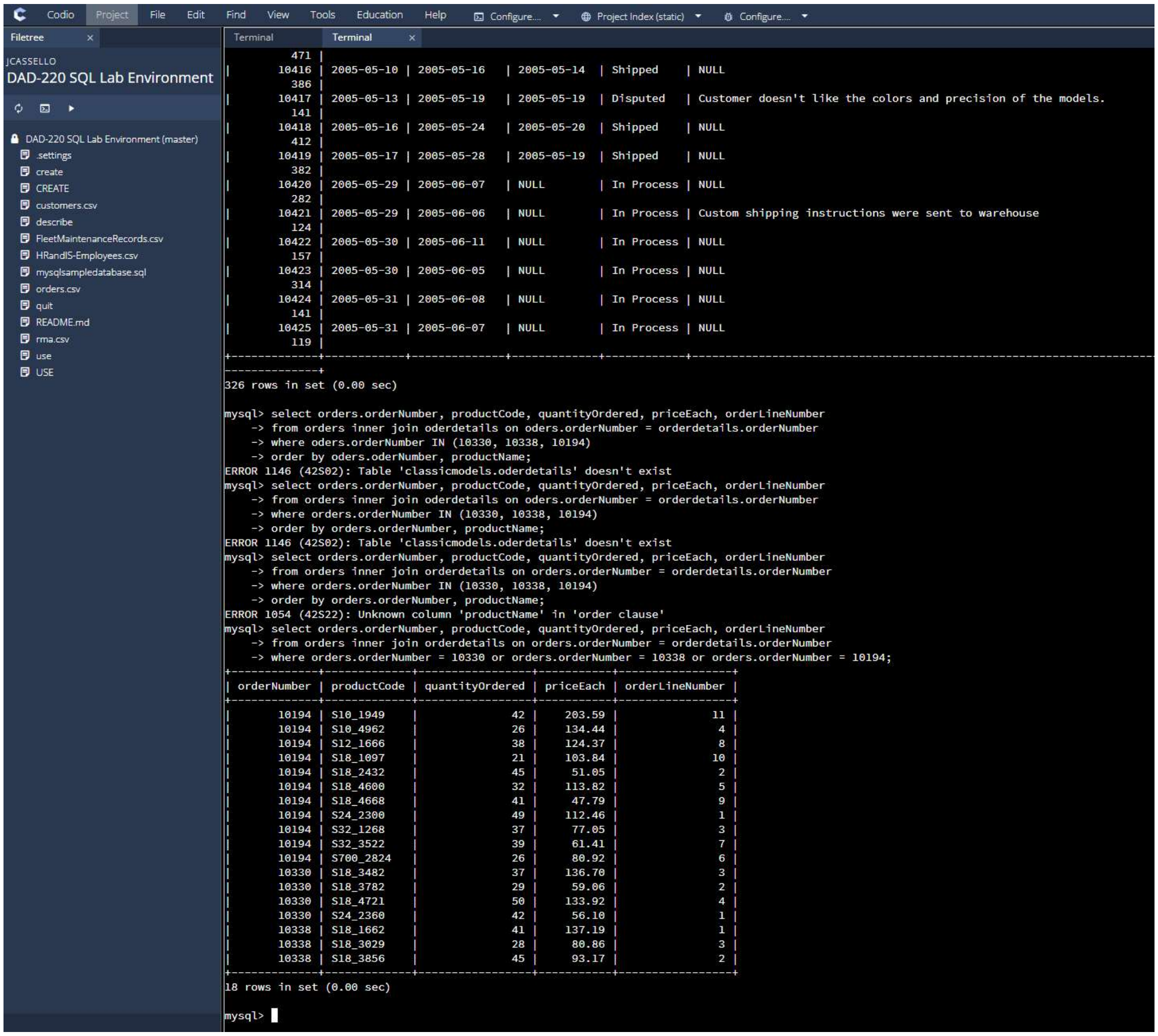

- **Retrieve order details** for orderNumber 10330, 10338, and 10194 and **identify** what **type of cardinality** this represents in the entity relationship model.
    - Retrieve the order details by running SELECT queries with WHERE clauses against the Orders table.

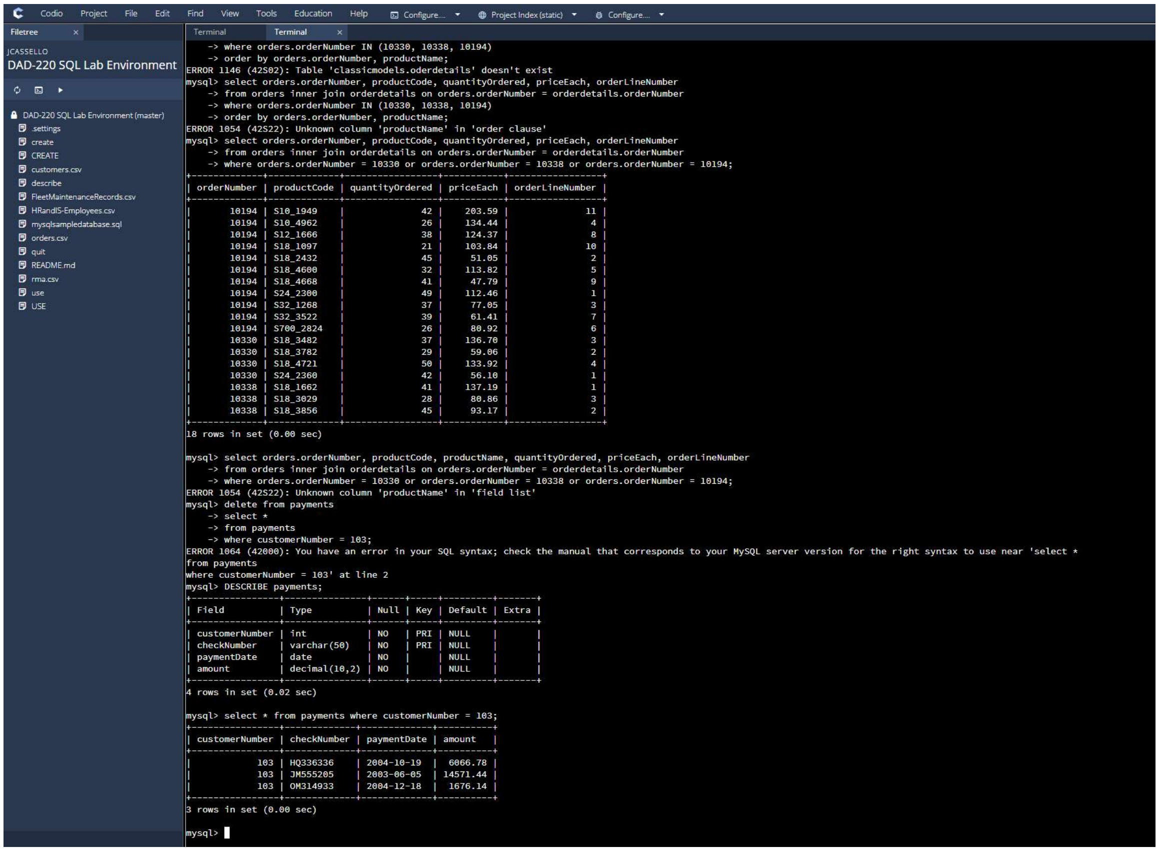


```
         471 |
|       10416 | 2005-05-10 | 2005-05-16   | 2005-05-14  | Shipped    | NULL
         386 |
|       10417 | 2005-05-13 | 2005-05-19   | 2005-05-19  | Disputed   | Customer doesn't like the colors and precision of the models.
         141 |
|       10418 | 2005-05-16 | 2005-05-24   | 2005-05-20  | Shipped    | NULL
         412 |
|       10419 | 2005-05-17 | 2005-05-28   | 2005-05-19  | Shipped    | NULL
         382 |
|       10420 | 2005-05-29 | 2005-06-07   | NULL        | In Process | NULL
         282 |
|       10421 | 2005-05-29 | 2005-06-06   | NULL        | In Process | Custom shipping instructions were sent to warehouse
         124 |
|       10422 | 2005-05-30 | 2005-06-11   | NULL        | In Process | NULL
         157 |
|       10423 | 2005-05-30 | 2005-06-05   | NULL        | In Process | NULL
         314 |
|       10424 | 2005-05-31 | 2005-06-08   | NULL        | In Process | NULL
         141 |
|       10425 | 2005-05-31 | 2005-06-07   | NULL        | In Process | NULL
         119 |
+-------------+------------+--------------+-------------+------------+----------------------------------------------------------------------
-------------+
326 rows in set (0.00 sec)

mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join oderdetails on oders.orderNumber = orderdetails.orderNumber
    -> where oders.orderNumber IN (10330, 10338, 10194)
    -> order by oders.oderNumber, productName;
ERROR 1146 (42S02): Table 'classicmodels.oderdetails' doesn't exist
mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join oderdetails on oders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber IN (10330, 10338, 10194)
    -> order by orders.orderNumber, productName;
ERROR 1146 (42S02): Table 'classicmodels.oderdetails' doesn't exist
mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join orderdetails on orders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber IN (10330, 10338, 10194)
    -> order by orders.orderNumber, productName;
ERROR 1054 (42S22): Unknown column 'productName' in 'order clause'
mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join orderdetails on orders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber = 10330 or orders.orderNumber = 10338 or orders.orderNumber = 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)

mysql> 
```

This is a one-to-many relationship because each order number corresponds to one unique order, but multiple oder numbers can exist in the orders table, indicating a one-to-many relationship.

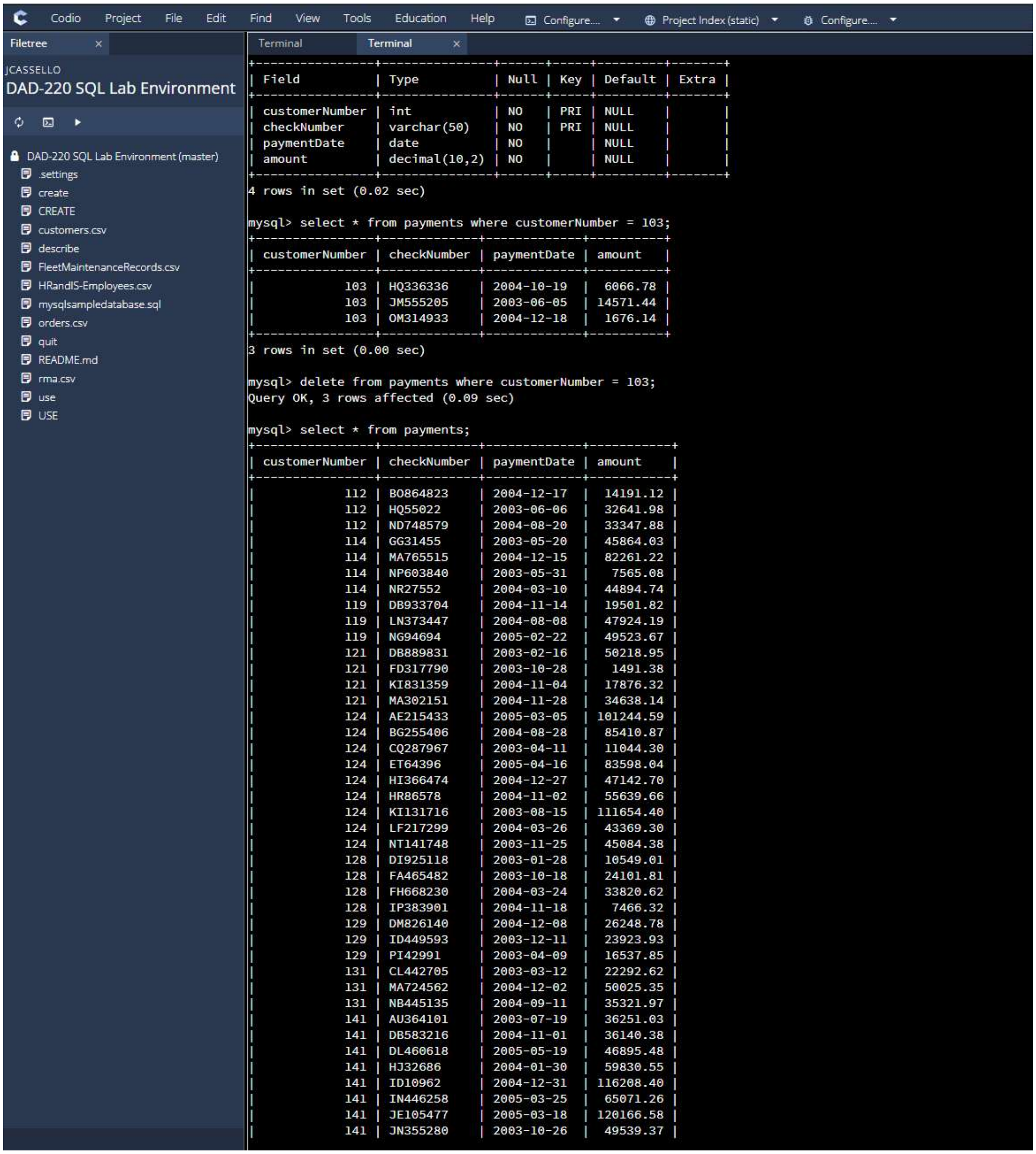
  - Now, identify what type of cardinality this represents in the entity relationship model.
    - Reference the Module Four Lab ERD diagram linked in the guidelines and rubric to help identify relationships.

- **Delete records** from the payments table where the customer number equals 103.
  - Run a DESCRIBE statement to identify fields in the Payments table first.
  - Select the records from the Payments table for customer number 103 before deleting them.



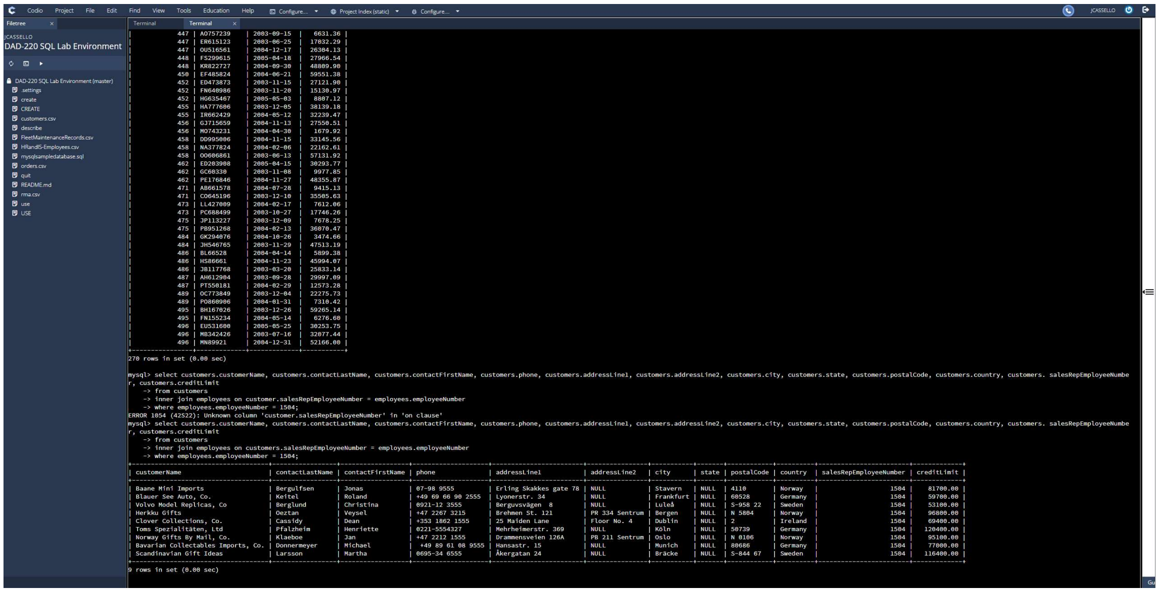
```
    -> where orders.orderNumber IN (10330, 10338, 10194)
    -> order by orders.orderNumber, productName;
ERROR 1146 (42S02): Table 'classicmodels.oderdetails' doesn't exist
mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join orderdetails on orders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber IN (10330, 10338, 10194)
    -> order by orders.orderNumber, productName;
ERROR 1054 (42S22): Unknown column 'productName' in 'order clause'
mysql> select orders.orderNumber, productCode, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join orderdetails on orders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber = 10330 or orders.orderNumber = 10338 or orders.orderNumber = 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)

mysql> select orders.orderNumber, productCode, productName, quantityOrdered, priceEach, orderLineNumber
    -> from orders inner join orderdetails on orders.orderNumber = orderdetails.orderNumber
    -> where orders.orderNumber = 10330 or orders.orderNumber = 10338 or orders.orderNumber = 10194;
ERROR 1054 (42S22): Unknown column 'productName' in 'field list'
mysql> delete from payments
    -> select *
    -> from payments
    -> where customerNumber = 103;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'select *
from payments
where customerNumber = 103' at line 2
mysql> DESCRIBE payments;
+----------------+---------------+------+-----+---------+-------+
| Field          | Type          | Null | Key | Default | Extra |
+----------------+---------------+------+-----+---------+-------+
| customerNumber | int           | NO   | PRI | NULL    |       |
| checkNumber    | varchar(50)   | NO   | PRI | NULL    |       |
| paymentDate    | date          | NO   |     | NULL    |       |
| amount         | decimal(10,2) | NO   |     | NULL    |       |
+----------------+---------------+------+-----+---------+-------+
4 rows in set (0.02 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 the records from the Payments table for customer number 103.
- Run a SELECT statement against the table to show that customer number 103 is no longer there.



```
+----------------+---------------+------+-----+---------+-------+
| Field          | Type          | Null | Key | Default | Extra |
+----------------+---------------+------+-----+---------+-------+
| customerNumber | int           | NO   | PRI | NULL    |       |
| checkNumber    | varchar(50)   | NO   | PRI | NULL    |       |
| paymentDate    | date          | NO   |     | NULL    |       |
| amount         | decimal(10,2) | NO   |     | NULL    |       |
+----------------+---------------+------+-----+---------+-------+
4 rows in set (0.02 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 (0.09 sec)

mysql> select * from payments;
+----------------+-------------+-------------+-----------+
| customerNumber | checkNumber | paymentDate | amount    |
+----------------+-------------+-------------+-----------+
|            112 | BO864823    | 2004-12-17  |  14191.12 |
|            112 | HQ55022     | 2003-06-06  |  32641.98 |
|            112 | ND748579    | 2004-08-20  |  33347.88 |
|            114 | GG31455     | 2003-05-20  |  45864.03 |
|            114 | MA765515    | 2004-12-15  |  82261.22 |
|            114 | NP603840    | 2003-05-31  |   7565.08 |
|            114 | NR27552     | 2004-03-10  |  44894.74 |
|            119 | DB933704    | 2004-11-14  |  19501.82 |
|            119 | LN373447    | 2004-08-08  |  47924.19 |
|            119 | NG94694     | 2005-02-22  |  49523.67 |
|            121 | DB889831    | 2003-02-16  |  50218.95 |
|            121 | FD317790    | 2003-10-28  |   1491.38 |
|            121 | KI831359    | 2004-11-04  |  17876.32 |
|            121 | MA302151    | 2004-11-28  |  34638.14 |
|            124 | AE215433    | 2005-03-05  | 101244.59 |
|            124 | BG255406    | 2004-08-28  |  85410.87 |
|            124 | CQ287967    | 2003-04-11  |  11044.30 |
|            124 | ET64396     | 2005-04-16  |  83598.04 |
|            124 | HI366474    | 2004-12-27  |  47142.70 |
|            124 | HR86578     | 2004-11-02  |  55639.66 |
|            124 | KI131716    | 2003-08-15  | 111654.40 |
|            124 | LF217299    | 2004-03-26  |  43369.30 |
|            124 | NT141748    | 2003-11-25  |  45084.38 |
|            128 | DI925118    | 2003-01-28  |  10549.01 |
|            128 | FA465482    | 2003-10-18  |  24101.81 |
|            128 | FH668230    | 2004-03-24  |  33820.62 |
|            128 | IP383901    | 2004-11-18  |   7466.32 |
|            129 | DM826140    | 2004-12-08  |  26248.78 |
|            129 | ID449593    | 2003-12-11  |  23923.93 |
|            129 | PI42991     | 2003-04-09  |  16537.85 |
|            131 | CL442705    | 2003-03-12  |  22292.62 |
|            131 | MA724562    | 2004-12-02  |  50025.35 |
|            131 | NB445135    | 2004-09-11  |  35321.97 |
|            141 | AU364101    | 2003-07-19  |  36251.03 |
|            141 | DB583216    | 2004-11-01  |  36140.38 |
|            141 | DL460618    | 2005-05-19  |  46895.48 |
|            141 | HJ32686     | 2004-01-30  |  59830.55 |
|            141 | ID10962     | 2004-12-31  | 116208.40 |
|            141 | IN446258    | 2005-03-25  |  65071.26 |
|            141 | JE105477    | 2005-03-18  | 120166.58 |
|            141 | JN355280    | 2003-10-26  |  49539.37 |
```

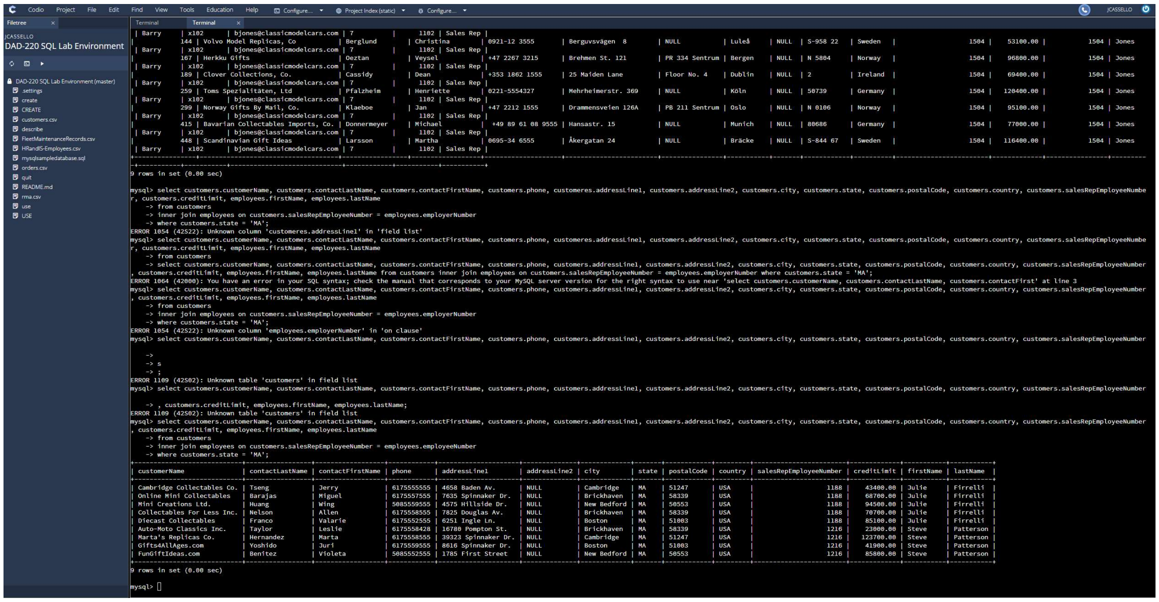
- **Retrieve customer records** for sales representative Barry Jones and **identify** if the **relationships** are one-to-one or one-to-many**.**
    - Remember: SELECT, FROM, INNER JOIN, and WHERE.
    - Use Barry’s employeeNumber, 1504, and perform a join between the customer salesRepEmployeeNumber to retrieve these records.
        - Identify whether these entities demonstrate one-to-one or many-to-many relationships.
    -



```
|            447 | AO757239      | 2003-09-15  |   6631.36 |
|            447 | ER615123      | 2003-06-25  |  17032.29 |
|            447 | OU516561      | 2004-12-17  |  26304.13 |
|            448 | FS299615      | 2005-04-18  |  27966.54 |
|            448 | KR822727      | 2004-09-30  |  48809.90 |
|            450 | EF485824      | 2004-06-21  |  59551.38 |
|            452 | ED473873      | 2003-11-15  |  27121.90 |
|            452 | FN640986      | 2003-11-20  |  15130.97 |
|            452 | HG635467      | 2005-05-03  |   8807.12 |
|            455 | HA777606      | 2003-12-05  |  38139.18 |
|            455 | IR662429      | 2004-05-12  |  32239.47 |
|            456 | GJ715659      | 2004-11-13  |  27550.51 |
|            456 | MO743231      | 2004-04-30  |   1679.92 |
|            458 | DD995006      | 2004-11-15  |  33145.56 |
|            458 | NA377824      | 2004-02-06  |  22162.61 |
|            458 | OO606861      | 2003-06-13  |  57131.92 |
|            462 | ED203908      | 2005-04-15  |  30293.77 |
|            462 | GC60330       | 2003-11-08  |   9977.85 |
|            462 | PE176846      | 2004-11-27  |  48355.87 |
|            471 | AB661578      | 2004-07-28  |   9415.13 |
|            471 | CO645196      | 2003-12-10  |  35505.63 |
|            473 | LL427009      | 2004-02-17  |   7612.06 |
|            473 | PC688499      | 2003-10-27  |  17746.26 |
|            475 | JP113227      | 2003-12-09  |   7678.25 |
|            475 | PB951268      | 2004-02-13  |  36070.47 |
|            484 | GK294076      | 2004-10-26  |   3474.66 |
|            484 | JH546765      | 2003-11-29  |  47513.19 |
|            486 | BL66528       | 2004-04-14  |   5899.38 |
|            486 | HS86661       | 2004-11-23  |  45994.07 |
|            486 | JB117768      | 2003-03-20  |  25833.14 |
|            487 | AH612904      | 2003-09-28  |  29997.09 |
|            487 | PT550181      | 2004-02-29  |  12573.28 |
|            489 | OC773849      | 2003-12-04  |  22275.73 |
|            489 | PO860906      | 2004-01-31  |   7310.42 |
|            495 | BH167026      | 2003-12-26  |  59265.14 |
|            495 | FN155234      | 2004-05-14  |   6276.60 |
|            496 | EU531600      | 2005-05-25  |  30253.75 |
|            496 | MB342426      | 2003-07-16  |  32077.44 |
|            496 | MN89921       | 2004-12-31  |  52166.00 |
+----------------+---------------+-------------+-----------+
270 rows in set (0.00 sec)

mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers. salesRepEmployeeNumbe
r, customers.creditLimit
    -> from customers
    -> inner join employees on customer.salesRepEmployeeNumber = employees.employeeNumber
    -> where employees.employeeNumber = 1504;
ERROR 1054 (42S22): Unknown column 'customer.salesRepEmployeeNumber' in 'on clause'
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers. salesRepEmployeeNumbe
r, customers.creditLimit
    -> from customers
    -> inner join employees on customers.salesRepEmployeeNumber = employees.employeeNumber
    -> where employees.employeeNumber = 1504;
+------------------------------+-----------------+------------------+-------------------+----------------------+-----------------+-----------+-------+------------+---------+------------------------+-------------+
| customerName                 | contactLastName | contactFirstName | phone             | addressLine1         | addressLine2    | city      | state | postalCode | country | salesRepEmployeeNumber | creditLimit |
+------------------------------+-----------------+------------------+-------------------+----------------------+-----------------+-----------+-------+------------+---------+------------------------+-------------+
| Baane Mini Imports           | Bergulfsen      | Jonas            | 07-98 9555        | Erling Skakkes gate 78 | NULL          | Stavern   | NULL  | 4110       | Norway  |                   1504 |    81700.00 |
| Blauer See Auto, Co.         | Keitel          | Roland           | +49 69 66 90 2555 | Lyonerstr. 34        | NULL            | Frankfurt | NULL  | 60528      | Germany |                   1504 |    59700.00 |
| Volvo Model Replicas, Co     | Berglund        | Christina        | 0921-12 3555      | Berguvsvägen  8      | NULL            | Luleå     | NULL  | S-958 22   | Sweden  |                   1504 |    53100.00 |
| Herkku Gifts                 | Oeztan          | Veysel           | +47 2267 3215     | Brehmen St. 121      | PR 334 Sentrum  | Bergen    | NULL  | N 5804     | Norway  |                   1504 |    96800.00 |
| Clover Collections, Co.      | Cassidy         | Dean             | +353 1862 1555    | 25 Maiden Lane       | Floor No. 4     | Dublin    | NULL  | 2          | Ireland |                   1504 |    69400.00 |
| Toms Spezialitäten, Ltd      | Pfalzheim       | Henriette        | 0221-5554327      | Mehrheimerstr. 369   | NULL            | Köln      | NULL  | 50739      | Germany |                   1504 |   120400.00 |
| Norway Gifts By Mail, Co.    | Klaeboe         | Jan              | +47 2212 1555     | Drammensveien 126A   | PB 211 Sentrum  | Oslo      | NULL  | N 0106     | Norway  |                   1504 |    95100.00 |
| Bavarian Collectables Imports, Co. | Donnermeyer | Michael        |  +49 89 61 08 9555 | Hansastr. 15        | NULL            | Munich    | NULL  | 80686      | Germany |                   1504 |    77000.00 |
| Scandinavian Gift Ideas      | Larsson         | Martha           | 0695-34 6555      | Åkergatan 24         | NULL            | Bräcke    | NULL  | S-844 67   | Sweden  |                   1504 |   116400.00 |
+------------------------------+-----------------+------------------+-------------------+----------------------+-----------------+-----------+-------+------------+---------+------------------------+-------------+
9 rows in set (0.00 sec)
```

This is a one-to-many relationship because each customer record retrieved is associated with exactly one corresponding employee record (Barry Jones), indicating a one-to-one relationship between each customer and their sales representative.

- **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.
    - Remember: SELECT, FROM, INNER JOIN, and WHERE.
    - Use employee.firstName and employee.lastName in your command.
    - Identify whether these entities demonstrate one-to-one or many-to-many relationships.



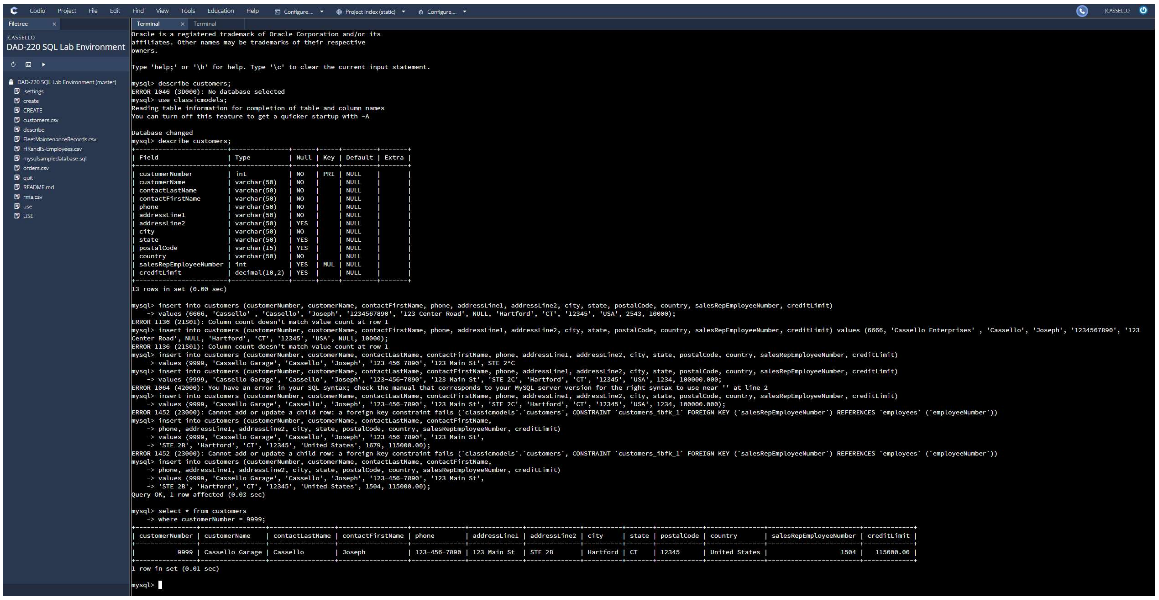
```
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           144 | Volvo Model Replicas, Co          | Berglund        | Christina        | 0921-12 3555      | Berguvsvägen  8       | NULL           | Luleå     | NULL  | S-958 22   | Sweden  |                   1504 |    53100.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           167 | Herkku Gifts                      | Oeztan          | Veysel           | +47 2267 3215     | Brehmen St. 121       | PR 334 Sentrum | Bergen    | NULL  | N 5804     | Norway  |                   1504 |    96800.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           189 | Clover Collections, Co.           | Cassidy         | Dean             | +353 1862 1555    | 25 Maiden Lane        | Floor No. 4    | Dublin    | NULL  | 2          | Ireland |                   1504 |    69400.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           259 | Toms Spezialitäten, Ltd           | Pfalzheim       | Henriette        | 0221-5554327      | Mehrheimerstr. 369    | NULL           | Köln      | NULL  | 50739      | Germany |                   1504 |   120400.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           299 | Norway Gifts By Mail, Co.         | Klaeboe         | Jan              | +47 2212 1555     | Drammensveien 126A    | PB 211 Sentrum | Oslo      | NULL  | N 0106     | Norway  |                   1504 |    95100.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           415 | Bavarian Collectables Imports, Co. | Donnermeyer    | Michael          |  +49 89 61 08 9555 | Hansastr. 15         | NULL           | Munich    | NULL  | 80686      | Germany |                   1504 |    77000.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
|           448 | Scandinavian Gift Ideas           | Larsson         | Martha           | 0695-34 6555      | Åkergatan 24          | NULL           | Bräcke    | NULL  | S-844 67   | Sweden  |                   1504 |   116400.00 |          1504 | Jones
| Barry     | x102      | bjones@classicmodelcars.com | 7          |       1102 | Sales Rep |
+---------------+-----------------------------------+-----------------+------------------+-------------------+-----------------------+----------------+-----------+-------+------------+---------+------------------------+-------------+---------------+--------
-+-----------+-----------+-----------------------------+------------+------------+-----------+
9 rows in set (0.00 sec)

mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customeres.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumbe
r, customers.creditLimit, employees.firstName, employees.lastName
    -> from customers
    -> inner join employees on customers.salesRepEmployeeNumber = employees.employerNumber
    -> where customers.state = 'MA';
ERROR 1054 (42S22): Unknown column 'customeres.addressLine1' in 'field list'
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customeres.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumbe
r, customers.creditLimit, employees.firstName, employees.lastName
    -> from customers
    -> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumber
, customers.creditLimit, employees.firstName, employees.lastName from customers inner join employees on customers.salesRepEmployeeNumber = employees.employerNumber where customers.state = 'MA';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'select customers.customerName, customers.contactLastName, customers.contactFirst' at line 3
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumber
, customers.creditLimit, employees.firstName, employees.lastName
    -> from customers
    -> inner join employees on customers.salesRepEmployeeNumber = employees.employerNumber
    -> where customers.state = 'MA';
ERROR 1054 (42S22): Unknown column 'employees.employerNumber' in 'on clause'
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumber

    ->
    -> s
    -> ;
ERROR 1109 (42S02): Unknown table 'customers' in field list
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumber

    -> , customers.creditLimit, employees.firstName, employees.lastName;
ERROR 1109 (42S02): Unknown table 'customers' in field list
mysql> select customers.customerName, customers.contactLastName, customers.contactFirstName, customers.phone, customers.addressLine1, customers.addressLine2, customers.city, customers.state, customers.postalCode, customers.country, customers.salesRepEmployeeNumber
, customers.creditLimit, employees.firstName, employees.lastName
    -> from customers
    -> inner join employees on customers.salesRepEmployeeNumber = employees.employeeNumber
    -> where customers.state = 'MA';
+----------------------------+-----------------+------------------+------------+----------------------+--------------+-------------+-------+------------+---------+------------------------+-------------+-----------+-----------+
| customerName               | contactLastName | contactFirstName | phone      | addressLine1         | addressLine2 | city        | state | postalCode | country | salesRepEmployeeNumber | creditLimit | firstName | lastName  |
+----------------------------+-----------------+------------------+------------+----------------------+--------------+-------------+-------+------------+---------+------------------------+-------------+-----------+-----------+
| Cambridge Collectables Co. | Tseng           | Jerry            | 6175555555 | 4658 Baden Av.       | NULL         | Cambridge   | MA    | 51247      | USA     |                   1188 |    43400.00 | Julie     | Firrelli  |
| Online Mini Collectables   | Barajas         | Miguel           | 6175557555 | 7635 Spinnaker Dr.   | NULL         | Brickhaven  | MA    | 58339      | USA     |                   1188 |    68700.00 | Julie     | Firrelli  |
| Mini Creations Ltd.        | Huang           | Wing             | 5085559555 | 4575 Hillside Dr.    | NULL         | New Bedford | MA    | 50553      | USA     |                   1188 |    94500.00 | Julie     | Firrelli  |
| Collectables For Less Inc. | Nelson          | Allen            | 6175558555 | 7825 Douglas Av.     | NULL         | Brickhaven  | MA    | 58339      | USA     |                   1188 |    70700.00 | Julie     | Firrelli  |
| Diecast Collectables       | Franco          | Valarie          | 6175552555 | 6251 Ingle Ln.       | NULL         | Boston      | MA    | 51003      | USA     |                   1188 |    85100.00 | Julie     | Firrelli  |
| Auto-Moto Classics Inc.    | Taylor          | Leslie           | 6175558428 | 16780 Pompton St.    | NULL         | Brickhaven  | MA    | 58339      | USA     |                   1216 |    23000.00 | Steve     | Patterson |
| Marta's Replicas Co.       | Hernandez       | Marta            | 6175558555 | 39323 Spinnaker Dr.  | NULL         | Cambridge   | MA    | 51247      | USA     |                   1216 |   123700.00 | Steve     | Patterson |
| Gifts4AllAges.com          | Yoshido         | Juri             | 6175559555 | 8616 Spinnaker Dr.   | NULL         | Boston      | MA    | 51003      | USA     |                   1216 |    41900.00 | Steve     | Patterson |
| FunGiftIdeas.com           | Benitez         | Violeta          | 5085552555 | 1785 First Street    | NULL         | New Bedford | MA    | 50553      | USA     |                   1216 |    85800.00 | Steve     | Patterson |
+----------------------------+-----------------+------------------+------------+----------------------+--------------+-------------+-------+------------+---------+------------------------+-------------+-----------+-----------+
9 rows in set (0.00 sec)

mysql> 
```

This is a One-to-many relationship because each customer residing in MA is

associated with exactly one sales representative, while each sales representative can be assigned to multiple customers.

- **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.

    - You may use the name of a celebrity or fictional character if you don't use your own name. Think of this as your signature.
    - Complete these actions to get to the right place to enter this information: (1) Show databases, (2) use classicmodels, (3) show tables, (4) describe customers;
        - You should now see all of the fields that you'll need to fill in to complete this step.
        - Reference your Module Two lab or resources on how to populate these fields if you need to.
        - Populate the following fields:
        - customerNumber
        - customerName
        - contactLastName
        - contactFirstName
        - phone
        - addressLine1
        - addressLine2
        - city
        - state
        - postalCode
        - country
        - salesRepEmployeeNumber
        - creditLimit
        - Run a SELECT statement on the Customers table and capture it in a screenshot.



```
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> describe customers;
ERROR 1046 (3D000): No database selected
mysql> use classicmodels;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> describe customers;
+------------------------+---------------+------+-----+---------+-------+
| Field                  | Type          | Null | Key | Default | Extra |
+------------------------+---------------+------+-----+---------+-------+
| customerNumber         | int           | NO   | PRI | NULL    |       |
| customerName           | varchar(50)   | NO   |     | NULL    |       |
| contactLastName        | varchar(50)   | NO   |     | NULL    |       |
| contactFirstName       | varchar(50)   | NO   |     | NULL    |       |
| phone                  | varchar(50)   | NO   |     | NULL    |       |
| addressLine1           | varchar(50)   | NO   |     | NULL    |       |
| addressLine2           | varchar(50)   | YES  |     | NULL    |       |
| city                   | varchar(50)   | NO   |     | NULL    |       |
| state                  | varchar(50)   | YES  |     | NULL    |       |
| postalCode             | varchar(15)   | YES  |     | NULL    |       |
| country                | varchar(50)   | NO   |     | NULL    |       |
| salesRepEmployeeNumber | int           | YES  | MUL | NULL    |       |
| creditLimit            | decimal(10,2) | YES  |     | NULL    |       |
+------------------------+---------------+------+-----+---------+-------+
13 rows in set (0.00 sec)

mysql> insert into customers (customerNumber, customerName, contactFirstName, phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (6666, 'Cassello' , 'Cassello', 'Joseph', '1234567890', '123 Center Road', NULL, 'Hartford', 'CT', '12345', 'USA', 2543, 10000);
ERROR 1136 (21S01): Column count doesn't match value count at row 1
mysql> insert into customers (customerNumber, customerName, contactFirstName, phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit) values (6666, 'Cassello Enterprises' , 'Cassello', 'Joseph', '1234567890', '123
Center Road', NULL, 'Hartford', 'CT', '12345', 'USA', NULL, 10000);
ERROR 1136 (21S01): Column count doesn't match value count at row 1
mysql> insert into customers (customerNumber, customerName, contactLastName, contactFirstName, phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (9999, 'Cassello Garage', 'Cassello', 'Joseph', '123-456-7890', '123 Main St', STE 2^C
mysql> insert into customers (customerNumber, customerName, contactLastName, contactFirstName, phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (9999, 'Cassello Garage', 'Cassello', 'Joseph', '123-456-7890', '123 Main St', 'STE 2C', 'Hartford', 'CT', '12345', 'USA', 1234, 100000.000;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '' at line 2
mysql> insert into customers (customerNumber, customerName, contactLastName, contactFirstName, phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (9999, 'Cassello Garage', 'Cassello', 'Joseph', '123-456-7890', '123 Main St', 'STE 2C', 'Hartford', 'CT', '12345', 'USA', 1234, 100000.000);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`classicmodels`.`customers`, CONSTRAINT `customers_ibfk_1` FOREIGN KEY (`salesRepEmployeeNumber`) REFERENCES `employees` (`employeeNumber`))
mysql> insert into customers (customerNumber, customerName, contactLastName, contactFirstName,
    -> phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (9999, 'Cassello Garage', 'Cassello', 'Joseph', '123-456-7890', '123 Main St',
    -> 'STE 2B', 'Hartford', 'CT', '12345', 'United States', 1679, 115000.00);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`classicmodels`.`customers`, CONSTRAINT `customers_ibfk_1` FOREIGN KEY (`salesRepEmployeeNumber`) REFERENCES `employees` (`employeeNumber`))
mysql> insert into customers (customerNumber, customerName, contactLastName, contactFirstName,
    -> phone, addressLine1, addressLine2, city, state, postalCode, country, salesRepEmployeeNumber, creditLimit)
    -> values (9999, 'Cassello Garage', 'Cassello', 'Joseph', '123-456-7890', '123 Main St',
    -> 'STE 2B', 'Hartford', 'CT', '12345', 'United States', 1504, 115000.00);
Query OK, 1 row affected (0.03 sec)

mysql> select * from customers
    -> where customerNumber = 9999;
+----------------+-----------------+-----------------+------------------+--------------+--------------+--------------+----------+-------+------------+---------------+------------------------+-------------+
| customerNumber | customerName    | contactLastName | contactFirstName | phone        | addressLine1 | addressLine2 | city     | state | postalCode | country       | salesRepEmployeeNumber | creditLimit |
+----------------+-----------------+-----------------+------------------+--------------+--------------+--------------+----------+-------+------------+---------------+------------------------+-------------+
|           9999 | Cassello Garage | Cassello        | Joseph           | 123-456-7890 | 123 Main St  | STE 2B       | Hartford | CT    | 12345      | United States |                   1504 |   115000.00 |
+----------------+-----------------+-----------------+------------------+--------------+--------------+--------------+----------+-------+------------+---------------+------------------------+-------------+
1 row in set (0.01 sec)

mysql> 
```

- **Reflection:** Use the lab environment or the screenshots you've worked with for this step. Address the prompts below in your reflection. Write a paragraph in response to each prompt:
    - **Define how cardinality is applied** to the databases you've been working with. Explain why different numbers of records were returned from the different offices.

    - **Cardinality is applied in our databases through the execution of record queries that involve data from multiple tables. By crafting specific queries that incorporate information from different tables we effectively integrate related data into a unified result set. For instance, in question 5, a query was executed to retrieve all customers associated with the sales representative Barry Jones. Through this query, the SQL processor seamlessly extracts the desired data from multiple tables and presents it as a cohesive table, showcasing the interconnecedness of entities within the database.**

    - **Compare and contrast** the different **queries** you ran and how cardinality applies to them.

    - **The intial query executed was the one described earlier, aiming to display all customers represented by the sales representative Barry Jones. To accomplish this, a combination of SELECT, FROM, INNER JOIN, and WHERE clauses were used. By utilizing the foreign key salesRepEmployeeNumber, which exists in both tables, the query combined data from two distinct tables into a singular entity. This allowed the creation of a consolidated table presenting relevant information about customers under Barry Jones' representation. The subsequent query sought to identify customers residing in MA along with their corresponding sales representatives. This query mirrored the structure**

of the previous one, with the alteration made in the Where clause to specifically filter customers based on their state value being 'MA'.

- **Describe two** of the crucial **benefits of cardinality** in this type of database.

- **One benefit is the ability to swiftly merge two distinct tables to retrieve information without redundant data replication. Cardinality facilitates establishing relationships between entities, ensuring coherence in data retrieval. Without it, such relationships would be absent, hindering efficient data querying. Another benefit lies in maintaing consistent rules across tables, thereby ensuring unformity in data management. This consistency empowers users to retrieve desired information seamlessly, while upholding the integrity of the database design.**