MSDS 7330
File Organization and Database Management
Mini Project 3

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3/4/17

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MySQL Database

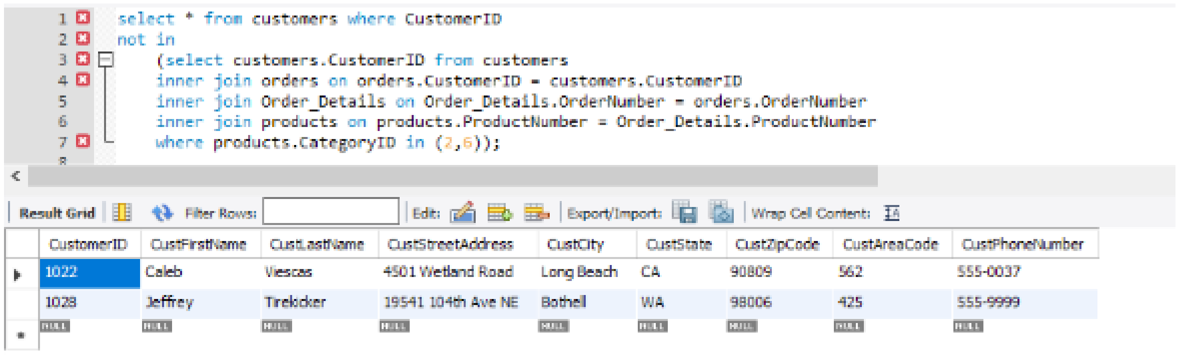
Question 1:

Use the Sales Order Database created during previous week InClass lab and answer following queries using MySQL Workbench. Submit screen shots of queries along with screen shots of results. If results are longer than one page then simply provide number of rows returned from the query. Answers for the following queries:

1) Display the customers who have never ordered bikes or tires.

This query provides only 2 customers that did not purchase a bike or tire from the store in the last 6 months.

```
select * from customers where CustomerID
not in
        (select customers.CustomerID from customers
        inner join orders on orders.CustomerID = customers.CustomerID
        inner join Order_Details on Order_Details.OrderNumber = orders.OrderNumber
        inner join products on products.ProductNumber = Order_Details.ProductNumber
        where products.CategoryID in (2,6));
```



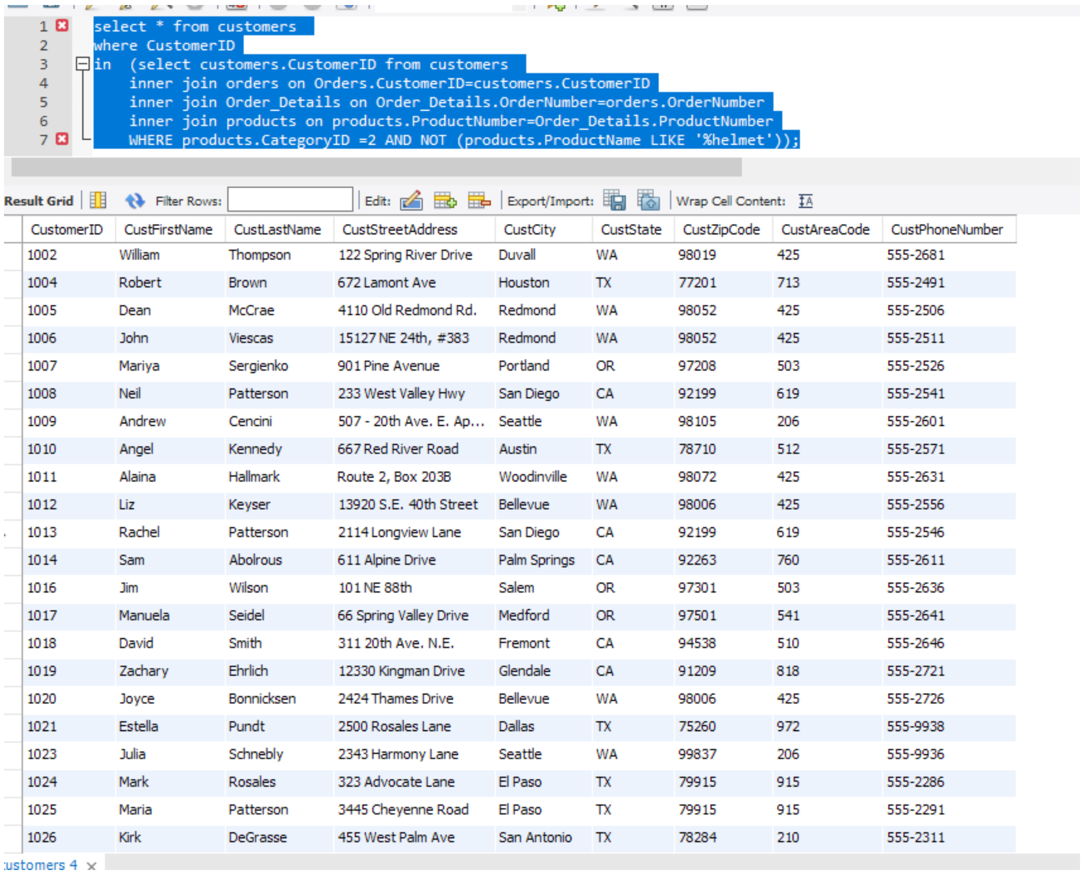
```
select * from customers where CustomerID
not in
    (select customers.CustomerID from customers
    inner join orders on orders.CustomerID = customers.CustomerID
    inner join Order_Details on Order_Details.OrderNumber = orders.OrderNumber
    inner join products on products.ProductNumber = Order_Details.ProductNumber
    where products.CategoryID in (2,6));
```

CustomerID	CustFirstName	CustLastName	CustStreetAddress	CustCity	CustState	CustZipCode	CustAreaCode	CustPhoneNumber
1022	Caleb	Viescas	4501 Wetland Road	Long Beach	CA	90809	562	555-0037
1028	Jeffrey	Tirekicker	19541 104th Ave NE	Bothell	WA	98006	425	555-9999
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

2) List the customers who have purchased a bike but not a helmet.

This query shows 23 customers that purchased a bike but helmet.

```
select * from customers
where CustomerID
in        (select customers.CustomerID from customers
          inner join orders on Orders.CustomerID=customers.CustomerID
          inner join Order_Details on Order_Details.OrderNumber=orders.OrderNumber
          inner join products on products.ProductNumber=Order_Details.ProductNumber
          where products.CategoryID =2 and not (products.ProductName LIKE '%helmet'));
```



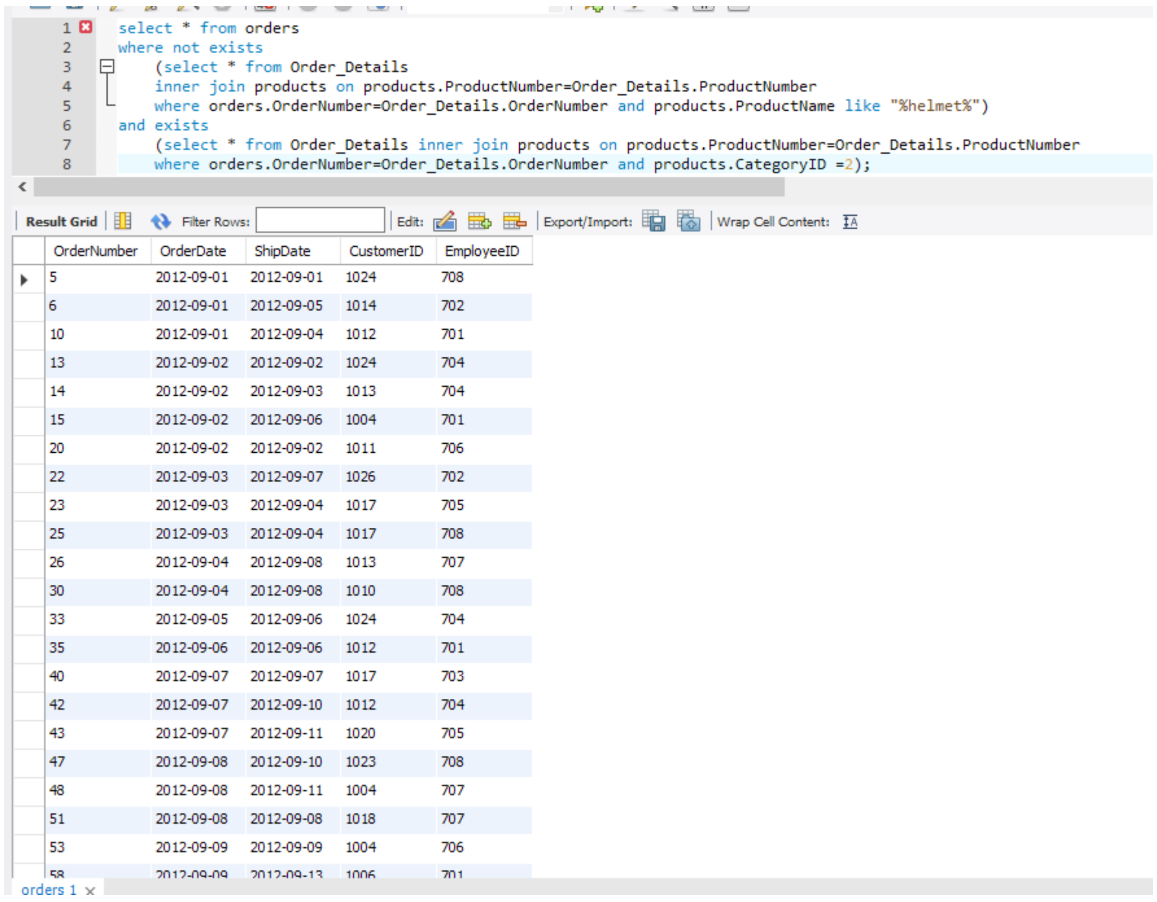
```
select * from customers
where CustomerID
in  (select customers.CustomerID from customers
    inner join orders on Orders.CustomerID=customers.CustomerID
    inner join Order_Details on Order_Details.OrderNumber=orders.OrderNumber
    inner join products on products.ProductNumber=Order_Details.ProductNumber
    WHERE products.CategoryID =2 AND NOT (products.ProductName LIKE '%helmet'));
```

CustomerID	CustFirstName	CustLastName	CustStreetAddress	CustCity	CustState	CustZipCode	CustAreaCode	CustPhoneNumber
1002	William	Thompson	122 Spring River Drive	Duvall	WA	98019	425	555-2681
1004	Robert	Brown	672 Lamont Ave	Houston	TX	77201	713	555-2491
1005	Dean	McCrae	4110 Old Redmond Rd.	Redmond	WA	98052	425	555-2506
1006	John	Viescas	15127 NE 24th, #383	Redmond	WA	98052	425	555-2511
1007	Mariya	Sergienko	901 Pine Avenue	Portland	OR	97208	503	555-2526
1008	Neil	Patterson	233 West Valley Hwy	San Diego	CA	92199	619	555-2541
1009	Andrew	Cencini	507 - 20th Ave. E. Ap...	Seattle	WA	98105	206	555-2601
1010	Angel	Kennedy	667 Red River Road	Austin	TX	78710	512	555-2571
1011	Alaina	Hallmark	Route 2, Box 203B	Woodinville	WA	98072	425	555-2631
1012	Liz	Keyser	13920 S.E. 40th Street	Bellevue	WA	98006	425	555-2556
1013	Rachel	Patterson	2114 Longview Lane	San Diego	CA	92199	619	555-2546
1014	Sam	Abolrous	611 Alpine Drive	Palm Springs	CA	92263	760	555-2611
1016	Jim	Wilson	101 NE 88th	Salem	OR	97301	503	555-2636
1017	Manuela	Seidel	66 Spring Valley Drive	Medford	OR	97501	541	555-2641
1018	David	Smith	311 20th Ave. N.E.	Fremont	CA	94538	510	555-2646
1019	Zachary	Ehrlich	12330 Kingman Drive	Glendale	CA	91209	818	555-2721
1020	Joyce	Bonnicksen	2424 Thames Drive	Bellevue	WA	98006	425	555-2726
1021	Estella	Pundt	2500 Rosales Lane	Dallas	TX	75260	972	555-9938
1023	Julia	Schnebly	2343 Harmony Lane	Seattle	WA	99837	206	555-9936
1024	Mark	Rosales	323 Advocate Lane	El Paso	TX	79915	915	555-2286
1025	Maria	Patterson	3445 Cheyenne Road	El Paso	TX	79915	915	555-2291
1026	Kirk	DeGrasse	455 West Palm Ave	San Antonio	TX	78284	210	555-2311

3) Show me the customer orders that have a bike but do not have a helmet. Hint: This might seem to be the same as problem 2 above, but it’s not. Solve it using EXISTS and NOT EXISTS.

This query shows 397 orders with a bike but no helmet.

```
select * from orders
where not exists
        (select * from Order_Details
        inner join products on products.ProductNumber=Order_Details.ProductNumber
        where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%helmet%")
and exists
        (select * from Order_Details inner join products on
        products.ProductNumber=Order_Details.ProductNumber
        where orders.OrderNumber=Order_Details.OrderNumber and products.CategoryID =2);
```



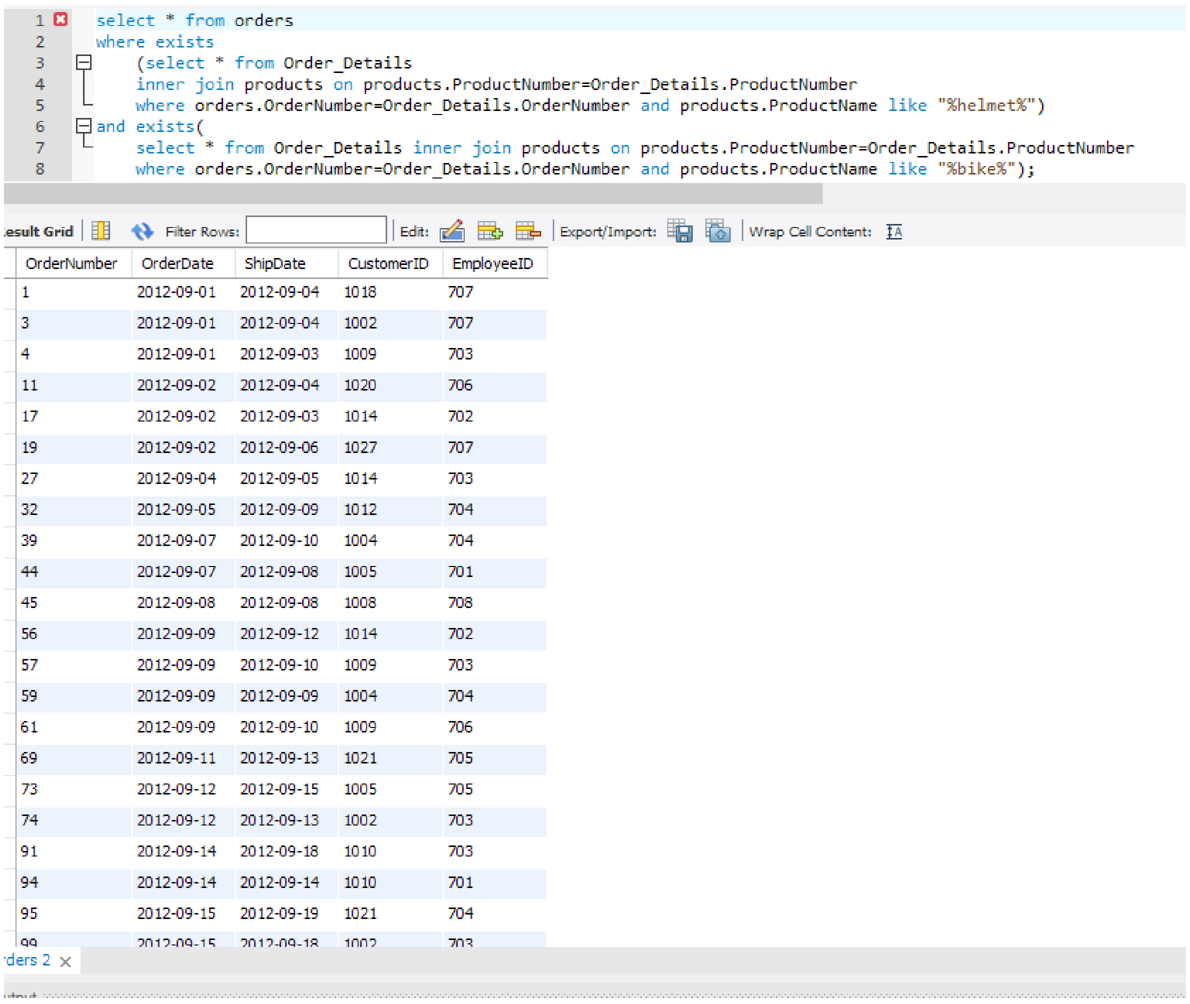
```
select * from orders
where not exists
    (select * from Order_Details
    inner join products on products.ProductNumber=Order_Details.ProductNumber
    where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%helmet%")
and exists
    (select * from Order_Details inner join products on products.ProductNumber=Order_Details.ProductNumber
    where orders.OrderNumber=Order_Details.OrderNumber and products.CategoryID =2);
```

OrderNumber	OrderDate	ShipDate	CustomerID	EmployeeID
5	2012-09-01	2012-09-01	1024	708
6	2012-09-01	2012-09-05	1014	702
10	2012-09-01	2012-09-04	1012	701
13	2012-09-02	2012-09-02	1024	704
14	2012-09-02	2012-09-03	1013	704
15	2012-09-02	2012-09-06	1004	701
20	2012-09-02	2012-09-02	1011	706
22	2012-09-03	2012-09-07	1026	702
23	2012-09-03	2012-09-04	1017	705
25	2012-09-03	2012-09-04	1017	708
26	2012-09-04	2012-09-08	1013	707
30	2012-09-04	2012-09-08	1010	708
33	2012-09-05	2012-09-06	1024	704
35	2012-09-06	2012-09-06	1012	701
40	2012-09-07	2012-09-07	1017	703
42	2012-09-07	2012-09-10	1012	704
43	2012-09-07	2012-09-11	1020	705
47	2012-09-08	2012-09-10	1023	708
48	2012-09-08	2012-09-11	1004	707
51	2012-09-08	2012-09-08	1018	707
53	2012-09-09	2012-09-09	1004	706
58	2012-09-09	2012-09-13	1006	701

4) Display the customers and their orders that have a bike and a helmet in the same order. Hint: Solve this problem using EXISTS

This query shows 193 orders with a bike and a helmet.

```
select * from orders
where exists
            (select * from Order_Details
            inner join products on products.ProductNumber=Order_Details.ProductNumber
            where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%helmet%")
and exists(
            select * from Order_Details inner join products on
products.ProductNumber=Order_Details.ProductNumber
            where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%bike%");
```



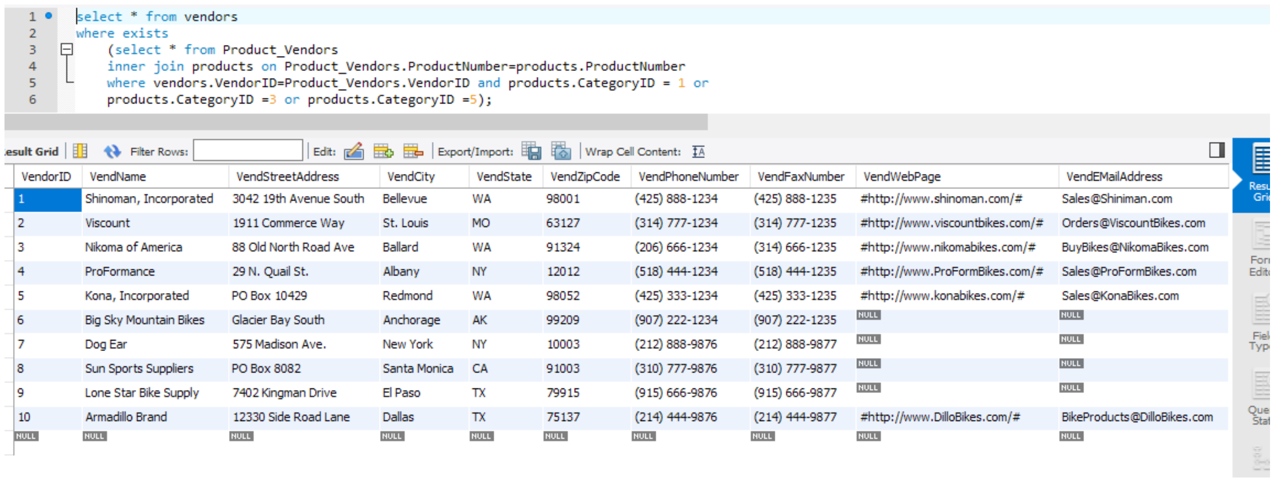
```
select * from orders
where exists
    (select * from Order_Details
    inner join products on products.ProductNumber=Order_Details.ProductNumber
    where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%helmet%")
and exists(
    select * from Order_Details inner join products on products.ProductNumber=Order_Details.ProductNumber
    where orders.OrderNumber=Order_Details.OrderNumber and products.ProductName like "%bike%");
```

OrderNumber	OrderDate	ShipDate	CustomerID	EmployeeID
1	2012-09-01	2012-09-04	1018	707
3	2012-09-01	2012-09-04	1002	707
4	2012-09-01	2012-09-03	1009	703
11	2012-09-02	2012-09-04	1020	706
17	2012-09-02	2012-09-03	1014	702
19	2012-09-02	2012-09-06	1027	707
27	2012-09-04	2012-09-05	1014	703
32	2012-09-05	2012-09-09	1012	704
39	2012-09-07	2012-09-10	1004	704
44	2012-09-07	2012-09-08	1005	701
45	2012-09-08	2012-09-08	1008	708
56	2012-09-09	2012-09-12	1014	702
57	2012-09-09	2012-09-10	1009	703
59	2012-09-09	2012-09-09	1004	704
61	2012-09-09	2012-09-10	1009	706
69	2012-09-11	2012-09-13	1021	705
73	2012-09-12	2012-09-15	1005	705
74	2012-09-12	2012-09-13	1002	703
91	2012-09-14	2012-09-18	1010	703
94	2012-09-14	2012-09-14	1010	701
95	2012-09-15	2012-09-19	1021	704
99	2012-09-15	2012-09-18	1002	703

5) Show the vendors who sell accessories, car racks, and clothing. Hint: Solve this problem using IN.

This query shows 10 vendors who sell accessories, car racks, and clothing.

```
select * from vendors
where exists
            (select * from Product_Vendors
            inner join products on Product_Vendors.ProductNumber=products.ProductNumber
            where vendors.VendorID=Product_Vendors.VendorID and products.CategoryID = 1 or
            products.CategoryID =3 or products.CategoryID =5);
```



```
select * from vendors
where exists
    (select * from Product_Vendors
    inner join products on Product_Vendors.ProductNumber=products.ProductNumber
    where vendors.VendorID=Product_Vendors.VendorID and products.CategoryID = 1 or
    products.CategoryID =3 or products.CategoryID =5);
```

VendorID	VendName	VendStreetAddress	VendCity	VendState	VendZipCode	VendPhoneNumber	VendFaxNumber	VendWebPage	VendEMailAddress
1	Shinoman, Incorporated	3042 19th Avenue South	Bellevue	WA	98001	(425) 888-1234	(425) 888-1235	#http://www.shinoman.com/#	Sales@Shiniman.com
2	Viscount	1911 Commerce Way	St. Louis	MO	63127	(314) 777-1234	(314) 777-1235	#http://www.viscountbikes.com/#	Orders@ViscountBikes.com
3	Nikoma of America	88 Old North Road Ave	Ballard	WA	91324	(206) 666-1234	(314) 666-1235	#http://www.nikomabikes.com/#	BuyBikes@NikomaBikes.com
4	ProFormance	29 N. Quail St.	Albany	NY	12012	(518) 444-1234	(518) 444-1235	#http://www.ProFormBikes.com/#	Sales@ProFormBikes.com
5	Kona, Incorporated	PO Box 10429	Redmond	WA	98052	(425) 333-1234	(425) 333-1235	#http://www.konabikes.com/#	Sales@KonaBikes.com
6	Big Sky Mountain Bikes	Glacier Bay South	Anchorage	AK	99209	(907) 222-1234	(907) 222-1235	NULL	NULL
7	Dog Ear	575 Madison Ave.	New York	NY	10003	(212) 888-9876	(212) 888-9877	NULL	NULL
8	Sun Sports Suppliers	PO Box 8082	Santa Monica	CA	91003	(310) 777-9876	(310) 777-9877	NULL	NULL
9	Lone Star Bike Supply	7402 Kingman Drive	El Paso	TX	79915	(915) 666-9876	(915) 666-9877	NULL	NULL
10	Armadillo Brand	12330 Side Road Lane	Dallas	TX	75137	(214) 444-9876	(214) 444-9877	#http://www.DilloBikes.com/#	BikeProducts@DilloBikes.com
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

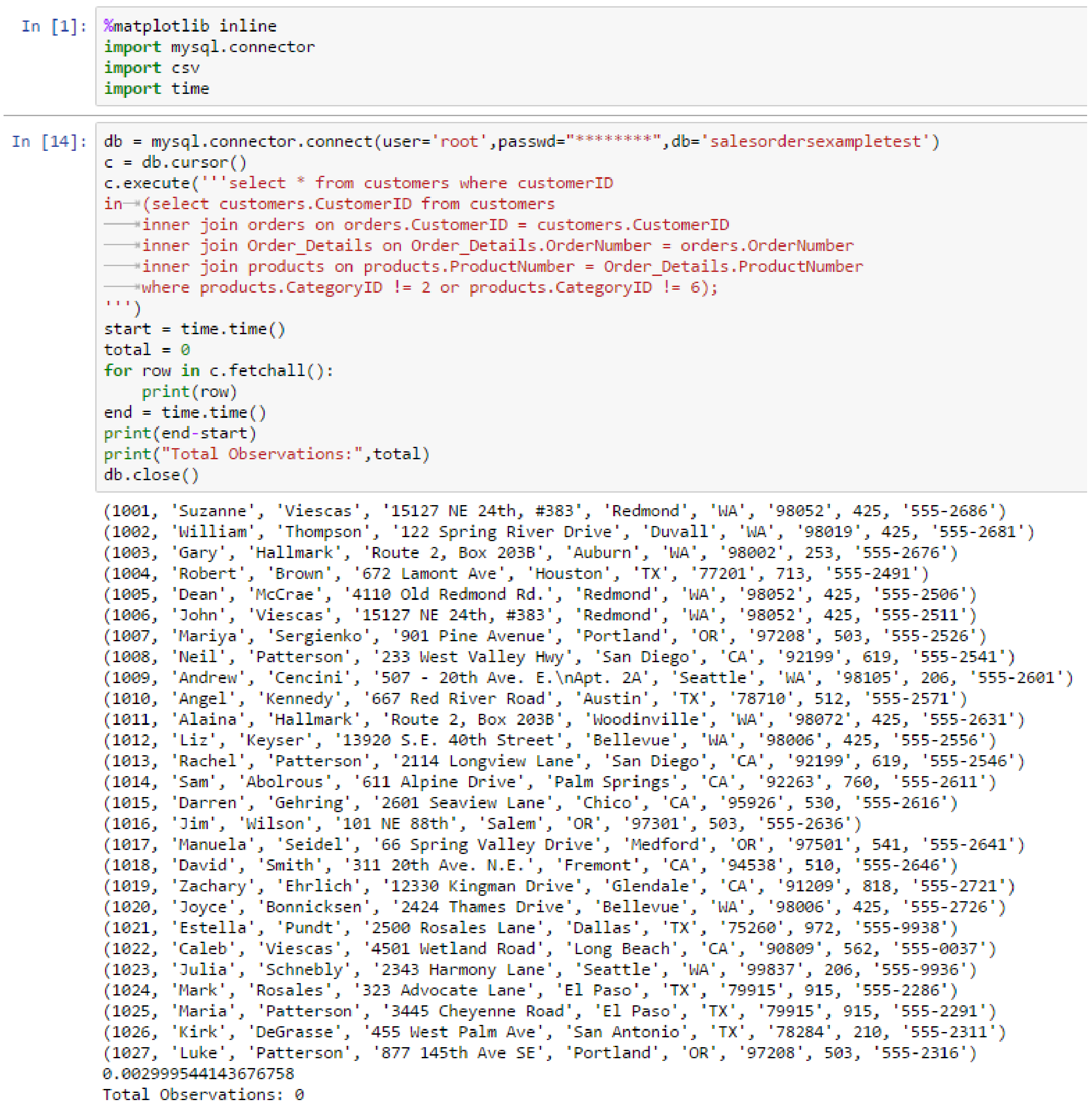
Question 2:

Python – Write a Python Script that will connect to the Sales Order database and execute queries from question 1. The python script will connect to the MySQL database using MySQL connector and then you will execute the query using cursor. To make it easier simply define the query in the beginning of the program. Submit complete python script.

Hint:

Import MySql connector
Define server name, user name, password
connect to the database
initialize cursor, execute query

Below is the python code from Jupyter Notebook for Query 2 in question 1.



```
In [1]: %matplotlib inline
        import mysql.connector
        import csv
        import time
```

```
In [14]: db = mysql.connector.connect(user='root',passwd="********",db='salesordersexampletest')
         c = db.cursor()
         c.execute('''select * from customers where customerID
         in	(select customers.CustomerID from customers
         	inner join orders on orders.CustomerID = customers.CustomerID
         	inner join Order_Details on Order_Details.OrderNumber = orders.OrderNumber
         	inner join products on products.ProductNumber = Order_Details.ProductNumber
         	where products.CategoryID != 2 or products.CategoryID != 6);
         ''')
         start = time.time()
         total = 0
         for row in c.fetchall():
             print(row)
         end = time.time()
         print(end-start)
         print("Total Observations:",total)
         db.close()
```

```
(1001, 'Suzanne', 'Viescas', '15127 NE 24th, #383', 'Redmond', 'WA', '98052', 425, '555-2686')
(1002, 'William', 'Thompson', '122 Spring River Drive', 'Duvall', 'WA', '98019', 425, '555-2681')
(1003, 'Gary', 'Hallmark', 'Route 2, Box 203B', 'Auburn', 'WA', '98002', 253, '555-2676')
(1004, 'Robert', 'Brown', '672 Lamont Ave', 'Houston', 'TX', '77201', 713, '555-2491')
(1005, 'Dean', 'McCrae', '4110 Old Redmond Rd.', 'Redmond', 'WA', '98052', 425, '555-2506')
(1006, 'John', 'Viescas', '15127 NE 24th, #383', 'Redmond', 'WA', '98052', 425, '555-2511')
(1007, 'Mariya', 'Sergienko', '901 Pine Avenue', 'Portland', 'OR', '97208', 503, '555-2526')
(1008, 'Neil', 'Patterson', '233 West Valley Hwy', 'San Diego', 'CA', '92199', 619, '555-2541')
(1009, 'Andrew', 'Cencini', '507 - 20th Ave. E.\nApt. 2A', 'Seattle', 'WA', '98105', 206, '555-2601')
(1010, 'Angel', 'Kennedy', '667 Red River Road', 'Austin', 'TX', '78710', 512, '555-2571')
(1011, 'Alaina', 'Hallmark', 'Route 2, Box 203B', 'Woodinville', 'WA', '98072', 425, '555-2631')
(1012, 'Liz', 'Keyser', '13920 S.E. 40th Street', 'Bellevue', 'WA', '98006', 425, '555-2556')
(1013, 'Rachel', 'Patterson', '2114 Longview Lane', 'San Diego', 'CA', '92199', 619, '555-2546')
(1014, 'Sam', 'Abolrous', '611 Alpine Drive', 'Palm Springs', 'CA', '92263', 760, '555-2611')
(1015, 'Darren', 'Gehring', '2601 Seaview Lane', 'Chico', 'CA', '95926', 530, '555-2616')
(1016, 'Jim', 'Wilson', '101 NE 88th', 'Salem', 'OR', '97301', 503, '555-2636')
(1017, 'Manuela', 'Seidel', '66 Spring Valley Drive', 'Medford', 'OR', '97501', 541, '555-2641')
(1018, 'David', 'Smith', '311 20th Ave. N.E.', 'Fremont', 'CA', '94538', 510, '555-2646')
(1019, 'Zachary', 'Ehrlich', '12330 Kingman Drive', 'Glendale', 'CA', '91209', 818, '555-2721')
(1020, 'Joyce', 'Bonnicksen', '2424 Thames Drive', 'Bellevue', 'WA', '98006', 425, '555-2726')
(1021, 'Estella', 'Pundt', '2500 Rosales Lane', 'Dallas', 'TX', '75260', 972, '555-9938')
(1022, 'Caleb', 'Viescas', '4501 Wetland Road', 'Long Beach', 'CA', '90809', 562, '555-0037')
(1023, 'Julia', 'Schnebly', '2343 Harmony Lane', 'Seattle', 'WA', '99837', 206, '555-9936')
(1024, 'Mark', 'Rosales', '323 Advocate Lane', 'El Paso', 'TX', '79915', 915, '555-2286')
(1025, 'Maria', 'Patterson', '3445 Cheyenne Road', 'El Paso', 'TX', '79915', 915, '555-2291')
(1026, 'Kirk', 'DeGrasse', '455 West Palm Ave', 'San Antonio', 'TX', '78284', 210, '555-2311')
(1027, 'Luke', 'Patterson', '877 145th Ave SE', 'Portland', 'OR', '97208', 503, '555-2316')
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```