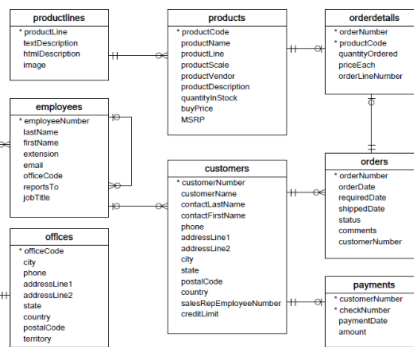


One to Many and Many to Many Joins



```
In [1]: import sqlite3
import pandas as pd

In [2]: conn = sqlite3.connect('data.sqlite')
cur = conn.cursor()
```

Write a one to one join

```
In [4]: #Answers will vary
cur.execute("""select * from customers
            join employees
            on (customers.salesRepEmployeeNumber = employeeNumber);""")
df = pd.DataFrame(cur.fetchall())
print('Number of results', len(df))
df.head()
```

Number of results 180

```
Out[4]:
```

	0	1	2	3	4	5	6	7	8	9	...	11	12	13	14	15	16
0	103	Atelier graphique	Schmitt Carine	40.32.2555	54, rue Royale			Nantes	44000	...	1370	21000.00	1370	Hernandez	Gerard	x2028	ghernande
1	112	Signal Gift Stores	King Jean	7025551838	8489 Strong St.			Las Vegas	NV	83030	...	1166	71800.00	1166	Thompson	Leslie	x4065
2	114	Australian Collectors, Co.	Ferguson Peter	03 9520 4555	636 St Kilda Road	Level 3		Melbourne	Victoria	3004	...	1611	117300.00	1611	Fixter	Andy	x101
3	119	La Rochelle Gifts	Labruno Janine	40.67.8555	67, rue des Cinquante Otages			Nantes	44000	...	1370	118200.00	1370	Hernandez	Gerard	x2028	ghernande
4	121	Baane Mini Imports	Bergulfen Jonas	07-98 9555	Erling Skalkies gate 78			Stavern		4110	...	1504	81700.00	1504	Jones	Barry	x102

5 rows x 21 columns

Write a one to many join

```
In [5]: #Answers will vary
cur.execute("""select * from payments
            join customers
            using(customerNumber);""")
df = pd.DataFrame(cur.fetchall())
print('Number of results', len(df))
df.head()
```

Number of results 273

```
Out[5]:
```

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	103	HQ336336	2004-10-19	6066.78	Atelier graphique	Schmitt Carine	40.32.2555	54, rue Royale	Nantes	44000	France	1370	21000.00			
1	103	JM555205	2003-06-05	14571.44	Atelier graphique	Schmitt Carine	40.32.2555	54, rue Royale	Nantes	44000	France	1370	21000.00			
2	103	OM314933	2004-12-18	1676.14	Atelier graphique	Schmitt Carine	40.32.2555	54, rue Royale	Nantes	44000	France	1370	21000.00			
3	112	BO864823	2004-12-17	14191.12	Signal Gift Stores	King Jean	7025551838	8489 Strong St.	Las Vegas	NV	83030	USA	1166	71800.00		
4	112	HQ550022	2003-06-06	32641.98	Signal Gift Stores	King Jean	7025551838	8489 Strong St.	Las Vegas	NV	83030	USA	1166	71800.00		

Write a many to many join

```
In [6]: #Answers will vary
cur.execute("""select * from orders
            join payments
            on (orders.orderDate = payments.paymentDate);""")
df = pd.DataFrame(cur.fetchall())
print('Number of results', len(df))
df.head()
```

Number of results 118

```
Out[6]:
```

	0	1	2	3	4	5	6	7	8	9	10
0	10116	2003-04-11	2003-04-19	2003-04-13	Shipped				381	124	CQ287967
1	10117	2003-04-16	2003-04-24	2003-04-17	Shipped				148	424	LM271923
2	10123	2003-05-20	2003-05-29	2003-05-22	Shipped				103	114	GG31455
3	10124	2003-05-21	2003-05-29	2003-05-25	Shipped	Customer very concerned about the exact color ...			112	353	GT878649
4	10125	2003-05-21	2003-05-27	2003-05-24	Shipped				114	353	GT878649

In []: