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Lab 6
Database Management
February 28, 2017

--Number 1
select name, city
from customers
where city in (
                select city
                from (
                        select city, count(*)
                        from products
                        group by city
                        order by count(*) DESC
                        limit 1
)table1
                );

--Number 2
select p.name
from products p
where priceUSD > (select avg(priceUSD)
                    from products
)

--Number 3
select c.name, o.pid as "PID Ordered", sum(o.totalUSD)as "Total"
from orders o inner join customers c on o.cid = c.cid
group by c.name, o.pid
order by sum(o.totalUSD) ASC;

--Number 4
select c.name,
coalesce(sum(o.totalUSD), 0) as "Total Ordered"
from orders o full outer join customers c on o.cid = c.cid
group by c.name
order by c.name ASC

--Number 5
select c.name as "Customer Name" , p.name as "Product Name", a.name as "Agent Name"
from orders o inner join customers c on o.cid = c.cid
                inner join products p on o.pid = p.pid
                inner join agents a on o.aid = a.aid
where a.city = 'Newark'

--Number 6
```
select o.*, (o.qty * p.priceUSD * (1 - c.discount / 100)) as "Correct Total"
from orders o inner join customers c on o.cid = c.cid
                inner join products p on o.pid = p.pid
where o.totalUSD != (o.qty * p.priceUSD * (1 - c.discount / 100))
```

--Number 7
A left outer join takes each value from the LEFT table, and combines it with matching values from the RIGHT table, displaying 'null' where there is not a matching value. A right outer join takes each value from the RIGHT table and combines with matching values from the LEFT table, displaying 'null' where there is not a matching value.

```
CAP4 on postgres@PostgreSQL 9.6
1  select *
2  from customers left outer join orders on customers.cid = orders.cid
```

Data Output Explain Messages History

cid character	name text	city text	discount numeric	ordnumb integer	month character	cid character	aid character	pid character	qty integer	totalusd numeric
c001	Tiptop	Duluth	10	1011	Jan	c001	a01	p01	1000	450
c002	Tyrell	Dallas	12	1012	Jan	c002	a03	p03	1000	880
c003	Allied	Dallas	8	1015	Jan	c003	a03	p05	1200	1104
c006	ACME	Kyoto	0	1016	Jan	c006	a01	p01	1000	500
c001	Tiptop	Duluth	10	1017	Feb	c001	a06	p03	600	540
c001	Tiptop	Duluth	10	1018	Feb	c001	a03	p04	600	540
c001	Tiptop	Duluth	10	1019	Feb	c001	a02	p02	400	180
c006	ACME	Kyoto	0	1020	Feb	c006	a03	p07	600	600
c004	ACME	Duluth	8.5	1021	Feb	c004	a06	p01	1000	460
c001	Tiptop	Duluth	10	1022	Mar	c001	a05	p06	400	720
c001	Tiptop	Duluth	10	1023	Mar	c001	a04	p05	500	450
c006	ACME	Kyoto	0	1024	Mar	c006	a06	p01	800	400
c001	Tiptop	Duluth	10	1025	Apr	c001	a05	p07	800	720
c002	Tyrell	Dallas	12	1026	May	c002	a05	p03	800	744
c005	Weyland	Risa	0							

```
CAP4 on postgres@PostgreSQL 9.6
1  select *
2  from customers right outer join orders on customers.cid = orders.cid
```

Data Output Explain Messages History

cid character	name text	city text	discount numeric	ordnumb integer	month character	cid character	aid character	pid character	qty integer	totalusd numeric
c001	Tiptop	Duluth	10	1011	Jan	c001	a01	p01	1000	450
c002	Tyrell	Dallas	12	1012	Jan	c002	a03	p03	1000	880
c003	Allied	Dallas	8	1015	Jan	c003	a03	p05	1200	1104
c006	ACME	Kyoto	0	1016	Jan	c006	a01	p01	1000	500
c001	Tiptop	Duluth	10	1017	Feb	c001	a06	p03	600	540
c001	Tiptop	Duluth	10	1018	Feb	c001	a03	p04	600	540
c001	Tiptop	Duluth	10	1019	Feb	c001	a02	p02	400	180
c006	ACME	Kyoto	0	1020	Feb	c006	a03	p07	600	600
c004	ACME	Duluth	8.5	1021	Feb	c004	a06	p01	1000	460
c001	Tiptop	Duluth	10	1022	Mar	c001	a05	p06	400	720
c001	Tiptop	Duluth	10	1023	Mar	c001	a04	p05	500	450
c006	ACME	Kyoto	0	1024	Mar	c006	a06	p01	800	400
c001	Tiptop	Duluth	10	1025	Apr	c001	a05	p07	800	720
c002	Tyrell	Dallas	12	1026	May	c002	a05	p03	800	744

This shows the difference between left and right outer joins. The left outer join shows each customer, so c005 is included. However, the right outer join only displays each order, and since c005 didn't place an order, that customer isn't displayed at all in the table.