2 HW #2: Subqueries

Answer the following questions using only the syntax discussed in class. If a year is unspecified, please use the 2010 data and refer to the data dictionary for questions regarding the contents of the data.

For each question, please provide both the query and the first few lines of output.

- What is the definition of dollar volume?
- What is the definition of dollar value?
- For #1(c), should volume be between 1 and 10,000,000 or between 1,000,000 and 10,000,000?
- For #1(f), should we return a list of exactly 50 distinct cusips? Or should we return a distinct list of the cusips from the top 50 rows (which may result in less than 50 distinct cusips)? In the latter case, my query returns 1 cusip.
- For #1(h), is this the intersection of the top 500 on each of the three listed days? Or the top 500 from any of these three days?
- For #3, should rows with NULL values in any of the columns of the output be removed?
- . In Q1.e, does "dollar volume" just mean "vol"?
- . In Q1.f, is "dollar value traded" defined as abs(prc) * vol ?
- . In Q1.h, does "dollar trading volume" mean "vol" or "dollar value" (may be defined as abs(prc) * vol)? Additionally, do we want to select the top 500 of dollar trading volume from the data from the 2nd, 3rd, and 4th days of February 2011 (in one query), or does it need to be the top 500 for each of the three dates (using three subqueries)?
- . In Q2.b, should we select the stocks with a margin greater than 20% (for any year or only 2011), if they have more than 25,000 employees in 2011?

1. Answer the following questions using the daily stock data.

   (a) Return a list of all the trading days in 2010.

   ```
   select distinct retdate from stocks2016.d2010;
   ```

   (b) The cusip with the lowest Jan 11th volume that also appears on Dec 1st.

```
select cusip
from stocks2016.d2010
where retdate = '20100111'
and cusip in
(select cusip from stocks2016.d2010 where retdate = '20101201')
order by vol asc
limit 1;
```

(c) The lowest five cusips by volume from Janaury 11th, 2010 that have a volume between 1 and 10 million on December 1st, 2011.

```
select cusip
from stocks2016.d2010
where retdate = '20100111'
and cusip in
(select distinct cusip from stocks2016.d2011 where retdate = '20111201')
and vol between 1000000 and 10000000
order by vol asc
limit 5;
```

(d) Return the list of permco's that exist in 2011, but not 2010.

```
select distinct permco
from stocks2016.d2011
where permco not in (select distinct permco from stocks2016.d2010);
```

(e) Of the permco's that existed in 2011, but not in 2010, which had the highest dollar volume traded day in 2010?

```
select permco
from stocks2016.d2011
where permco not in (select distinct permco from stocks2016.d2010)
and vol is not null
order by vol*abs(prc) desc limit 1;
```

(f) Return a list of the distinct cusips that were in the top 50 highest dollar value traded in 2011.

```
select distinct cusip
from
(select cusip from stocks2016.d2011
order by abs(prc)*vol
limit 50) as innerQ
```

(g) Of the cusips that were in the top 50 highest dollar value traded in 2011, which were also in the top 100 highest value traded in 2010?

```
select distinct cusip
from
(select cusip from stocks2016.d2011
order by abs(prc)*vol
limit 50) as innerQ
where cusip in
(select cusip from stocks2016.d2010
order by abs(prc)*vol
limit 100);
```

(h) Which permcos were in the top 500 of dollar trading volume on the 2nd, 3rd and 4th days of February 2011?

```
select distinct permco
from stocks2016.d2011
where permco in
        (select permco from stocks2016.d2011
                where retdate = '20110202' order by abs(prc)*vol desc
                limit 500)
and permco in
        (select permco from stocks2016.d2011
                where retdate = '20110203' order by abs(prc)*vol desc
                limit 500)
and permco in
         (select permco from stocks2016.d2011
                 where retdate = '20110204' order by abs(prc)*vol desc
                limit 500);
```

(i) Of the permcos that had volume between 100,000 and 1,000,000 on the 2nd and 3rd of February 2011, which had volume greater than 5,000,000 on the 4th on February?

```
select distinct permco
from stocks2016.d2011
where
        permco in
                (select permco from stocks2016.d2011
                        where retdate = '20110202'
                        and vol between 100000 and 1000000)
and permco in
                (select permco from stocks2016.d2011
                        where retdate = '20110203'
                        and vol between 100000 and 1000000 )
and permco in
                (select permco from stocks2016.d2011
                        where retdate = '20110204'
                        and vol > 5000000 );
```

2. Answer the following questions using the fnd table

   (a) Of the stocks (ticker symbols) that have a net income to employee ratio greater than $1,000 in fiscal year 2010, which have a net income between 20 and 30 million dollars in 2011?

```
select tic from stocks2016.fnd
where emp > 0 and netinc/ emp > 1 and fyear = 2010
and tic in
        (select distinct tic
                from stocks2016.fnd
                where netinc between 20 and 30 and fyear = 2011)
```

   (b) Of the stocks (ticker symbols) that have a net income to revenue ratio (called a profit margin) greater than 20%, which have more than 25,000 employees in fiscal year 2011?

```
select tic from stocks2016.fnd
where tic in
         (select distinct tic from
                 stocks2016.fnd
                 where rev <> 0
                 and netinc/rev > .2)
         and emp > 25 and fyear = 2011;
```

   (c) Of the stocks (ticker symbol) that have profit margin greater than 20% in 2010,

which had a profit margin greater than 30% in fiscal year 2011?

```
select tic
        from stocks2016.fnd
        where
                tic in (select tic
                        from stocks2016.fnd
                        where rev <> 0 and netinc is not null
                        and netinc/rev > .2 and fyear = 2010)
                and fyear = 2011
                and rev <> 0
                and netinc/rev > .3;
```

(d) Of the stocks (ticker symbols) that have a net-income to employee ratio greater than $1,000 in fiscal year 2010 and more than 1,000 employees in 2011, what is the highest profit margin in fiscal year 2011 and what is the ticker symbol?

```
select tic, netinc/rev
from stocks2016.fnd
where tic in
         (select  tic
                 from stocks2016.fnd
                 where emp > 0
                 and netinc/emp > 1 and fyear = 2010)
         and rev >0 and fyear = 2011 and emp >= 1
order by netinc/rev desc
limit 1;
```

(e) Of the stocks (ticker symbols) that have a net-income to employee ratio greater than $1,000 in fiscal year 2010 and more than 1,000 employees in 2011, what is the lowest profit margin in fiscal year 2011?

```
select tic, netinc/rev
from stocks2016.fnd
where tic in
        (select  tic
                from stocks2016.fnd
                where emp > 0
                and netinc/emp > 1 and fyear = 2010)
        and rev >0 and fyear = 2011 and emp >= 1
order by netinc/rev asc
limit 1;
```

(f) Of the stocks (ticker symbols) that have a net-income to employee ratio greater than $1,000 in fiscal year 2010 and between 1,000 and 2,000 employees in 2011, what is the highest profit margin in fiscal year 2011 and what is the ticker symbol?

```
select tic, netinc/rev
from stocks2016.fnd
where tic in
        (select  tic
                from stocks2016.fnd
                where emp > 0
                and netinc/emp >1 and fyear = 2010)
        and rev >0 and fyear = 2011 and emp between 1 and 2
order by netinc/rev desc
limit 1;
```

(g) We define revenue divided by inventory as the turnover. It expresses how many times the inventory has turned-over during the year in the form of sales. For companies (ticker symbols) with revenue between 1 and 2 million dollars in 2010, what company has the highest turnover in 2011?

```
select tic
        from stocks2016.fnd
        where
                invt > 0 and rev is not null
                and tic in
                        (select tic from stocks2016.fnd
                        where rev between 1 and 2
                        and fyear = 2010)
        order by rev/invt desc limit 1;
```

(h) Of the companies (ticker symbols) with turnover between 1 and 2 in 2010, which companies also had a net income to employee ratio greater than $1,000 in 2010?

```
select
        tic
from stocks2016.fnd
where
        invt > 0
        and rev is not null
        and rev/invt  between 1 and 2
        and fyear = 2010
        and emp > 0
        and netinc/emp > 1
```

(i) Of the companies (ticker symbols) with turnover between 1 and 2 in 2010, which companies also had a net income to employee ratio greater than $1,000 in 2011?

```
select
        tic
from stocks2016.fnd
where
        invt > 0
        and rev/invt  between 1 and 2
        and fyear = 2010
        and tic in (select tic from stocks2016.fnd
                where fyear = 2011
                and emp > 0
                and netinc/emp > 1)
```

(j) Which companies (company name), in fiscal year 2010 had a profit margin greater than 20%, turnover more than 2 and more than 10,000 employees?

```
select
    conm
from stocks2016.fnd
where
        invt > 0  and emp > 10
        and rev/invt > 2  and netinc/rev > .2
        and fyear = 2010;
```

3. For each of the questions below, please write a single query which generates a dataset with the specified columns.[3]

   (a) Write a select statement to generate the following datasets:

   - company name, ticker symbol, revenue, inventory and employee information from fiscal year 2010
   - A column called turnflag which is 1 for companies with turnover greater than 2, 0 otherwise
   - For a company to be included it must have revenue, inventory and employee all greater than zero for both 2010 and 2011

```
select
    conm, tic, rev, invt
    , case when rev/invt > 2 then 1 else 0 end as turnflag
from stocks2016.fnd
        where rev >0
        and invt >0 and emp >0 and fyear = 2010
        and tic in (select tic from stocks2016.fnd
                                    where rev >0 and invt >0
                                    and emp >0 and fyear = 2011)
```

   (b) Write a select statement to generate the following datasets:

   - company name, ticker symbol, revenue, inventory and employee information from both 2010 and 2011 fiscal years.
   - A column called invtflag which is equal to 1 for companies with turnover between 2 and 3, 2 for turnover between 3 and 4 and 5 for turnover greater than 4 and zero otherwise.
   - A column called invtProfit which is equal to 1 for companies with less than 20% profit margin and turnover greater than 2, 2 for companies with profit

[3]Some of these requests maybe large. When testing, use limits to avoid waiting.

margin greater than 40% and turnover greater than 2 and 0 otherwise.

- A column called EmployeeProfit which is equal to 0 for companies that have profit margins between 20% and 40% and have more than 10,000 employees, is equal to a company's profit margin if the margin is less than 20%, is equal to twice the number of employees (if it exists) if the profit margin is greater than 40% and is -1 otherwise.

```
select
        conm, tic, rev, invt
        , case
                when invt > 0 and rev / invt between 2 and 3 then 1
                when invt > 0 and rev / invt between 3 and 4 then 2
                when invt > 0 and rev / invt > 4 then 5
                else 0
        end as invtflag
        , case
                when rev <> 0 and invt > 0 and netinc / rev < .2
                        and rev / invt > 2 then 1
                when rev <> 0 and invt > 0 and netinc / rev > .4
                        and rev / invt > 2 then 2
                else 0
        end as invtProfit
        , case
                when emp > 10 and rev <> 0
                        and netinc/rev between .2 and .4 then 1
                when rev <> 0 and netinc/rev < .2 then netinc/rev
                when rev <> 0 and emp is not null
                        and netinc/rev > .4 then 2*emp
                else -1
        end as EmployeeProfit
from stocks2016.fnd;
```