# 7 HW #3A: 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 each table. Be careful when using the fnd data as many of the items in that dataset are scaled by a factor (e.g. in thousands or millions).

Three terms that are defined in this assignment:

- **Profit Margin:** Net Income divided by Revenue.
- **Turnover:** Revenue divided by Inventory.
- **Dollar-volume:** This is the dollar value of stocks traded based on the closing price, so equal to the closing price of the shares traded multiplied by the volume.

For each question, please provide the query which will generate the result.

The best approach to learning from these problems is to complete them using pen and paper, working by yourself and then using your group to double check your results. The First Five problems provide a short overview of the core concepts in the assignment, so make sure that you understand them. The Main Problems section contains questions which range from easy to very difficult. Remember to don't get stuck! If a problem is taking a long time or is too difficult, *use your group!*



### First Five

1. Using the daily stock data from 2010, return a list of the unique trading days in 2010.
2. Using the 2010 data return the stock (symbol), the date and the dollar-volume for the stock with the largest dollar-volume traded on the NYSE (on a single day).
3. Using the 2010 data, return the stock (symbol only) with the largest volume on Jan 11th that also appears on Dec 1st.
4. Using the 2010 data, return the stock symbol and a column called "HFlag" which is equal to 1 if the high - low is greater than 1 and zero otherwise. Only return those companies whose stock symbol begins or ends with "A".
5. Write a query which returns (a) the date, (b) closing price and (c) a flag ("gt30") which is equal to "1" when the closing price is greater than $30.00 and "0" otherwise for "AAPL" in 2010.

### Main Problems

1. Return the list of symbols that exist in 2011, but not 2010.[4]
2. Using the fnd data, return company name, year and the a column called "HFlag" which is equal to 1 if the company has a net income larger than $1 Billion dollars and 0 otherwise. Only include those companies whose name begins with "B".
3. Using the fnd data, which ticker symbols have a net income to employee ratio greater than $1,000 in fiscal year 2010 and also have a net income between 20 and 30 million dollars in 2011?
4. The lowest five symbols by volume from Janaury 11th, 2010 that have a volume between 1 million and 10 million on December 1st, 2011. In other words, of those stocks which had between 1 and 10 million shares traded on December 1st, 2011, which five have the lowest volume traded on January 11th, 2010.

[4] If this is slow, try using distinct and see what happens. Any ideas why this may happen?

5. Of the stocks (symbols) that existed in 2011, but not in 2010, which had the highest closing price in 2011?
6. Which symbols were in the top 500 of dollar volume on the 2nd, 3rd and 4th days of February 2011 (The stock needs to be in the top 500 for all days)?
7. Of the symbols 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?
8. Write a query to generate the following dataset:
    - company name, ticker symbol, revenue for all companies whose name begin with "A" or "a"
    - A column, revflag which is 1 if revenue is greater than $25,000,000 and 0 otherwise.
9. Write a query to generate the following dataset:
    - 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

### Additional Problems

1. 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?
2. 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?
3. 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?
4. 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?
5. 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?
6. 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?
7. 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?
8. 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?
9. Write a select statement to generate the following dataset:
    - 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 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.