**CS 3450 - Design Patterns**

**Program 2 – Observer Pattern**

The Chicago Sun-Times reports stocks of local interest to Chicagoans. Write a LocalStocks object that “monitors” local stock activity as it is reported. You will simulate a live feed by reading snapshots from the file ticker.dat (details below).

Several periodic custom reports of the stock data provided by your LocalStocks object are required, as follows:

1. A report that displays the average of all local stock prices of each snapshot, along with the time the snapshot was taken.
2. A report that displays all companies that have had a price change of 10% or more. List the ticker symbol, the price, and the percentage change.
3. A report that displays all fields for the following companies (listed here by ticker symbol): ALL, BA, BC, GBEL, KFT, MCD, TR, WAG

As each snapshot is “received” by the LocalStocks object, each report is appended to a unique file associated with the report. Write your code so that a new custom report or a new type of stock data object (like LocalStocks) could be added with minimal code impact. Write each report to its own file.

Each line of the file ticker.dat contains the following 9 fields:

* Company
* Ticker Symbol
* Current Price
* $ Change
* % Change
* YTD % Change
* 52-Week High
* 52-Week Low
* P/E Ratio

Each snapshot is a group of lines preceded by a line of the form: Last updated Sep 1, 2005, 4:58:41 PM ET The snapshot is ended by a blank line. The number of lines per snapshot (equivalent to the number of companies observed) can change at any time. Note that the company name can contain an arbitrary number of spaces.

Don’t worry about minute details of formatting. My output files look like the following:

**Average.dat:**

Sep 1, 2005 4:58:41 PM , Average price: 31.847586206896555

Sep 2, 2005 12:50:26 PM, Average price: 31.926293103448273

Sep 2, 2005 5:30:42 PM , Average price: 30.794545454545446

Sep 6, 2005 3:09:40 PM , Average price: 31.08958677685951

Sep 6, 2005 4:52:15 PM , Average price: 31.157685950413235

**Change10.dat:**

Sep 2, 2005 12:50:26 PM:

Sep 2, 2005 5:30:42 PM :

NLEQ 8.75 -12.5

Sep 6, 2005 3:09:40 PM :

HOST 0.2 -31.03

NLEQ 10.0 14.29

UFMC 5.4 29.19

**Selections.dat:**

Last updated Sep 2, 2005 12:50:26 PM ET:

ALLSTATE CORPORATION ALL 55.33 -0.46 -0.82 6.98 63.22 45.50 11.06

BOEING CO BA 64.52 -1.47 -2.23 24.63 68.38 48.10 31.76

BRUNSWICK CORP BC 42.91 -0.09 -0.21 -13.31 49.85 38.96 12.75

KRAFT FOODS INC CL A KFT 30.98 0.24 0.78 -13.00 36.06 30.11 20.39

MCDONALD'S CORPORATION MCD 31.89 0.34 1.08 -0.53 34.70 26.89 17.08

TOOTSIE ROLL INDUSTRIES TR 32.35 0.38 1.19 -6.58 33.86 28.24 25.49

WALGREEN CO WAG 45.32 -0.43 -0.94 18.11 49.01 35.05 30.28

Last updated Sep 2, 2005 5:30:42 PM ET:

ALLSTATE CORPORATION ALL 55.53 -0.26 -0.47 7.37 63.22 45.50 11.06

BOEING CO BA 64.34 -1.65 -2.50 24.28 68.38 48.10 31.76

BRUNSWICK CORP BC 42.99 -0.01 -0.02 -13.15 49.85 38.96 12.75

GRUBB & ELLIS CO GBEL 6.80 -0.05 -0.73 46.24 7.30 3.55 8.77

KRAFT FOODS INC CL A KFT 30.79 0.05 0.16 -13.54 36.06 30.11 20.39

MCDONALD'S CORPORATION MCD 31.90 0.35 1.11 -0.50 34.70 26.89 17.08

TOOTSIE ROLL INDUSTRIES TR 32.44 0.47 1.47 -6.32 33.86 28.24 25.49

WALGREEN CO WAG 45.13 -0.62 -1.36 17.62 49.01 35.05 30.28

(Note: Selections.dat shows the observer beginning observation after the first snapshot,

observing for two snapshots, and then going away.)

My test program may be different from yours, so your files can vary. In my case, I

created an Average observer and then ran a snapshot. Then I added a Change10 observer

and ran another snapshot. Then finally I added a Selection snapshot, etc. Then I removed

them in LIFO order, running snapshots in between (there are 5 snapshots in Ticker.dat).

The above is from a Java version.