CS 101 Fall 2016 Project 3 Due 10/20

- Consider a series of stock transactions (buying and selling). When shares of stock are sold, the "capital gain" is the difference between the sales price and the "cost basis". This cost basis depends upon the original purchase price of the stock. If the seller has purchased shares of this stock at several different times at different prices, then many accounting methods exist for calculating the cost basis. Here we illustrate three such accounting methods via an example:

Series of transactions	**First-in first-out method**	**Last-in first-out method**	**Weighted average method**
Buy 100 shares at $20.00 per share			Shares owned = 100, Mean cost/share = $20.00
Buy 400 shares at $10.00 per share			Shares owned = 500, Mean cost/share = $12.00
Sell 200 shares at $28.00 per share (Sales price = 200*28 = 5600)	Cost basis = 100*20 + 100*10 = 3000, Capital gain = 5600 - 3000 = 2600	Cost basis = 200*10 = 2000, Capital gain = 5600 - 2000 = 3600	Cost basis = 200*12 = 2400, Capital gain = 5600 - 2400 = 3200
Buy 100 shares at $15.00 per share			Shares owned = 400, Mean cost/share = $12.75
Sell 200 shares at $25.00 per share (Sales price = 200*25 = 5000)	Cost basis = 200*10 = 2000, Capital gain = 5000 - 2000 = 3000	Cost basis = 100*15 + 100*10 = 2500, Capital gain = 5000 - 2500 = 2500	Cost basis = 200 * 12.75 = 2550, Capital gain = 5000 - 2550 = 2450

- Write a program that takes as input a series of stock transactions, and that produces as output the capital gain (or loss) for each sale, as well as the total capital gain (or loss) for the entire series.
- Your program should have a class which implements a doubly linked list. Using this class, you should implement both a stack and a queue. Each node of the stack or queue should hold a pair that consists of (number of shares, price per share).
- Your program should only include iostream, fstrea, and string.
- Your makefile should produce p3.exe
- The input should be read from a file Transactions.txt, and the outputs should be written to three files: FIFO.txt, LIFO.txt, and WtAvg.txt. Each line of the input contains a string ("Buy" or "Sell"), an integer (the number of shares), and a floating point value (the price per share). The files shown below correspond to the above example.

Transactions.txt	**FIFO.txt**	**LIFO.txt**	**WtAvg.txt**
Buy 100 20.00 Buy 400 10.00 Sell 200 28.00 Buy 100 15.00 Sell 200 25.00	Gain = 2600 Gain = 3000 Total = 5600	Gain = 3600 Gain = 2500 Total = 6100	Gain = 3200 Gain = 2450 Total = 5650