



How Securities Are Traded

What is this project about?

- You will learn how securities are traded on exchanges, particularly how to conduct margin trades, short sales, and submit limit orders.

What case do I use?

- You can use any stock trading case, such as the FTS 30 Stock Case, the FTS 1000 Stock Case, or the international stock cases. The case will be selected by your instructor.

What are the pre-requisites?

- A basic understanding of financial instruments such as stocks and stock exchanges.

How much time does it take?

- It takes two weeks, in two steps.
 - Step 1: Market orders (margin trades, short sales): 1 week
 - Step 2: Limit and stop orders: 1 week

What software and data are required?

- You will use the FTS Real Time Client (RTFTS)
 - Windows: You can launch the FTS Real Time Client from the FTS System Manager
 - Other: use the browser based version at <http://www.rtfts.com>
 - You will need a trading name and password, assigned by your instructor
- You may also need Excel for formulating and evaluating the results

How long is the report?

- 1 page executive summary
- 3 pages max describing the results
- Other material in an appendix

Question: How are stocks traded in the secondary markets?

Stocks are first issued in a “Primary Market,” for example through an IPO (initial public offering). Once issued, they are traded in “Secondary Markets.” These include organized exchanges such as the New York Stock Exchange (NYSE) and over-the-counter (OTC) markets. In any of these markets, buyers and sellers negotiate a price through a process called *price discovery* and then trade at the negotiated price. For example, on the NASD, price discovery is initiated by dealers who post bids and offers. On the NYSE, price discovery is initiated by investors, but orders above a certain size are matched by a specialist who can also trade on their personal account. Other markets, referred to as third and fourth markets, trade exchange listed securities and are pure order driven markets, where price discovery is initiated by investors and all matching of buyers and sellers is via an electronic network.

Common to these markets are various order types. The two most popular are **market orders**, and **limit orders**. Market orders are “buy” or “sell” orders for a specified quantity at the best currently available prices (the highest current bid and the lowest current ask). In a **limit order** traders specify both the price and quantity they want to trade. A buy order is executed if the ask drops to the price, and a sell order is executed if the bid rises to the price. A variation known as a **stop order** lets traders lock in their profits or limit losses on existing positions.

Two other important institutional details are known as **short sales** and **buying on margin**. Short sales allow traders to sell securities they do not currently own. To sell short, a trader is required to borrow the securities from a broker and then sell the borrowed security; when they cover their short position, the shares have to be returned. When buying on margin a trader borrows money from a broker to buy the stock. Interest is charged on the loan, and has to be repaid when the stock is sold. If the value of the stock falls sufficiently, the broker can make a margin call, which requires the trader to either deposit more money into the account or to sell the stock.

The FTS Real Time Client allows you to implement these orders using real world institutional details. Limit and stop orders are monitored by the system in real time and all positions are marked-to-market daily; the marking to market can trigger off automatic cash transfers to cover margin calls. All the accounting is performed automatically for you and the details of this accounting are available at any time via the “Reports” menu item.

In this project you will learn how stocks are traded in the secondary markets and the details of these order types using the FTS 30 stocks. To keep things interesting you will first form a simple price view for three stocks in the FTS 30 index. A view is simply whether you expect a particular stock to increase or decline in price. You can form your view in any way, e.g. thinking about short term economic trends, looking at some price charts, or even just flipping a coin if nothing else leads to a prediction. In practice, traders use many methods to develop their views, including technical analysis, news, and fundamental analysis. In this project, it does not matter whether your view is correct.

Once you have formed your view on the three stocks, complete the following five steps; a detailed guide of where you implement each step is below. You should read the “Getting Started” chapter for a quick overview of how to log in and trade.

1. On day 1 implement the following trades for the three stocks: a Cash Purchase of stock 1, a Margin Purchase of stock 2 and a Short Sale of stock 3, each for 100 shares.
2. After 5 days (or longer), close out the transactions implemented on day 1. That is, reverse your trades by conducting a Cash Sale, Margin Sale and Short Cover respectively so you are now left with no stocks either short or long.
3. Your cash account has now either increased or decreased over this time period. In this step, reconcile how the transactions above changed your total cash. Pay particular attention to interest paid on margin and short sale accounts and any margin calls, and also to transactions costs charged on each trade.
4. Next, implement a limit order/stop order strategy. Given your price view of three stocks, implement the following three trades: Limit Cash Purchase of stock 1, Limit Margin Purchase of stock 2 and a Limit Short Sale of stock 3. After you observe your limit orders have been executed then you should also put on the following “Stop Loss” trades – Stop Cash Sale, Stop Margin Sale and Stop Short Cover. If you want to you can enter all these at the same time.
 - Note: For part 4 you should track recent price changes for the three stocks so that your limit orders are placed at prices that have a reasonable chance of being executed. Your goal for a limit order is to purchase or sell at a better price than is currently available. Your goal for a stop (loss) order is to sell or cover a previous sale at a price that is worse than the current price – hence the term “stop loss.” Of course the “stop loss” may imply stopping the loss of a profit if prices have moved in your favor!
5. After you have successfully completed step 4, you have again cashed out of the three trades. Again your cash has either increased or decreased relative to what it was at the beginning of step 4. Reconcile how your transactions in step 4 changed your total cash.

After completing the above 5 steps, you will have gained important experience and understanding of order types and how they are implemented and executed.

Details: Submitting Market Orders and Limit Orders

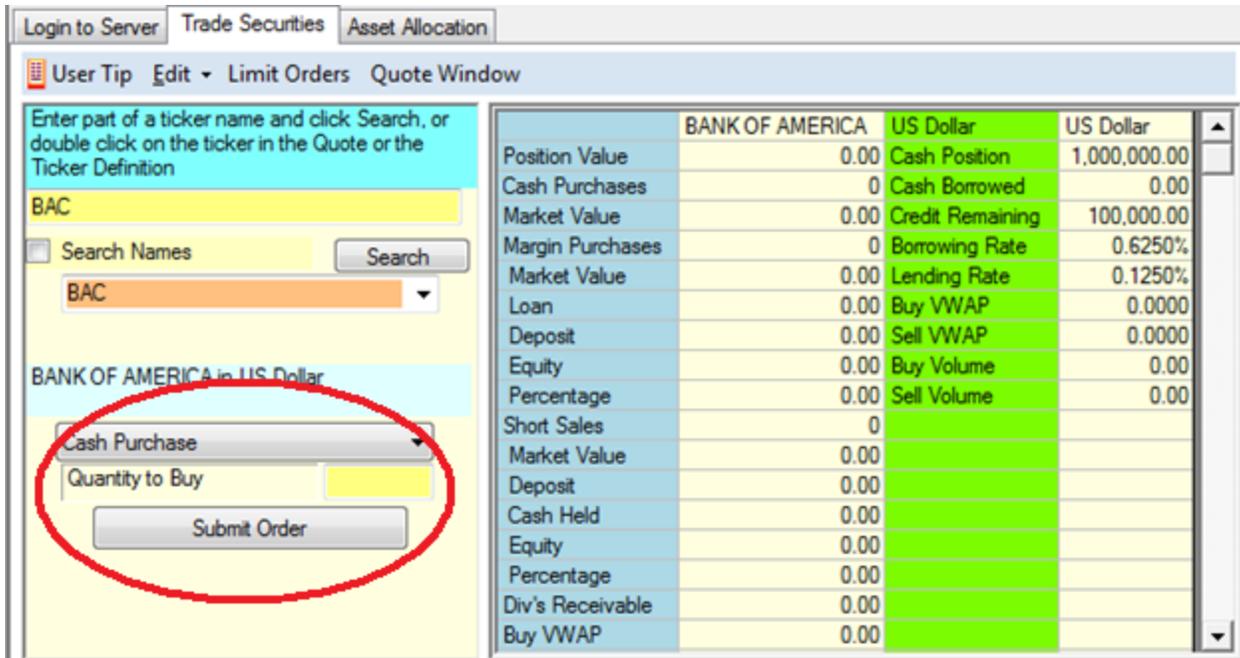
Market orders are submitted in the “Trade Securities” Tab on the bottom left of the screen. The easiest way to trade is to double click on a security name in the Ticker window. For example, in the FTS 30 Stock Case:

The screenshot displays the FTS Real Time Trader Client interface. A Ticker Window is open, showing a list of stocks with columns for Ticker, Name, Currency, and Description. The list includes AA (ALCOA), AXP (AMERICAN EXPRESS), BA (BOEING), BAC (BANK OF AMERICA), CAT (CATERPILLAR), CSCO (CISCO SYSTEMS), CVX (CHEVRON), DD (E I DU PONT DE NEMOURS), DIS (WALT DISNEY), GE (GENERAL ELECTRIC CO), HD (HOME DEPOT INC), HPG (HEWLETT-PACKARD CO), IBM (INTERNATIONAL BUSINESS MACHINE), INTC (INTEL), JNJ (JOHNSON & JOHNSON), JPM (J.P. MORGAN CHASE & CO.), KFT (KRAFT FOODS), KO (COCA-COLA), and MCD (MCDONALDS CORP).

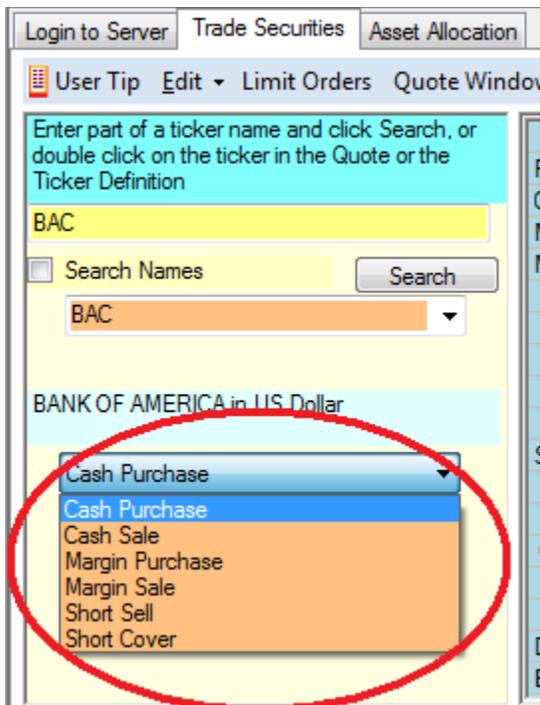
Below the Ticker Window, a Parameters table is visible, showing various metrics for the selected security (BAC). The table includes columns for Exp Return, Volatility, Sharpe, Treynor, Jensen, and Weight. The data for BAC is as follows:

Exp Return	Volatility	Sharpe	Treynor	Jensen	Weight
0.0807	0.1987	0.2152	0.0442	0.0000	
2.0737	0.1296	0.3888	0.2357	0.0442	0.0000
1.0183	0.0829	0.1935	0.2325	0.0442	0.0000
1.0000	0.0821	0.1875	0.2357	0.0442	0.0000
0.9677	0.0807	0.1987	0.2152	0.0442	0.0000

In this case, if you double click on BAC, you will see quotes from public web sites on the right top. At the bottom left, you will see:



You select order type from the drop-down in the middle, enter the quantity to trade, and then click "Submit Order." If you click the drop down, you will see the market orders available to you:



To close out a position, you simply do the opposite of the initial trade: reverse a cash purchase with a cash sale, a margin purchase with a margin sale, and a short sale with a short cover.

A note on netting: Unless requested by the instructor, we net short and long positions. So if you bought 10 shares of a stock and then short sold 5, you would be left with 5 shares of the stock, the short sale would netted against your long position.

Once you submit an order and the order is executed, you will see the results on the same screen. For example, here are three trades: cash purchase of a stock, margin purchase of a stock, and short sale of a third stock:

Cash Purchase: Select 'Cash Purchase' and click 'Submit Order'

We start with \$1m in cash and

	ALCOA	US Dollar	US Dollar
Position Value	1,083.00	Cash Position	998,907.06
Cash Purchases	100	Cash Borrowed	0.00
Market Value	1,083.00	Credit Remaining	100,000.00
Margin Purchases	0	Borrowing Rate	0.6250%
Market Value	0.00	Lending Rate	0.1250%
Loan	0.00	Buy VWAP	0.0000
Deposit	0.00	Sell VWAP	0.0000
Equity	0.00	Buy Volume	0.00
Percentage	0.00	Sell Volume	0.00
Short Sales	0		
Market Value	0.00		
Deposit	0.00		
Cash Held	0.00		
Equity	0.00		
Percentage	0.00		
Div's Receivable	0.00		
Buy VWAP	10.83		
Sell VWAP	0.00		
Buy Volume	100.00		
Sell Volume	0.00		
Contract Size	1		

You can see the cash purchase amount, the position value, and also the 'Buy VWAP'; this is the volume-weighted average price of purchases. Your cash position has dropped from \$1m to \$998,907.06, which is the cost of buying the shares plus \$9.95 in transactions costs.

Margin Purchase: Select 'Margin Purchase' and click 'Submit Order'

We start over with \$1m in cash and buy 100 shares of Chevron on margin:

Currency	Amount	Borrowed	Credit Left	Buy VWAP	Sell VWAP	Buy Volume	Sell Volume		
US Dollar	996,083.56	0.00	100,000.00	0.0000	0.0000	0.00	0.00		

Stocks	Position	Last	Last Value	Weight	Avg Cost	Total Cost	Gain/Loss	Gain/Loss %	Previc
CHEVRON	100	77.45	7,745.00	100.00	77.79	7,779.00	-34.00	-0.44	

Login to Server Trade Securities Asset Allocation

User Tip Edit Limit Orders Quote Window

Enter part of a ticker name and click Search, or double click on the ticker in the Quote or the Ticker Definition

CVX

Search Names

CVX

CHEVRON in US Dollar

Margin Purchase

Quantity to Buy

	CHEVRON	US Dollar	US Dollar
Position Value	3,872.50	Cash Position	996,083.56
Cash Purchases	0	Cash Borrowed	0.00
Market Value	0.00	Credit Remaining	100,000.00
Margin Purchases	100	Borrowing Rate	0.6250%
Market Value	7,745.00	Lending Rate	0.1250%
Loan	3,872.50	Buy VWAP	0.0000
Deposit	0.00	Sell VWAP	0.0000
Equity	3,872.50	Buy Volume	0.00
Percentage	0.50	Sell Volume	0.00
Short Sales	0		
Market Value	0.00		
Deposit	0.00		
Cash Held	0.00		
Equity	0.00		
Percentage	0.00		
Div's Receivable	0.00		
Buy VWAP	77.79		
Sell VWAP	0.00		
Buy Volume	100.00		
Sell Volume	0.00		
Contract Size	1		

Details of the margin account are shown. The last traded price in the example is \$77.45. The price at which the stock was bought (the ask price at the time of the trade execution) was \$77.79 (this is shown in the trade confirmation that was received; here we can also infer it from the Buy VWAP).

Margin requirements are calculated relative to the last traded price. Here, we started with \$1m in cash. There is a 50% margin. 100 shares at 77.79 would cost \$7,779. The last traded price was \$77.45, 100 shares at \$77.45 are worth \$7,745. The "broker" lends us 50% of this value, which is \$3,872.50. This is the margin `loan.' The actual cost was \$7,778 and \$3,872.50 was borrowed, so we had to pay the difference, \$3,909.50 from our cash. The position value is \$3,872.50; this is calculated relative to the last traded price; at that price, the 100 shares are worth \$7,745 but we owe half of that (the margin loan). So the position value is only \$3,872.50.

Just below the margin loan, you see `Deposit.' If the stock lost value, you would have to put up more cash as collateral, and this would be shown as the deposit.

Let us reconcile our cash balance. We started with \$1m and paid \$3,909.50 for the margin purchase. So we should have \$996,093.5 in cash remaining. But we only have \$996,083.56 (you can see that next to US Dollar Cash Position). The difference is the transaction cost we paid, which in this case was \$9.95, and a small rounding error that works in your favor. You can find the history of your transactions costs under the 'Reports' menu item. This is illustrated below, after we describe a short sale.

Short Sales: Select 'Short Sell' and click 'Submit Order'

We again start with \$1m in cash and short sell 100 shares of Walt Disney:

Currency	Amount	Borrowed	Credit Left	Buy VWAP	Sell VWAP	Buy Volume	Sell Volume
US Dollar	998,309.06	0.00	100,000.00	0.0000	0.0000	0.00	0.00

Stocks	Position	Last	Last Value	Weight	Avg Cost	Total Cost	Gain/Loss	Gain/Loss %	Prev
WALT DISNEY	-100	33.91	-3,391.00	100.00	33.62	-3,362.00	-29.00	-0.86	

	WALT DISNEY	US Dollar	US Dollar
Position Value	1,652.00	Cash Position	998,309.06
Cash Purchases	0	Cash Borrowed	0.00
Market Value	0.00	Credit Remaining	100,000.00
Margin Purchases	0	Borrowing Rate	0.6250%
Market Value	0.00	Lending Rate	0.1250%
Loan	0.00	Buy VWAP	0.0000
Deposit	0.00	Sell VWAP	0.0000
Equity	0.00	Buy Volume	0.00
Percentage	0.00	Sell Volume	0.00
Short Sales	100		
Market Value	3,391.00		
Deposit	1,681.00		
Cash Held	3,362.00		
Equity	1,652.00		
Percentage	0.49		
Div's Receivable	0.00		
Buy VWAP	0.00		
Sell VWAP	33.62		
Buy Volume	0.00		
Sell Volume	100.00		
Contract Size	1		

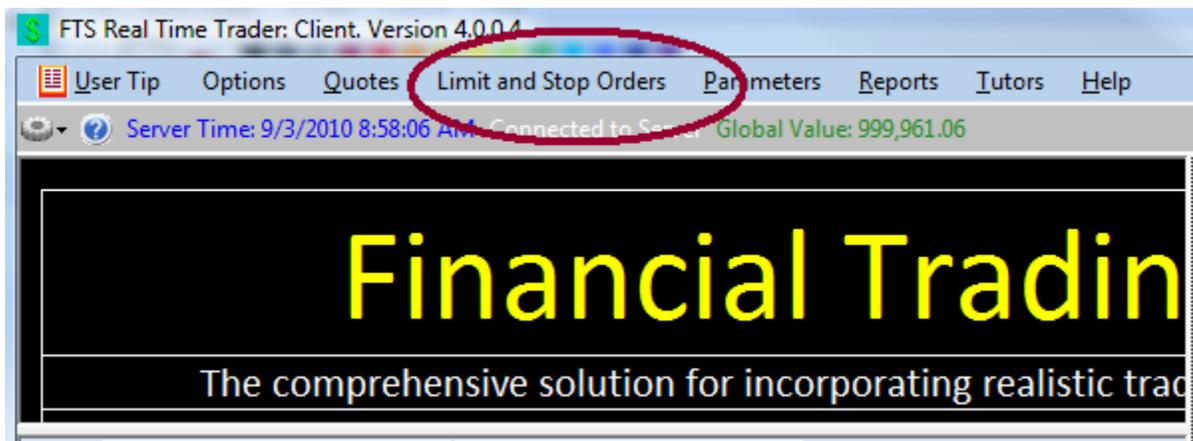
The short sales account details are shown. The shares were sold short at \$33.62 per share. So the proceeds from the sale were \$3,362. Short sale regulations require that these proceeds be held by the broker (shown above as 'cash held'). In addition, the short sales margin is 50%, so you have to put up an

additional 50% of the amount, which is \$1,681, shown as the `Deposit`. The position value is \$1,652. This is calculated relative to the last traded price, which was \$33.91. If the short sale was covered (the shares bought back) at this price, you would have to pay \$3,391 to buy back the shares. But you would get back the `cash held` and the `deposit` so the net amount would be - $\$3,391 + \$3,362.50 + \$1,681 = \$1,652$, which is shown as the position value.

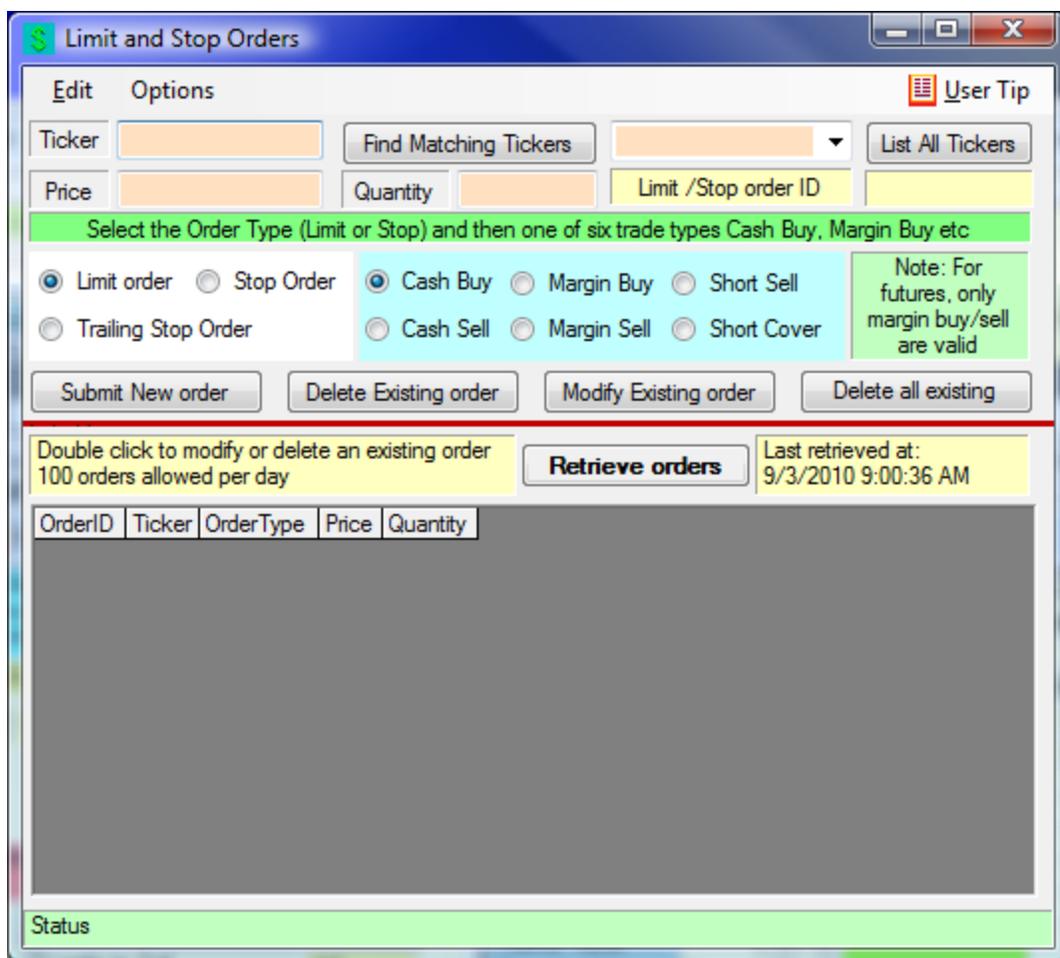
Finally, the cash account: it started at \$1m, the deposit of \$1,681 was subtracted, and the transaction of \$9.95 cost was paid, resulting in the cash balance of \$998,309.06. There is again a small rounding error of 1c in your favor; the rounding occurs because, for example, we may receive a quote of 33.62 as 33.61999, and if you trade 100 or 1000 shares, it can create a small discrepancy.

Limit Orders

These are submitted from the Limit Order window, accessible from the menu's at the top:

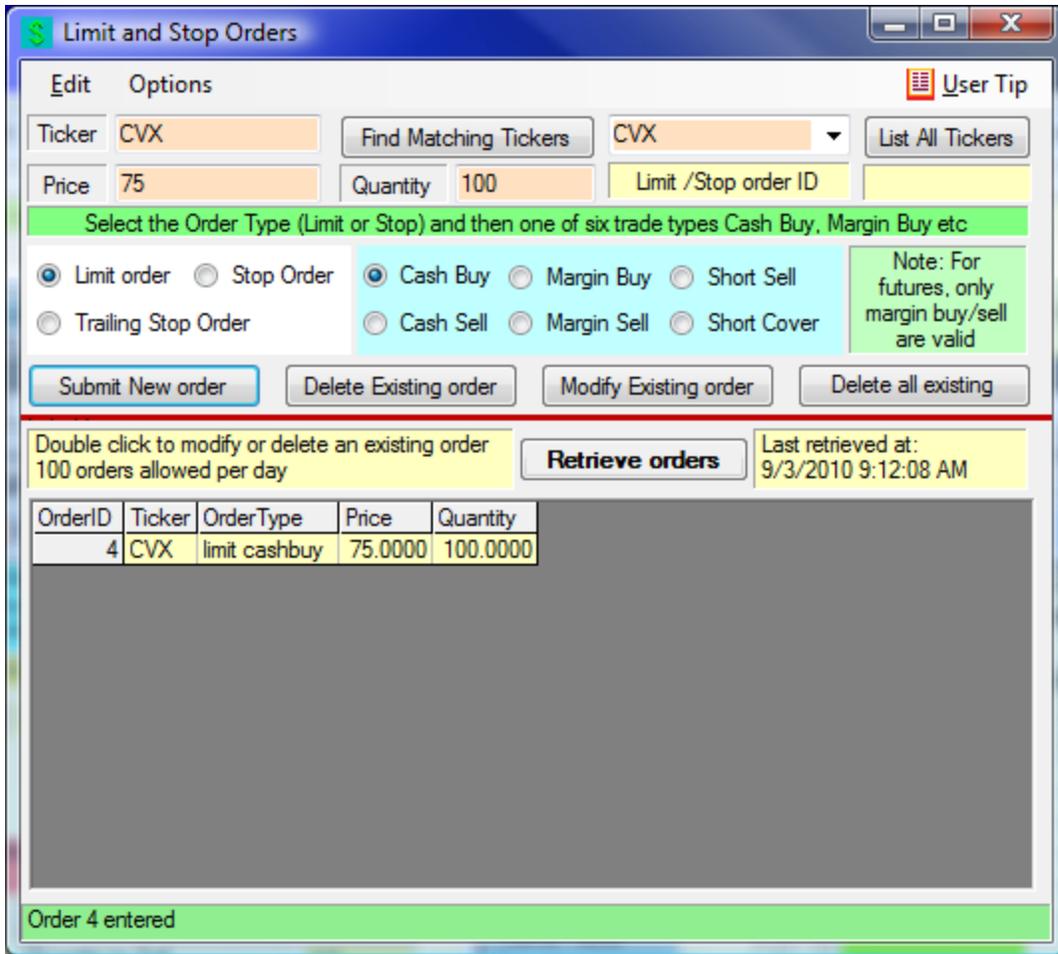


Click on `Limit and Stop Orders` to get:



This is fairly easy. You type in the ticker, price and quantity, select the order type and the trade type, and submit a new order. If you want to delete or modify an existing order, double click on an order, then either click 'Delete Existing Order' it or change the price/quantity and click 'Modify Existing Order.' You can list all the tickers and select the one you want or enter part of a ticker and 'Find Matching Tickers'. As an aside, tickers are case sensitive; this is because exchanges re-use the letters in a ticker and use lower and upper case letters to distinguish companies.

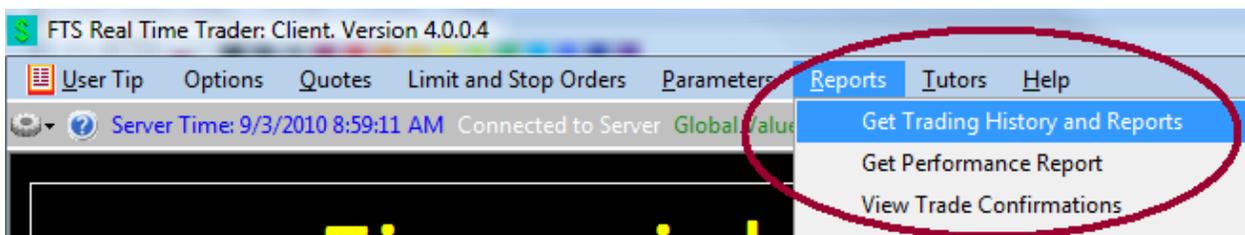
Limit orders you have entered are shown in this window and the information is updated whenever you make any changes. If you want to make sure you have the latest information on limit orders, click 'Retrieve Orders.' We show you the result of submitting a limit cash buy for Chevron at 75:



Limit orders are monitored all the time, even if you are not logged in. But they only execute if the price condition is met (in this example, the price of Chevron must fall from the current 77.45 to 75 for this order to execute). So if you put in unrealistic prices, the trades will not execute.

History

You can access your trading history from the 'Reports' menu at the top:

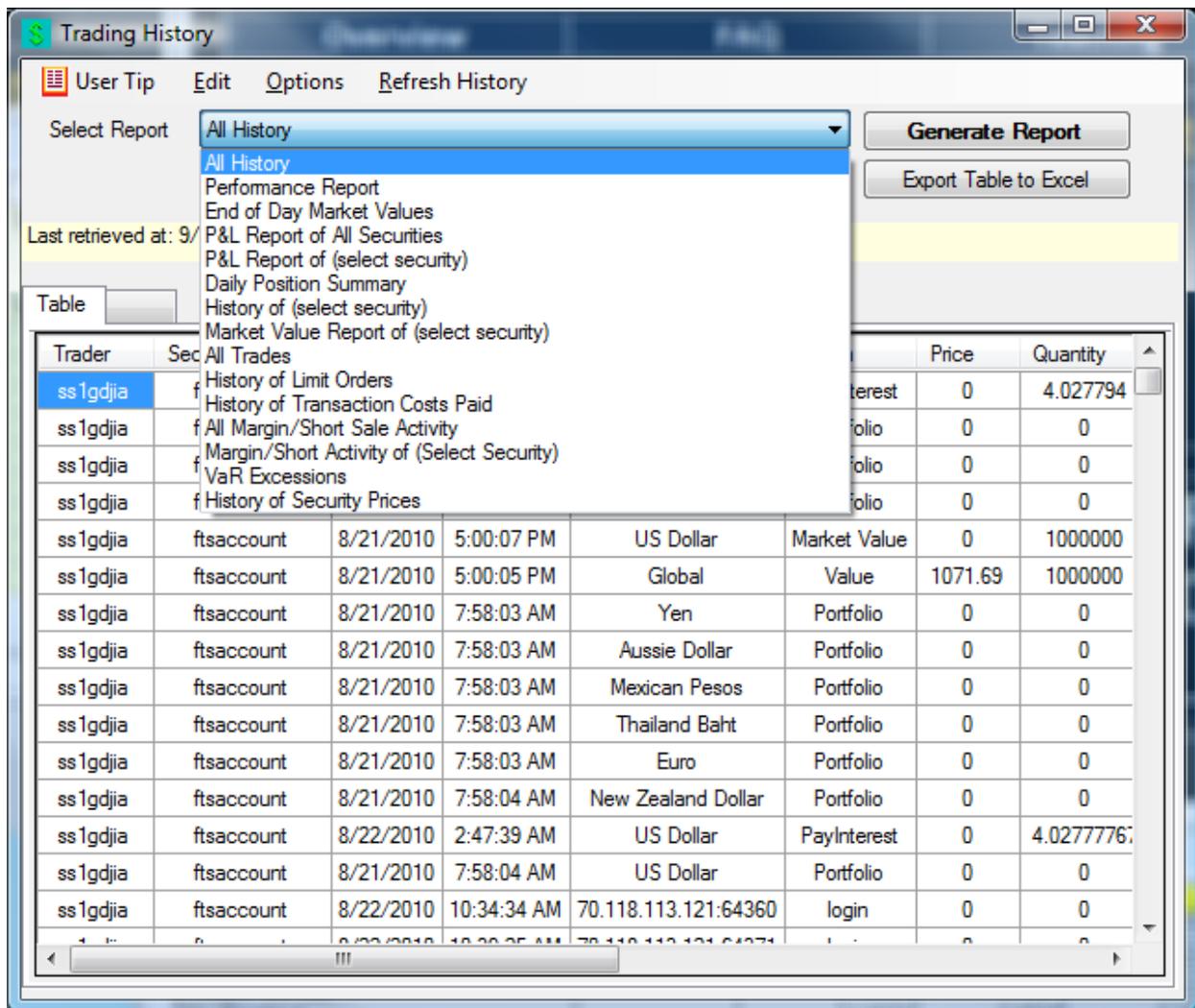


Select 'Get Trading History and Reports' to obtain the history. When it first comes up, shows everything recorded for your account, including when you logged in and from where. It looks like this:

Trader	SectionName	Date	Time	Security	Action	Price	Quantity
ss1gdjia	ftsaccount	8/25/2010	2:11:56 AM	US Dollar	PayInterest	0	4.30560827
ss1gdjia	ftsaccount	8/25/2010	5:00:06 PM	Global	Value	1055.33	1000016.5
ss1gdjia	ftsaccount	8/25/2010	5:00:09 PM	US Dollar	Market Value	0	1000016.5
ss1gdjia	ftsaccount	8/26/2010	2:11:57 AM	US Dollar	PayInterest	0	4.16673568
ss1gdjia	ftsaccount	8/26/2010	9:56:28 AM	70.118.113.121:56982	login	0	0
ss1gdjia	ftsaccount	8/26/2010	9:56:49 AM	US Dollar	CashChan...	10.18	-1018
ss1gdjia	ftsaccount	8/26/2010	9:56:49 AM	ALCOA	cashbuy	10.18	100
ss1gdjia	ftsaccount	8/26/2010	9:56:49 AM	US Dollar	CashChan...	0	-9.95
ss1gdjia	ftsaccount	8/26/2010	9:57:04 AM	US Dollar	CashChan...	58.98	-5898
ss1gdjia	ftsaccount	8/26/2010	9:57:04 AM	EXXONMOBIL	cashbuy	58.98	100
ss1gdjia	ftsaccount	8/26/2010	9:57:04 AM	US Dollar	CashChan...	0	-9.95
ss1gdjia	ftsaccount	8/26/2010	12:31:39 PM	70.118.113.121:58039	login	0	0
ss1gdjia	ftsaccount	8/26/2010	12:33:21 PM	70.118.113.121:58108	login	0	0
ss1gdjia	ftsaccount	8/26/2010	12:34:25 PM	US Dollar	CashChan...	12.73	-1273
ss1gdjia	ftsaccount	8/26/2010	12:34:25 PM	BANK OF AMERICA	cashbuy	12.73	100

As an aside, what is under 'Trader' may be your trading name with something added at the end. In this example, the trading name is ss1g but djia is added at the end. This is because trader ss1g has multiple trading accounts, and when they select the FTS 30 Stock Case, the system maps them to an internal name of ss1gdjia. This way, the trader can have a single trading name and password for multiple accounts.

The drop-down next to 'Select Report' lets you generate a variety of reports:



Select the report and click 'Generate Report.' P&L stands for profit and loss. You can see the transactions costs paid. The margin/short sale activity shows you interest credited to the deposits and interest charged on loans. After you have generated a report, you can export the table into Excel by clicking on the button. Some of the reports, like end of day market values, can also be plotted.