A Multi-Account Asset Management System with Real-Time Cross-Market Data Feed

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Abstract: *This system aggregates securities data from various global capital markets into a single interface and enables real-time updates and synchronization. It provides significant convenience for investors who frequently need to allocate assets across markets. Investors can freely configure and integrate according to their needs and can understand the changes in all account assets in real-time, providing effective data support for investment decisions.*

Keywords: Asset, Price, Real-Time, Securities data.

1. Overview

1.1 Background

Finance is the core of the modern economy and an important force driving economic and social development. After decades of development, China's financial capital market has become increasingly mature and sophisticated. Especially in recent years, with the deepening of China's reform and opening-up, the capital market has been continuously moving towards openness and internationalization. Simultaneously, the range of financial products and derivatives available for investors has expanded significantly. Beyond traditional financial products such as A-shares, funds, and bonds, products like commodity futures, financial futures, Hong Kong stocks, foreign exchange, and US stocks have gradually been incorporated into the investable universe in recent years... Consequently, investors are faced with an increasing number of investable markets. However, while the opening of numerous financial markets enriches investment options, it also creates certain inconveniences. For example, different financial products often belong to different financial markets. If an investor wishes to purchase different financial products, they must open accounts in different financial markets.

Ultimately, an investor ends up holding several financial accounts, which belong to different markets or are traded and settled in different currencies. To track their overall asset status, investors can only manually aggregate and organize the assets from each account. Due to frequent market price fluctuations, this aggregation and organization must be performed frequently, which is time-consuming, labor-intensive, and highly inefficient. In the rapidly changing market environment, this process makes it easier to miss critical investment opportunities. Therefore, there is an urgent need for software that can consolidate multiple account data and multiple market data feeds into a single system.

1.2 Introduction

To change the above passive situation, we have developed the "Multi-Account Asset Management System with Real-Time Cross-Market Data Feed." This system can update market data from different markets in real-time and automatically aggregate asset data from different market accounts. As market data continuously updates, account assets are also updated automatically in real-time, allowing investors to understand the changes in all account assets instantly and providing effective data support for investment decisions.

2. Functional and Detailed Design

After repeatedly confirming requirements, we have summarized the main functions of this system as follows: initialization of market data, real-time acquisition of market data feeds, and multi-account asset aggregation and management.

This system adopts a Client-Server (C/S) architecture. The client uses a VBA program to scrape data from various stock exchange servers in real-time via third-party websites into local documents, and then automatically calculates the market value and fund changes of each securities account. The detailed design of this system is shown in Figure 1.
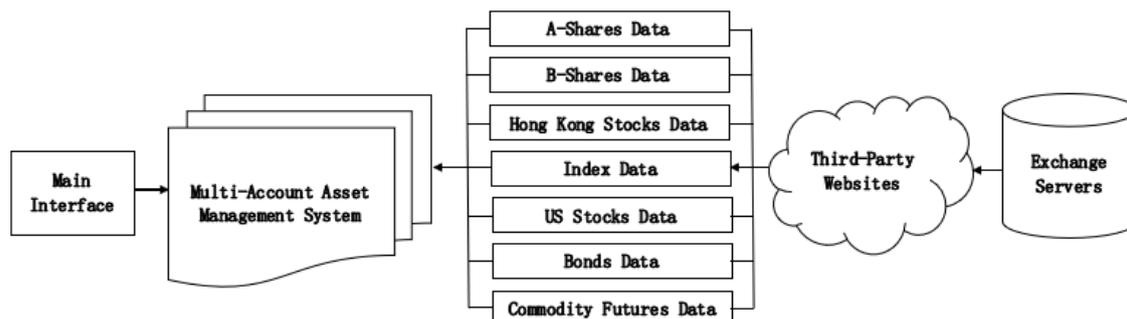

Figure 1: Detailed Design of Technical Architecture

3. Running Environment

This system operates in the following environment

(1) Hardware Environment: This system needs to run on a PC or laptop. The client machine requires a CPU above 3.2GHz and memory above 8GB.

(2) Network Environment: This system requires an internet connection.

(3) Operating System: Windows 10 or above.

(4) Application Software: Microsoft Office 2019 or above must be installed.

4. Implementation

This system requires no installation; it can be copied into the above environment and run directly by double-clicking. The runtime interface is shown in the Figure 2 below:

Index	Current Price	Change	Change%	Annual Change		Current Total Assets	1678129.95			Exchange Rates	Current Price	
Sh Composite Index	4101.91	-10.69	-0.26	3.35		Opening Total Assets	1000000.00			HKDCNY	0.8936	
HS300	4731.87	-19.56	-0.41	2.2		Total Rate of Return	68%			USDCNY	6.9686	
IXIC	23515.39	-14.63	-0.06	5.59		Total Posi	94%			USDHKD	7.8006	
SPX	6940.01	-4.46	-0.06	10.28		Total Market Cap	1583251.46			USDIND	99.393	

Account Types	Code	Quantity	Current	Previous	Change	Change%	Market Value	MV(RMB)	持仓占本类百	持仓百分比	总市值	总资产
A-Account	002304	200	62	62.95	-0.95	-1.51	12400.00	12400.00	7%	1%		
	002594	200	95.86	95.67	0.19	0.20	19172.00	19172.00	11%	1%		
	300750	200	352.32	353.75	-1.43	-0.40	70464.00	70464.00	42%	4%	115302.00	167448.00
	601318	200	66.33	67.41	-1.08	-1.60	13266.00	13266.00	8%	1%		
	cash	52146					52146.00	52146.00	31%	3%		
B-Account	200596	200	84.81	85.39	-0.58	-0.68	16962.00	15157.24	80%	1%		
	200869	200	8.12	8.09	0.03	0.37	1624.00	1451.21	8%	0%	16608.45	18884.45
	cash	2547					2547.00	2276.00	12%	0%		
HK-Account	00700	200	617.5	622	-4.5	-0.72	123500.00	110359.60	45%	7%		
	09618	200	113.6	115.1	-1.5	-1.30	22720.00	20302.59	8%	1%		
	09988	200	166.2	164.6	1.6	0.97	33240.00	29703.26	12%	2%	223766.38	246515.64
	02318	600	68.65	69.55	-0.9	-1.29	41190.00	36807.38	15%	2%		
	01211	300	99.2	99.1	0.1	0.10	29760.00	26593.54	11%	2%		
	cash	25458					25458.00	22749.27	9%	1%		
USD Account	BABA	200	165.4	170.93	-5.53	-3.24	33080.00	230521.29	19%	14%		
	AAPL	200	255.53	258.21	-2.68	-1.04	51106.00	356137.27	29%	21%	1227574.64	1245281.85
	MSFT	200	459.86	456.66	3.2	0.70	91972.00	640916.08	51%	38%		
	cash	2541					2541.00	17707.21	1%	1%		

Buttons: Update Prices · Weekly Initialization · Monthly Initialization · Annual Initialization

Figure 2: runtime interface

All accounts and securities on this page are examples. Users can modify, add, or delete them according to their actual asset situation. Users need to modify the "Opening Total Assets," and then reset the "Code," "Quantity," "Price," and "Cash" in each account based on their actual circumstances. Among these, "Code," "Quantity," and "Cash" are filled in directly, while "Price" must be referenced from the corresponding data in the respective worksheet tabs of this system.

After completing the above settings, click the "Update Prices" with one click button on the right. The system will then calculate and update the asset data for all accounts in real-time.

To track assets weekly, click the "Weekly Initialization" button on the right before the market opens on Monday. This will perform weekly initialization of the data in all worksheets for "A-Shares," "Hong Kong Stocks," "Exchange Rates," "Indices," "US Stocks," "Bonds," and "B-Shares."

To track assets monthly, click the "Monthly Initialization" button on the right before the market opens on the 1st of each month. This will perform monthly initialization of the data in the worksheets.

To track assets annually, click the "Annual Initialization" button on the right before the market opens on January 1st each year. This will perform annual initialization of the data in the worksheets.

5. Conclusion

This system aggregates securities data from various global capital markets into a single interface and enables real-time updates and synchronization. It provides significant convenience for investors who frequently need to allocate assets across markets. Investors can freely configure and integrate according to their needs and can understand the changes in all account assets in real-time, providing effective data support for investment decisions.

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