Tutorials

English Version

U-Mart Project

http://www.u-mart.org

Table of Contents

- Tutorials of U-Mart System
  - Tutorial for beginners in Computer Room
- Reference
  - Settings of Market Simulator
    - How to make setting files.
  - Settings of Market Server
    - How to make setting files.
  - Institutions of Futures Market
    - Margin and mark to the market
  - Example of Debriefing
    - Explain what can be seen in the experiment.

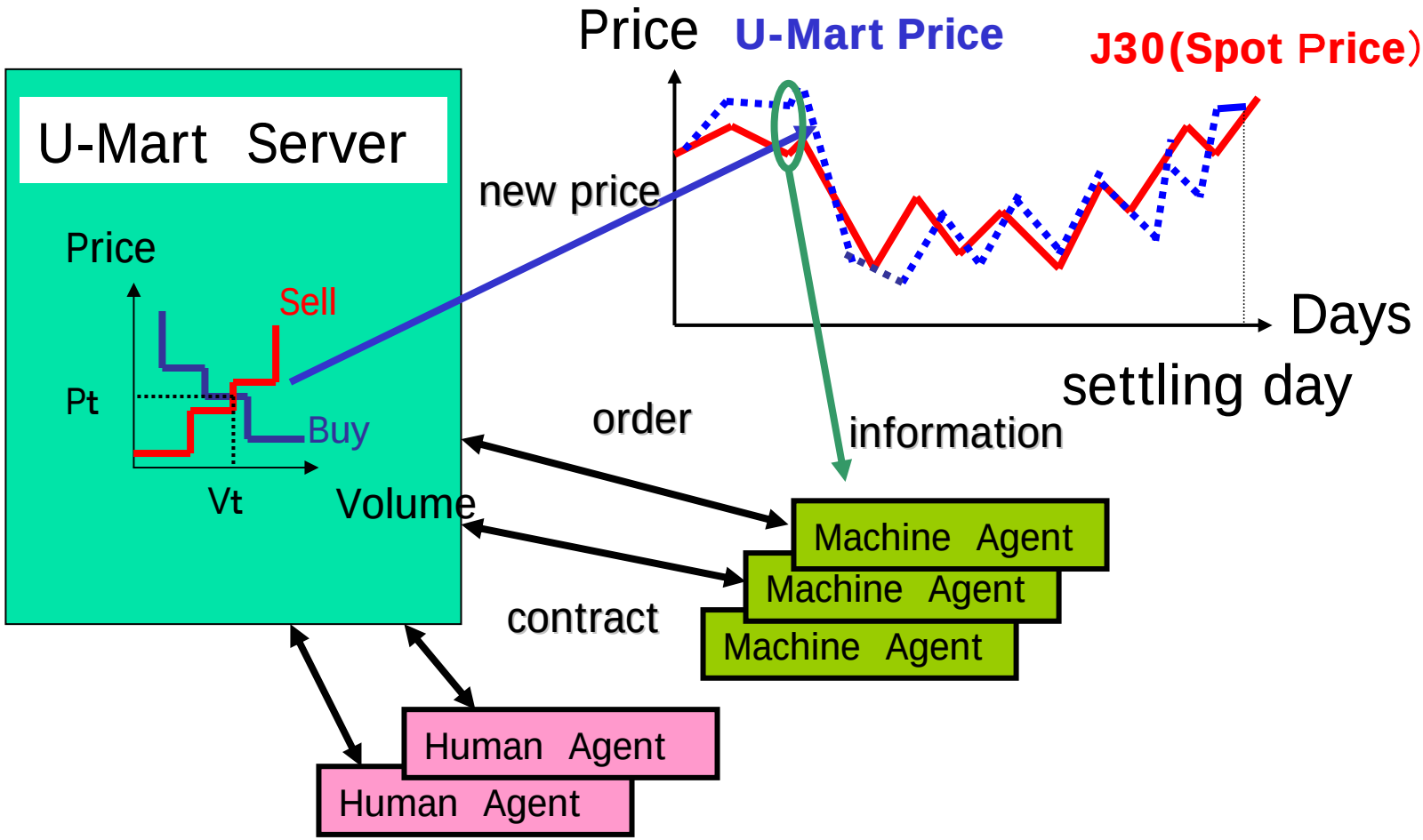
Preparation

- Please seat and activate PC
- Please confirm U-Mart System
  - CD-ROM
  - The Folder on Desktop
  - etc
- Please check your U-Mart Account and Password
- Please wait others and read handout

Lecture plan

- Learn how to use U-Mart System (artificial futures market)
- Trading Competition
- Debriefing

Architecture of U-Mart



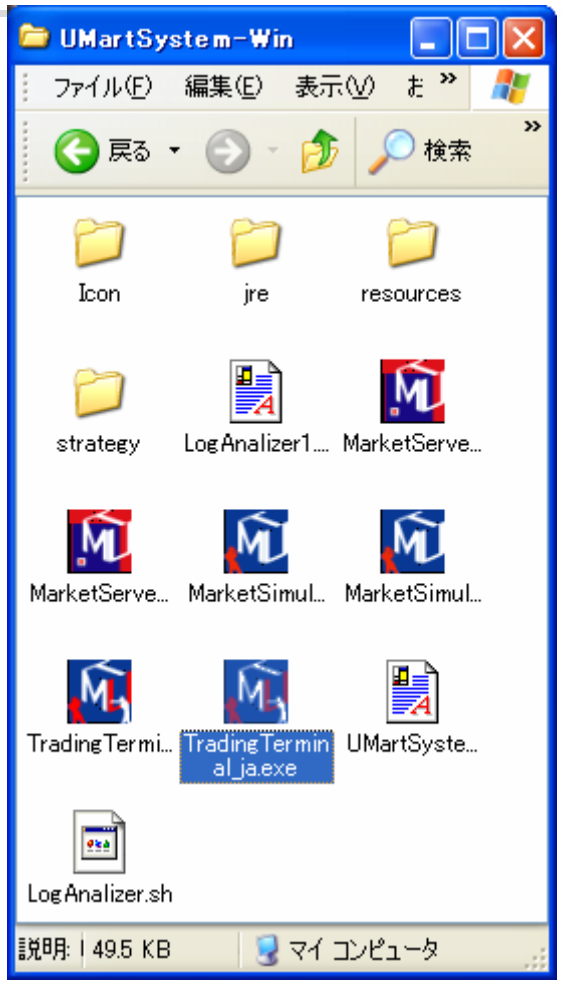
Set of U-Mart System Version2.0

<table>
<tr><th></th><th>Human Agent</th><th>Machine Agent</th></tr>
<tr><td>Stand Alone Environment</td><td>Market Simulator</td><td>Stand Alone CUI (Market Server)</td></tr>
<tr><td rowspan="2">Via Network</td><td>Human Agent Network Terminal</td><td>Machine Agent Adapter</td></tr>
<tr><td colspan="2">Market Server</td></tr>
</table>

U-Mart System Version 2.0

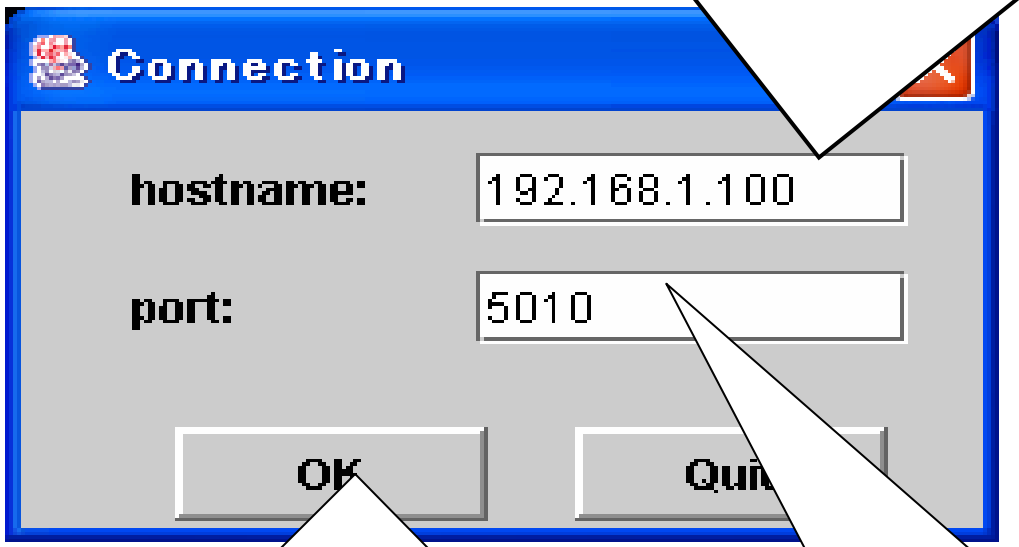
Activate U-Mart System

- Insert CD-ROM
- Double click Icon
  - **Trading Terminal**
    - For Experiment via network
  - **Market Server**
    - Server
  - **MarketSimulator**
    - For Training in Standalone environment



Connection to U-Mart Server

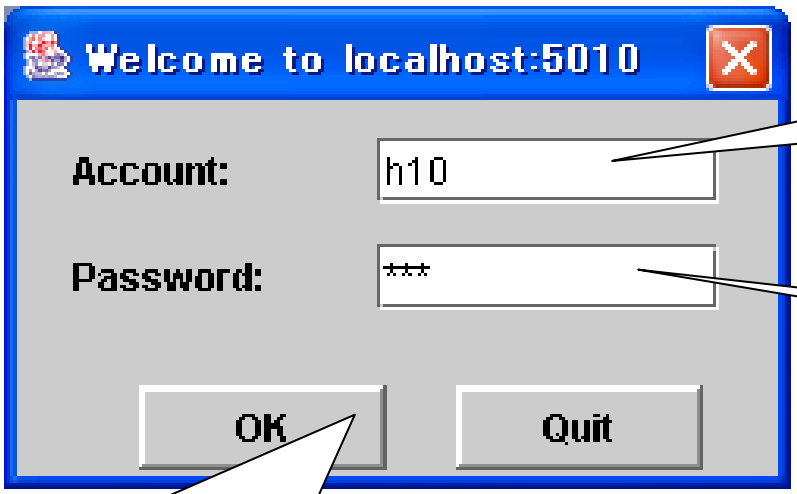
1) Enter IP Address of Server in hostname box
(in this case, 192.168.1.100)



3) Then, Click “OK”

2) Port is “5010”

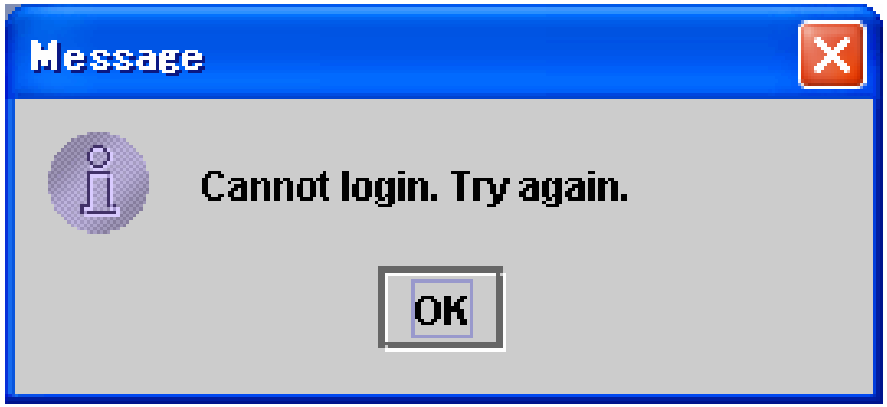
Login U-Mart Server



1) Enter your Account

2) Enter your password

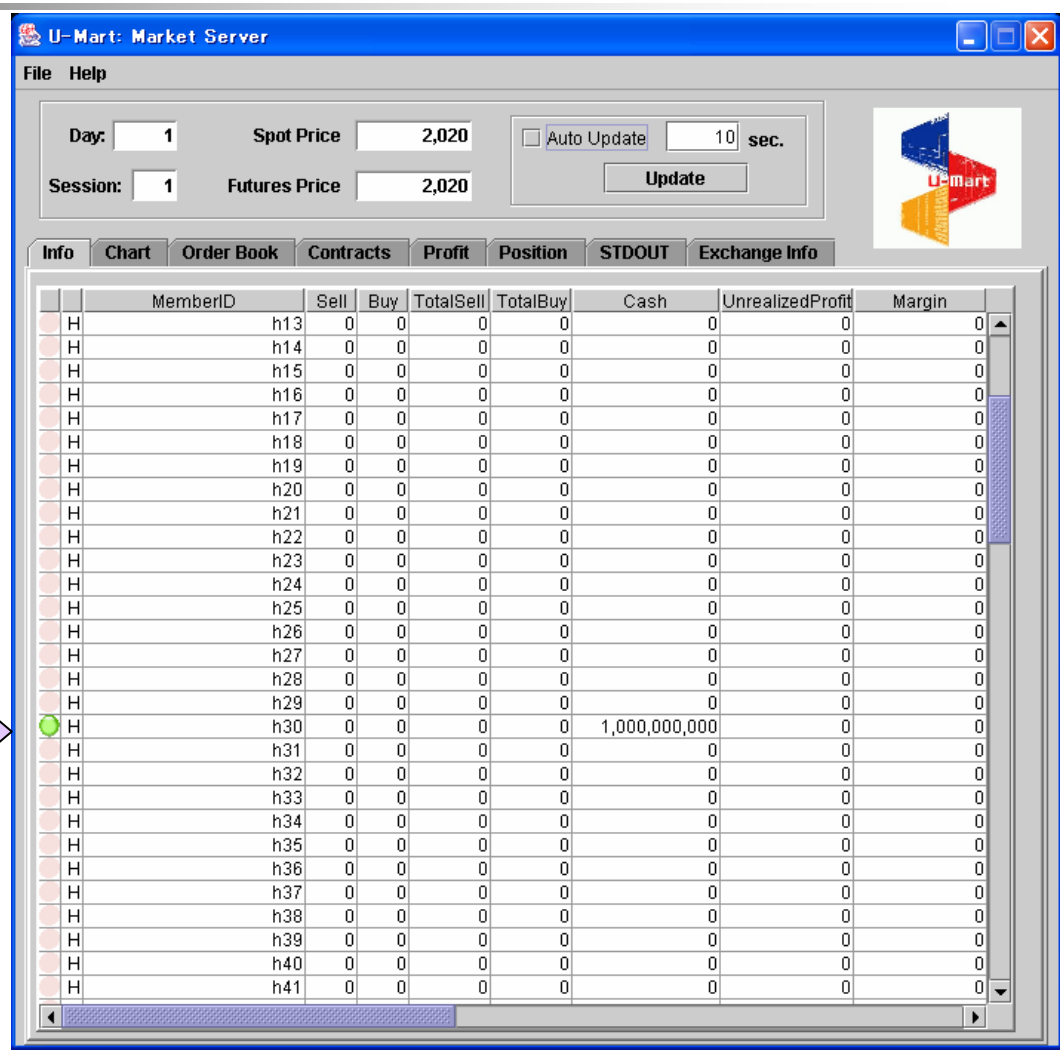
3) Click “OK”



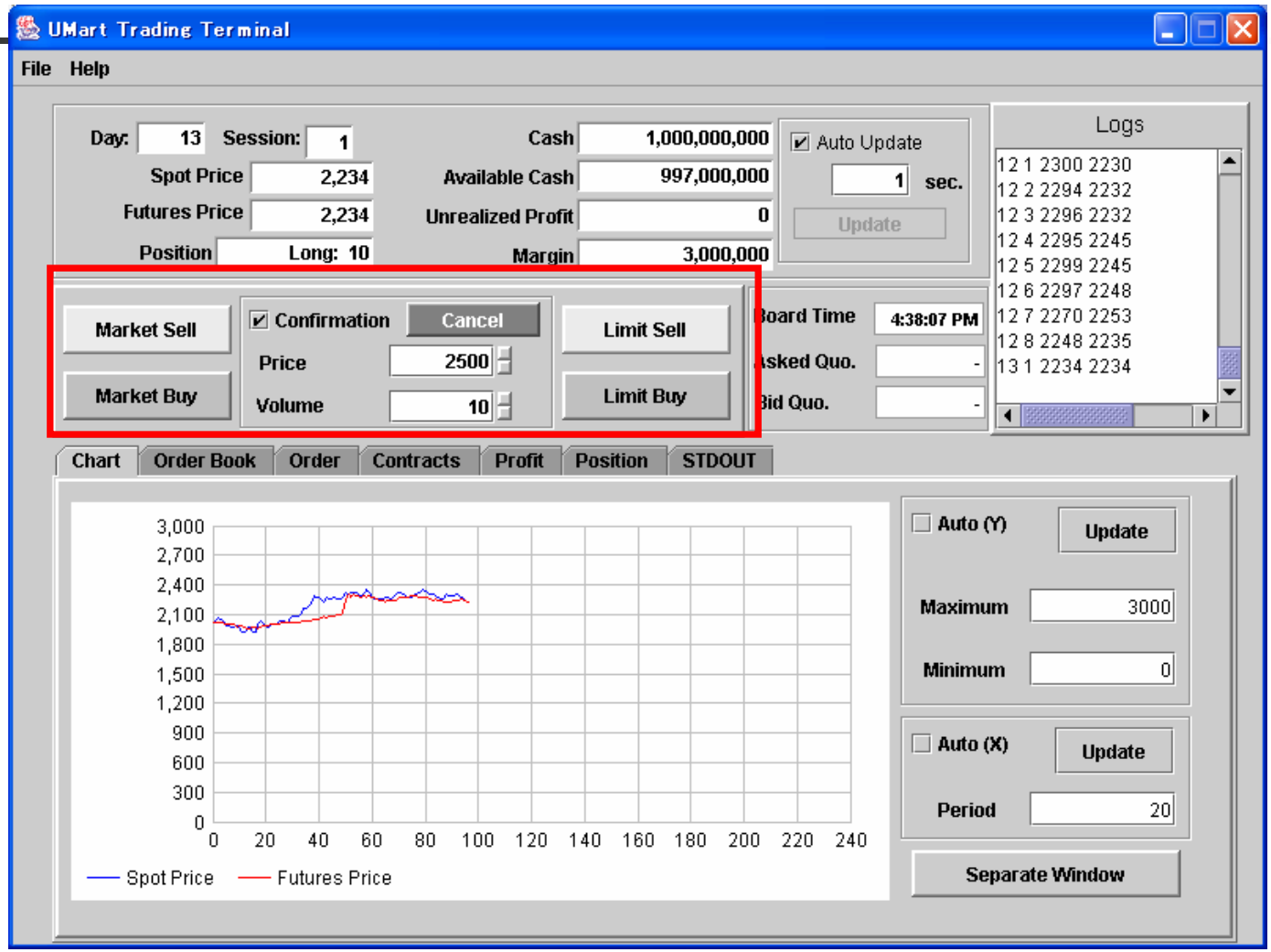
If this comment is popped up , Enter OK and try again from the beginning.

The view of the Server

If login is succeeded,
toggle turns to Green

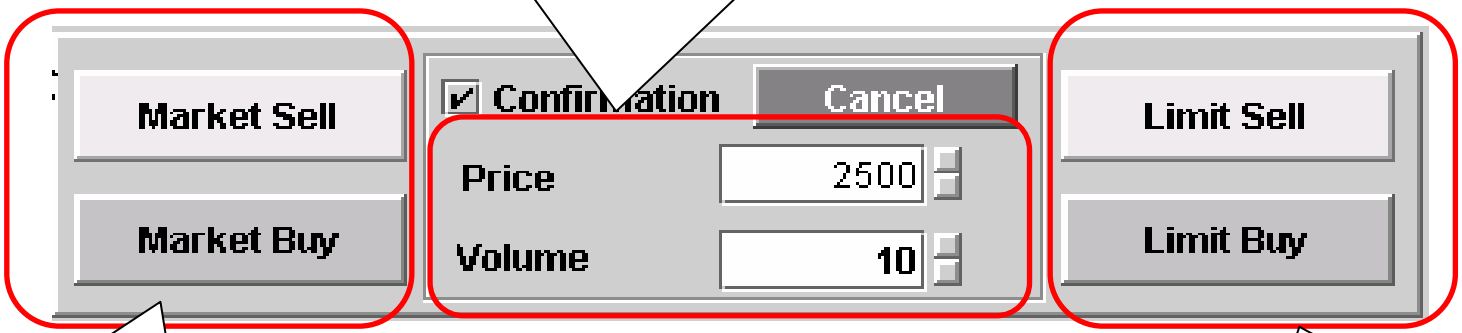


Order Area


UMart Trading Terminal
File Help
Day: 13 Session: 1
Spot Price 2,234
Futures Price 2,234
Position Long: 10
Cash 1,000,000,000
Available Cash 997,000,000
Unrealized Profit 0
Margin 3,000,000
Auto Update
1 sec.
Update
Logs
12 1 2300 2230
12 2 2294 2232
12 3 2296 2232
12 4 2295 2245
12 5 2299 2245
12 6 2297 2248
12 7 2270 2253
12 8 2248 2235
13 1 2234 2234
Market Sell
Market Buy
Confirmation
Cancel
Price 2500
Volume 10
Limit Sell
Limit Buy
Board Time 4:38:07 PM
Asked Quo. -
Bid Quo. -
Chart
Order Book
Order
Contracts
Profit
Position
STDOUT
3,000
2,700
2,400
2,100
1,800
1,500
1,200
900
600
300
0
0 20 40 60 80 100 120 140 160 180 200 220 240
Spot Price
Futures Price
Auto (Y)
Update
Maximum 3000
Minimum 0
Auto (X)
Update
Period 20
Separate Window

How to send Order

Enter Limited Price, Amount of Order here

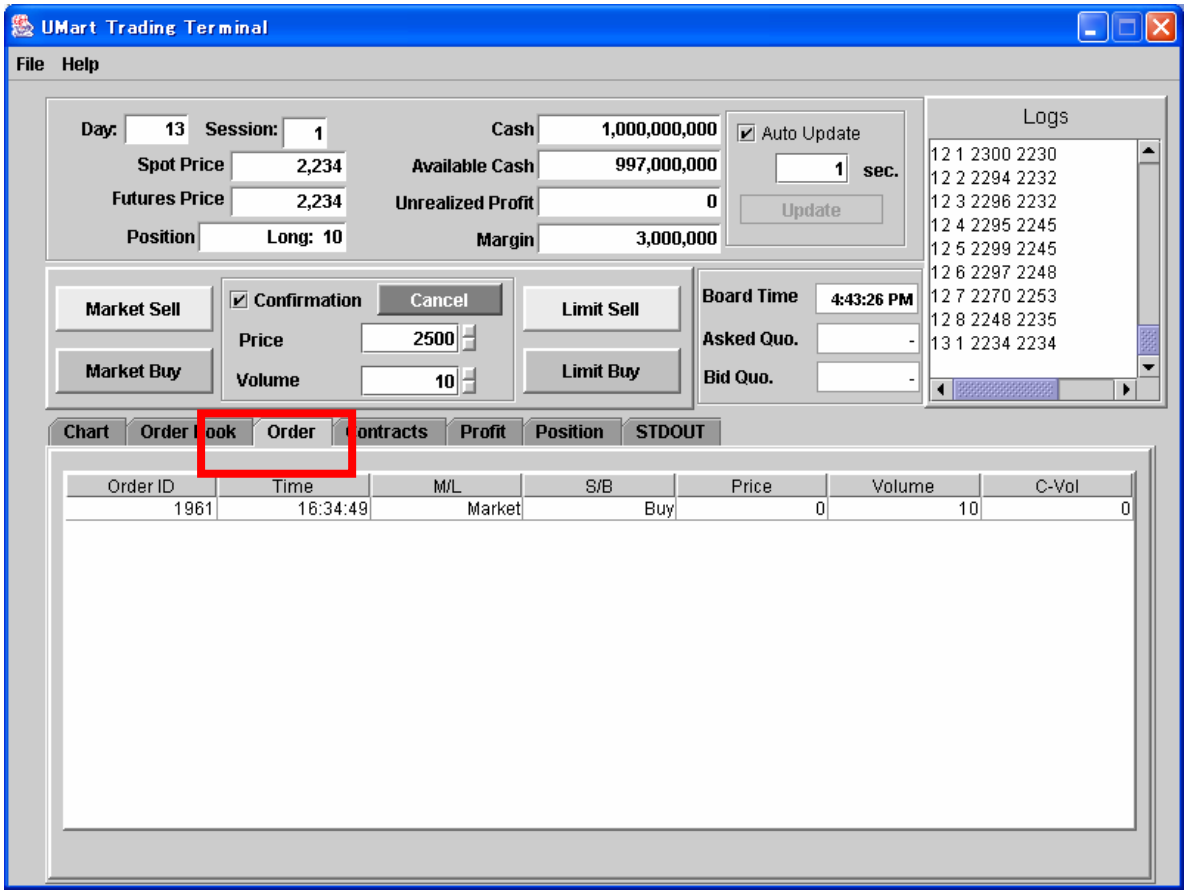


Order at market price toggle

Order at limited price toggle

Let’s order !

Then check in the “Order” window.



As Market Proceeding

- Updating Session
  - Execute centralized trading name “Itayose”
  - Contracts are conducted.
  - Futures price is decided.
- After the Market (8th session)
  - Mark to the market is conducted.
  - Calculate profit or loss

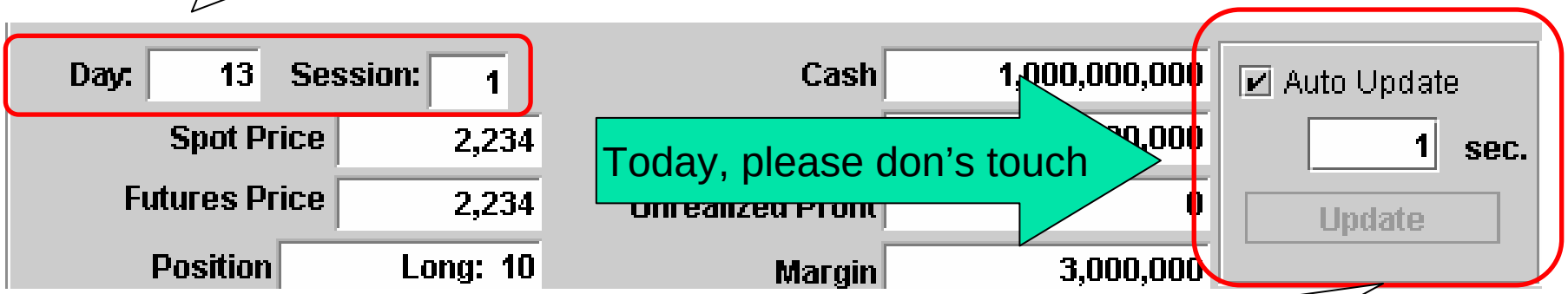
- Details are written in following “reference”.

Digital Information Area

The meanings of Digital Information

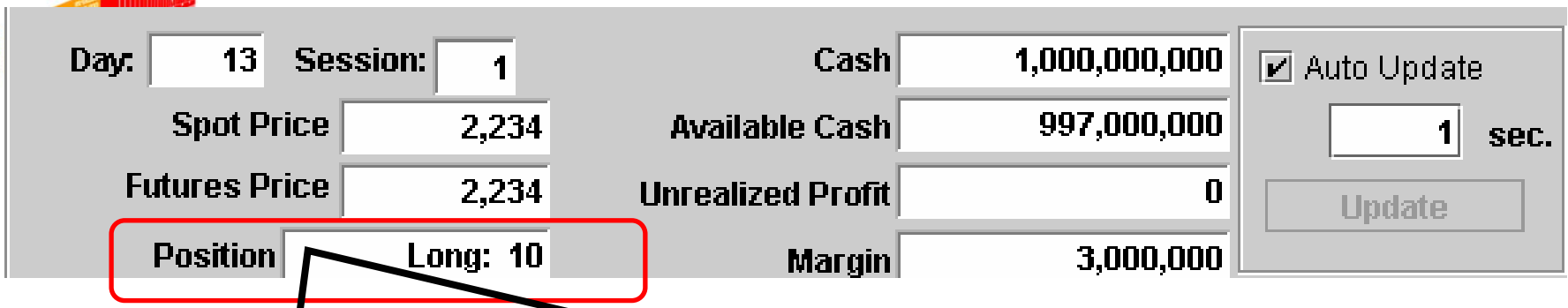
Current Date and Session

Default Setting : 8 sessions/day, 30 days



Refresh rate of information

The meanings of Digital Information 2



Current position

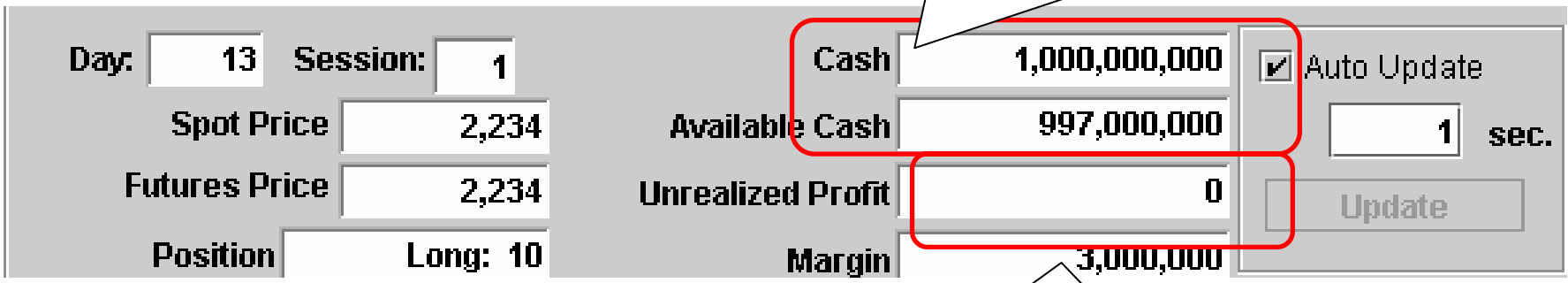
Long: buying position

You can make profit by price increasing.

Short: selling position

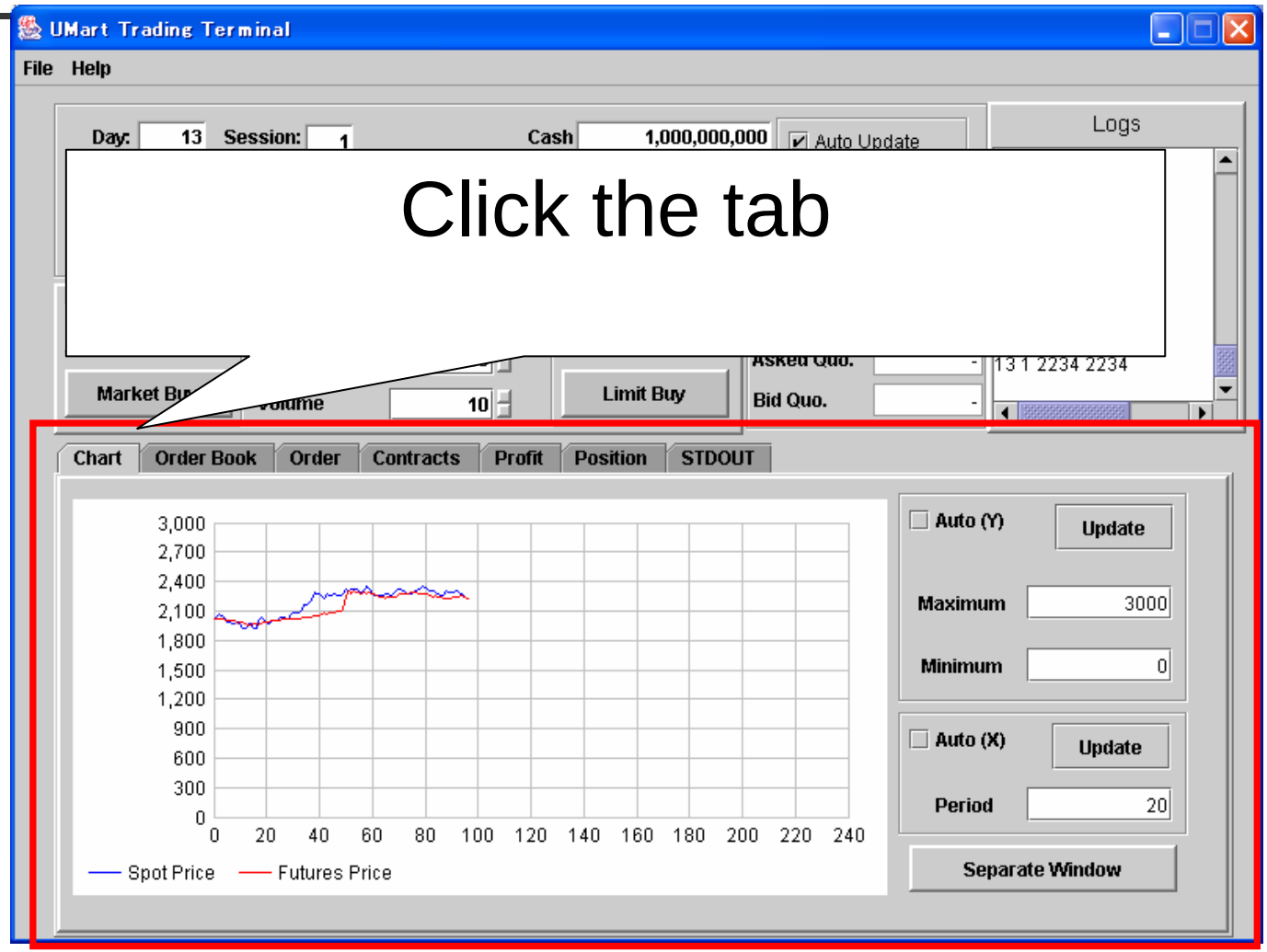
The meanings of Digital Information 3

Cash: your cash
Available Cash: When it became 0, you are bankrupted
Margin: 300,000 points per 1 unit of futures



Current profit
Black: you win your money
Red : you lose your money

Visual Information Area



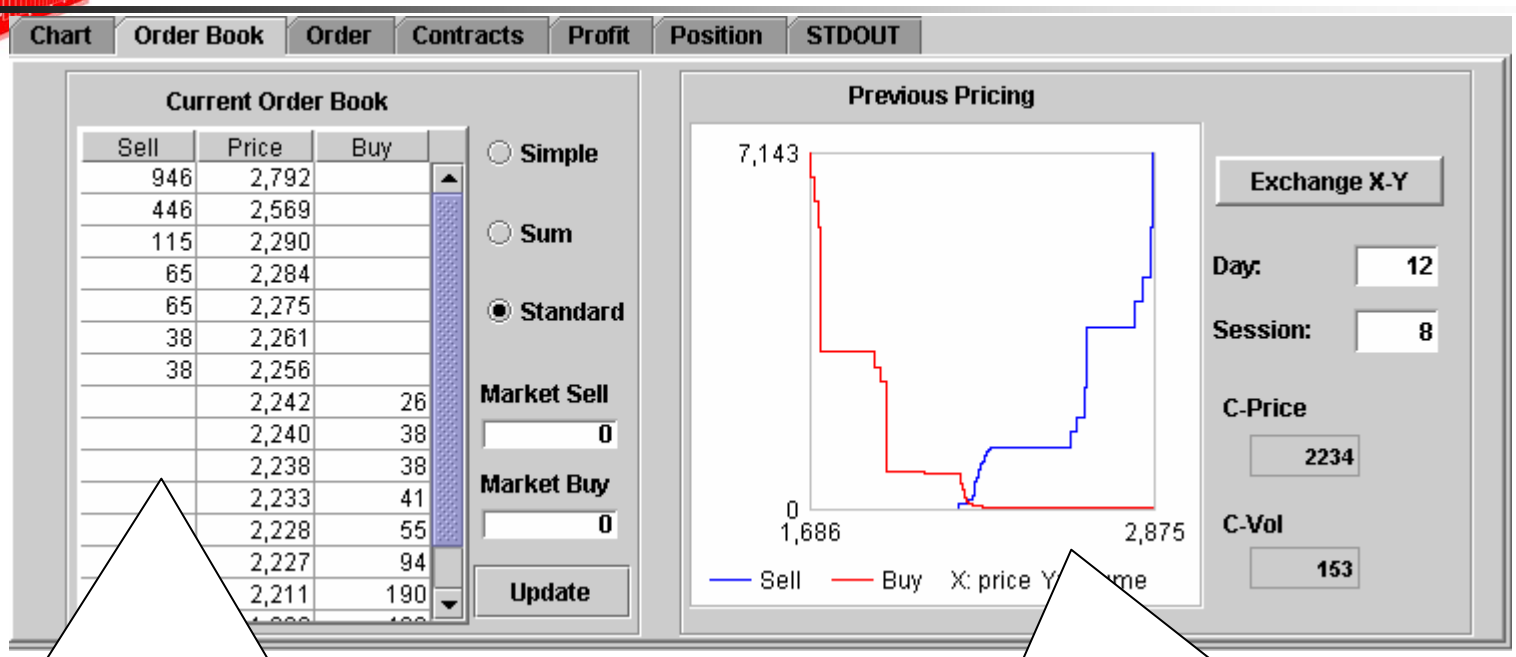
Price Chart

Size adjustment

Graph of Price

Separate Window Toggle

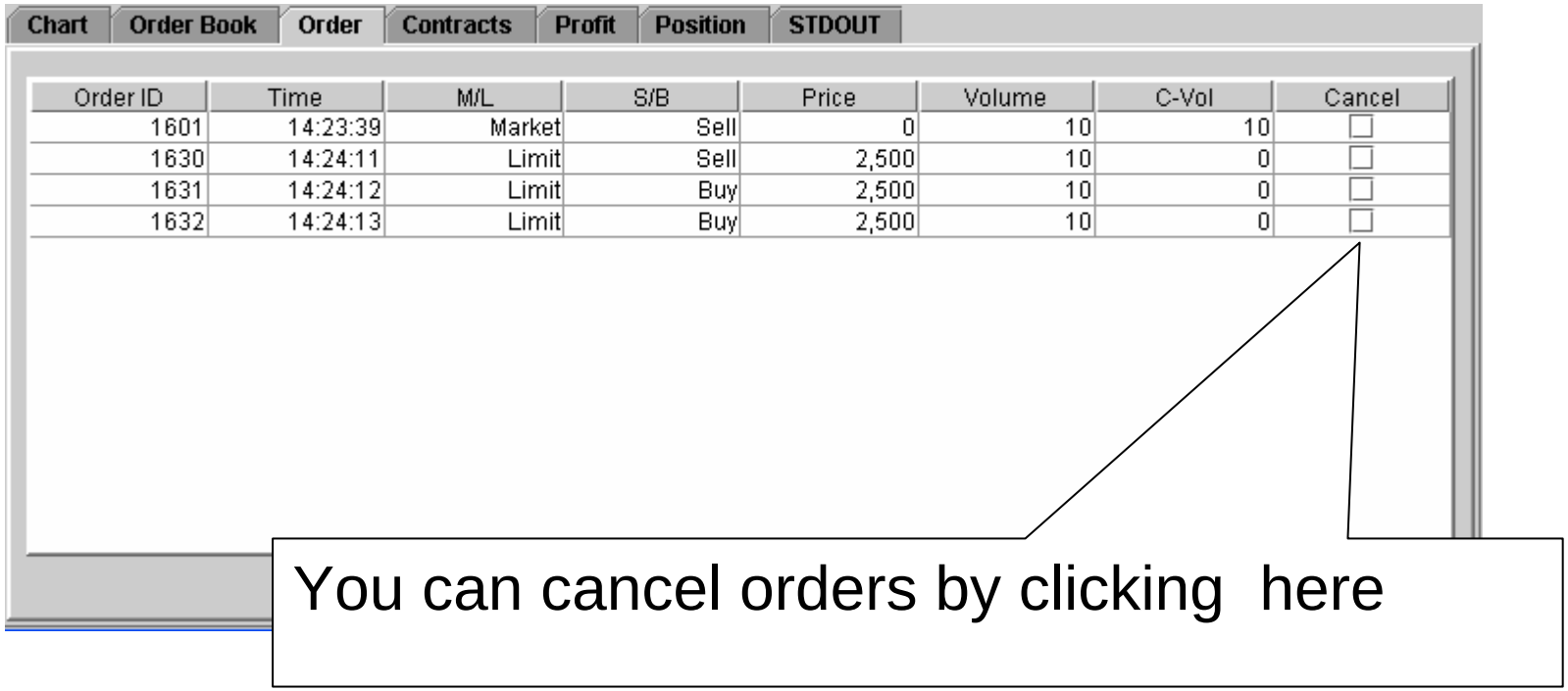
“Order Book TAB” Distribution of Order



Current Distributions of Orders

Graph of the distribution of orders at last session.

“order tab” shows current orders



“Contract” shows results of orders

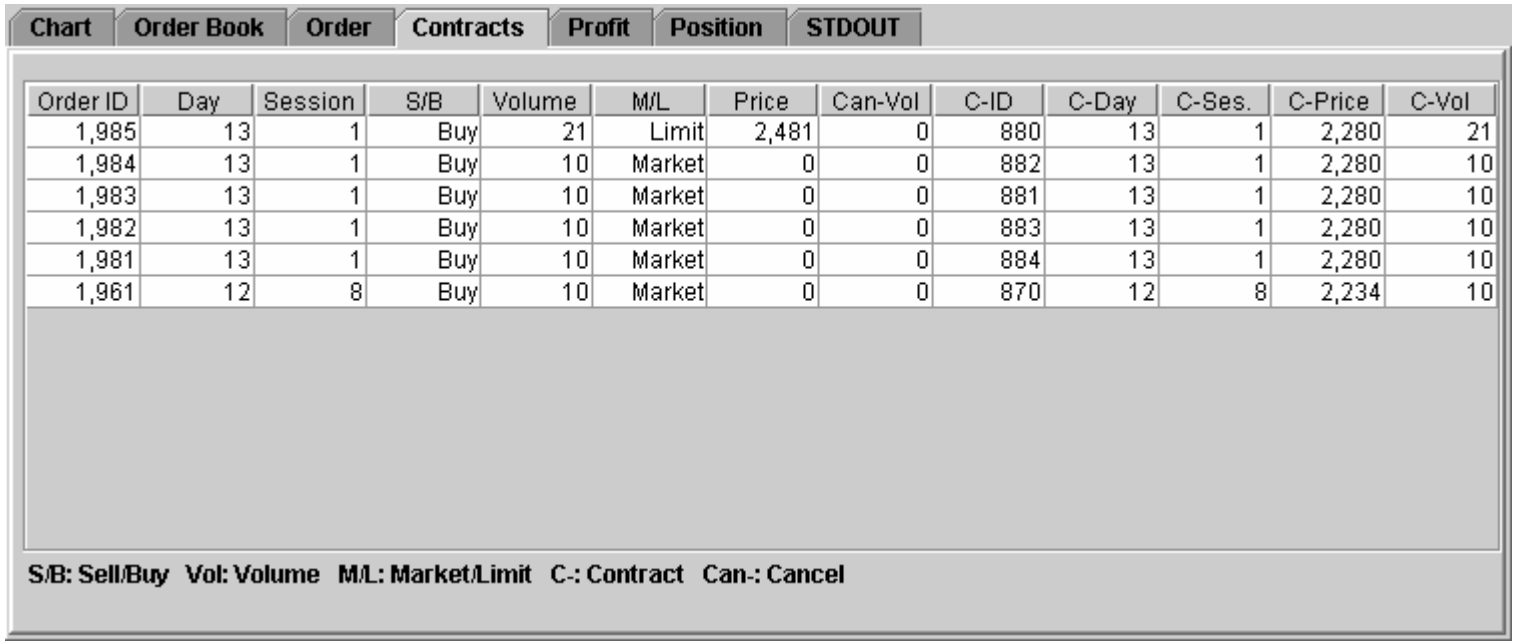


Chart | Order Book | Order | Contracts | Profit | Position | STDOUT

Order ID	Day	Session	S/B	Volume	M/L	Price	Can-Vol	C-ID	C-Day	C-Ses.	C-Price	C-Vol
1,985	13	1	Buy	21	Limit	2,481	0	880	13	1	2,280	21
1,984	13	1	Buy	10	Market	0	0	882	13	1	2,280	10
1,983	13	1	Buy	10	Market	0	0	881	13	1	2,280	10
1,982	13	1	Buy	10	Market	0	0	883	13	1	2,280	10
1,981	13	1	Buy	10	Market	0	0	884	13	1	2,280	10
1,961	12	8	Buy	10	Market	0	0	870	12	8	2,234	10

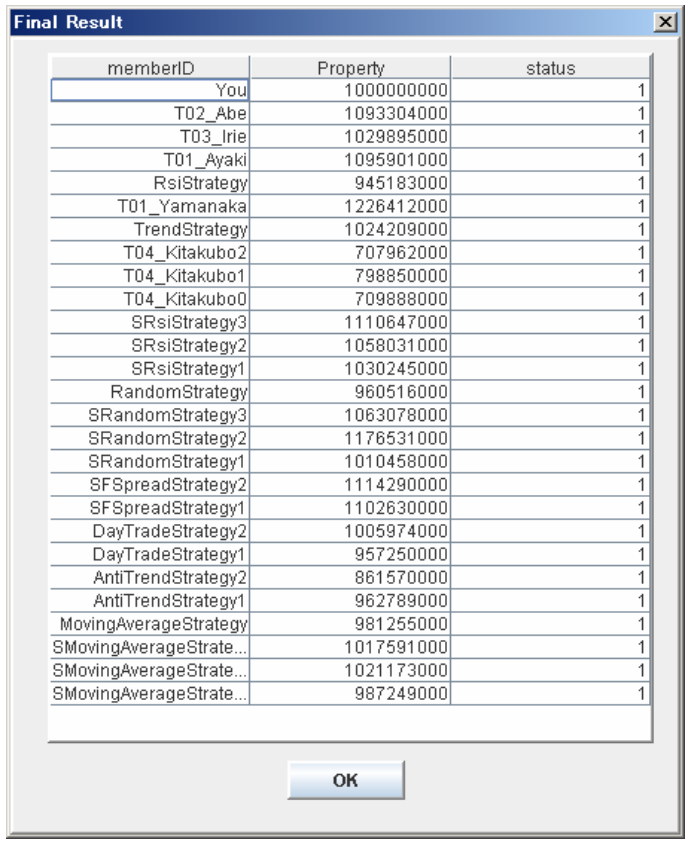
S/B: Sell/Buy Vol: Volume M/L: Market/Limit C-: Contract Can-: Cancel

If your display become blanc, activate Task Manager by Ctr+Alt+Del, then stop java process. Access server again by new terminal.

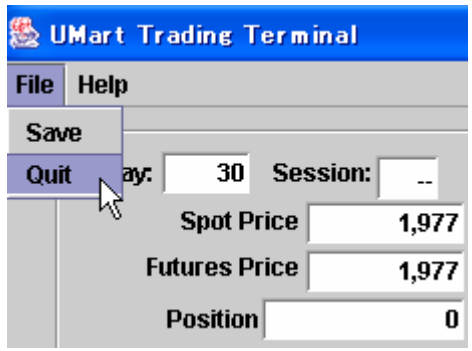
Please try and play.

- Market price order, Limited price order
- Canceling orders.
- Auto adjustment and separate window
  - In Chart, Profit, Position Tab
- Order Book
  - Simple, Sum, Standard

Result of the competition



Please check your result and order



Select “Quit” in pull down menu.

If you select “Save”, you can save log data.
(After the next game, please save your log and analyze them.

Let’s have a game!

Setting

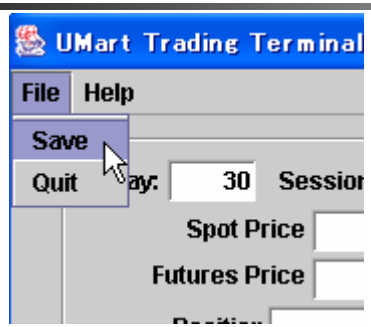
1 Session Second

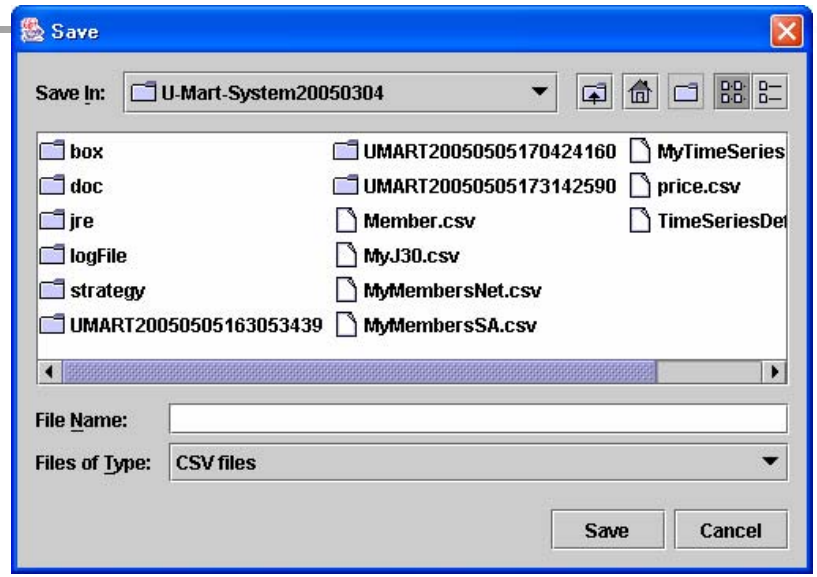
1 day Session

Days

After finish the game, please don’t “quit”

Personal LOG





- Select Folder (default is “My Document” Folder)
- Enter file name

Debriefing

- To improve your understanding
- To improve lecture
- To improve tools

- Take a look back on the situation and behavior
  - Log analysis (reference 3)
  - Discussion
  - Questionnaire (report)

Further more

- “Doc” folder in CD-ROM
  - Tutorial (this presentation)
  - Pamphlet (introduction of activities of U-Mart Project)
  - Descriptions of Standard Agents.
- Annual Open Contest
  - For Human Agent: U-Mart 200x Series
  - For Machine Agent: UMIE 200x Series
- Web Page http://www.u-mart.org (for both)
  - New information and new tools are provided from this site.
  - Announcement of Open Contest

Reference

Reference

1. How to use Market Simulator
   - Please refer when you train in standalone environment.
2. How to use Market Server
   - For facilitator to conduct experiments via network.
3. Institutions of futures market
   - Guide of “margin” and “mark to the market”
4. Example of Log analysis
   - Example of Debriefing with log analysis

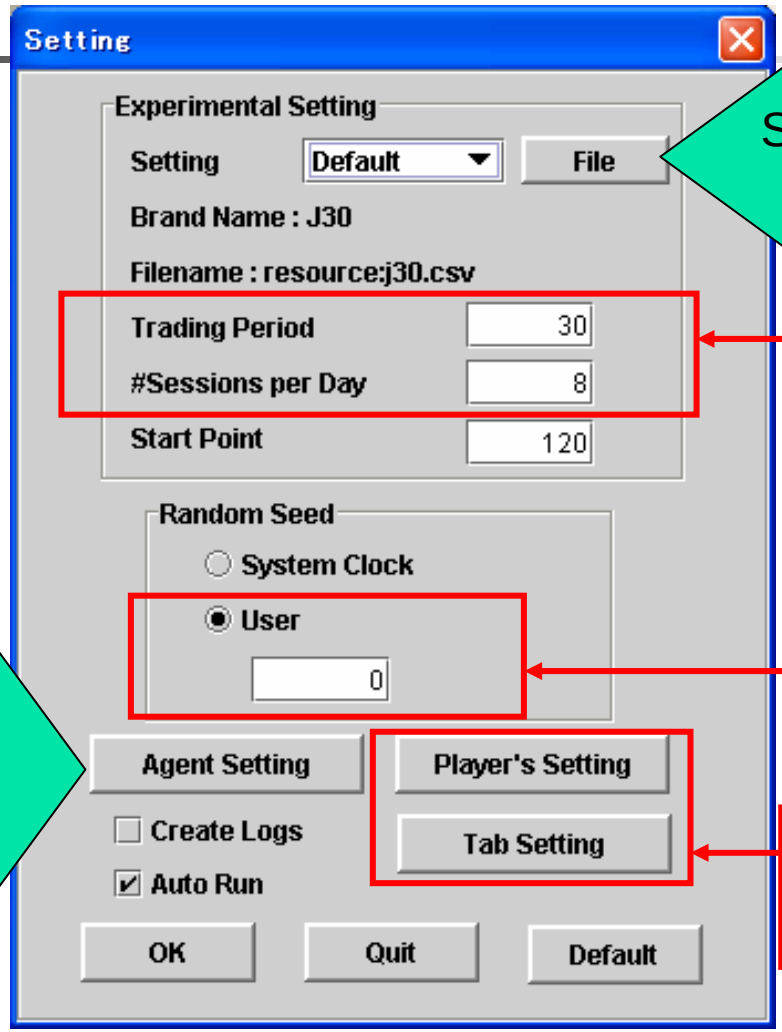
1. How to use Market Simulator

- Variations of Market Setting
  - Selection of spot price time series (and where you use ?)
    - Price time series from not only any actual market but also from any stochastic models
  - Setting : The number of days and the number of sessions of each days.
    - You can control number the timing of market to the market by the number of session per day.
  - Random Seed
    - With same spot prices, same set of agents, Market can be changed by random seed.
  - Selection of Agent set
    - You can select opponents.

Executions and Setting

MarketSimul...

Double click the Icon of Market Simulator



Setting of Time Series CSV-File①

Setting of Days and Sessions

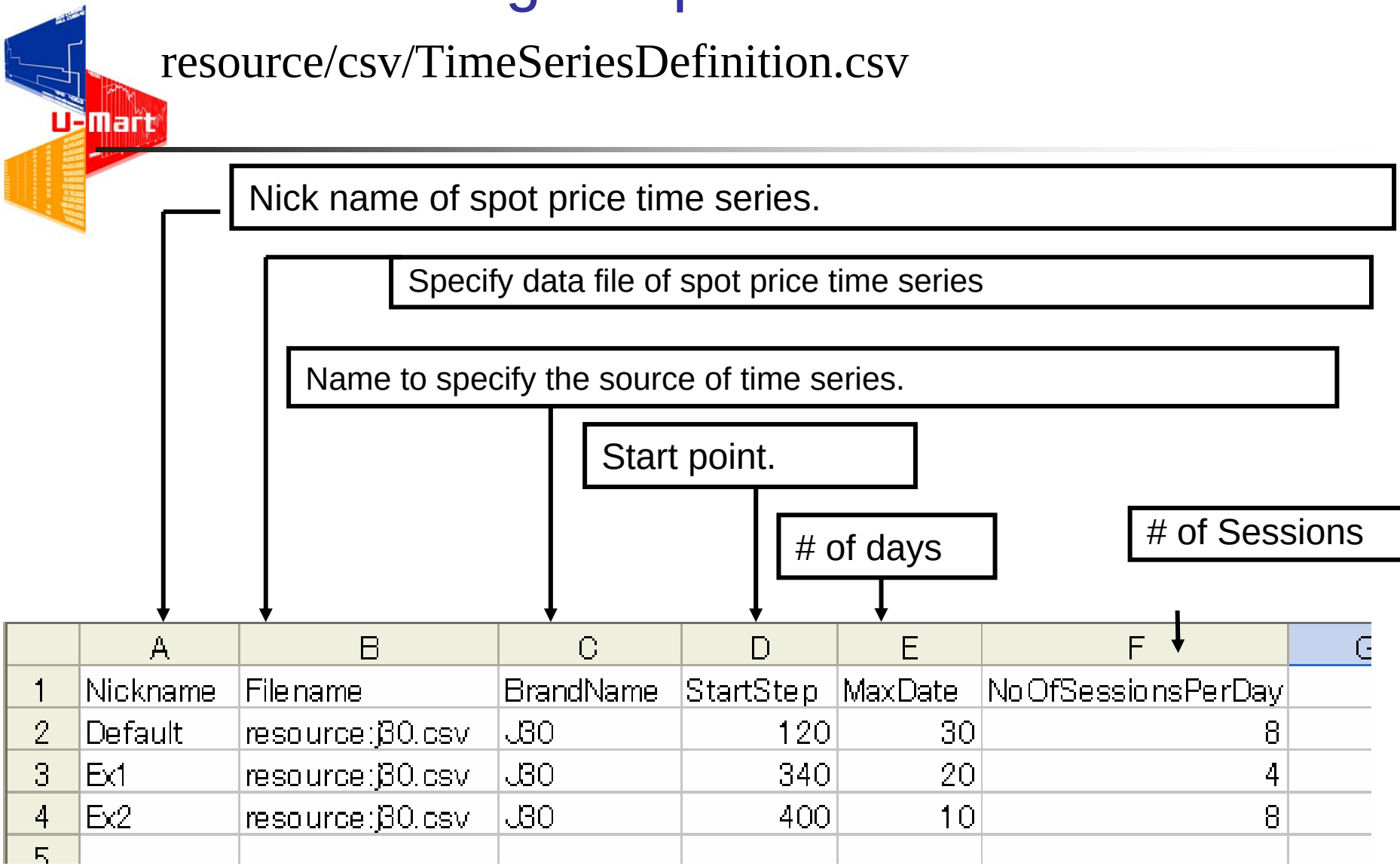
Setting of Random Seed

Setting of Agent Set CSV-File②

Setting of Player's trading environment.Initial asset, fee, information, and so on

CSV-File 1 Setting of Spot Price Time Series

resource/csv/TimeSeriesDefinition.csv



	A	B	C	D	E	F	G
1	Nickname	Filename	BrandName	StartStep	MaxDate	NoOfSessionsPerDay	
2	Default	resource:j30.csv	J30	120	30	8	
3	Ex1	resource:j30.csv	J30	340	20	4	
4	Ex2	resource:j30.csv	J30	400	10	8	
5							

CSV-File 2 Setting of Agent Set

resource/csv/MembersSA.csv

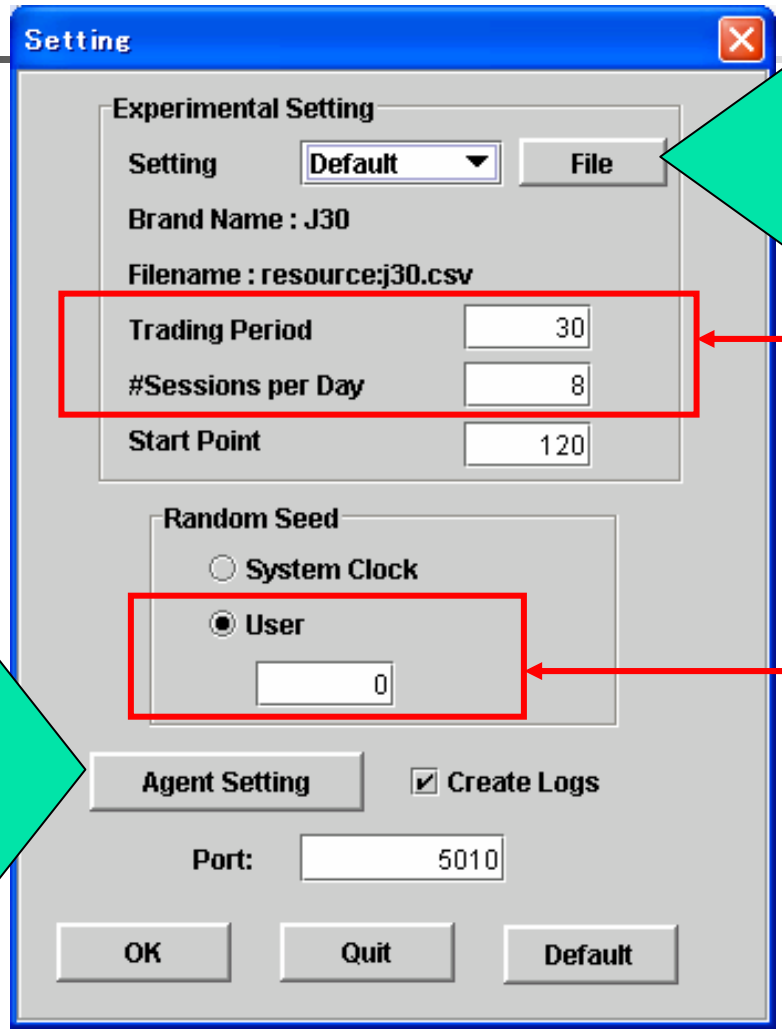
- How to Set Agent Set
  - Set file name of machine-agent program in “Real Name”
  - Set parameters for machine agents in “System Parameters” column.
  - Fill LoginName column, then you name an agent with program and a set of parameters.
  - Other columns are common parameters of agents.
    - Password, Initial cash, interest rate, fee, … and so on

- Setting Terms
  - LoginName
  - Password
  - Attribute
  - Connection
  - Access(Allow_All)
  - RealName
  - SystemParameters
  - Seed
  - InitialCash
  - TradingUnit
  - FeePerUnit
  - MarginRate
  - MaxLoan
  - Interest

2. How to use Market Server

- Variations of Market Setting (Same as Market Simulator)
  - Selection of spot price time series (and where you use ?)
    - Price time series from not only any actual market but also from any stochastic models
  - Setting : Number of days and number of sessions of each days.
    - You can try any length of days. Number of session par day means how often orders are canceled and conduct mark to the market.
  - Random Seed
    - With same spot prices, same set of agents, Market can be changed by random seed.
  - Selection of Agent set
    - Setting of Human Agents and Machine Agents

How to Set Market Server



Setting of Time Series CSV-File①

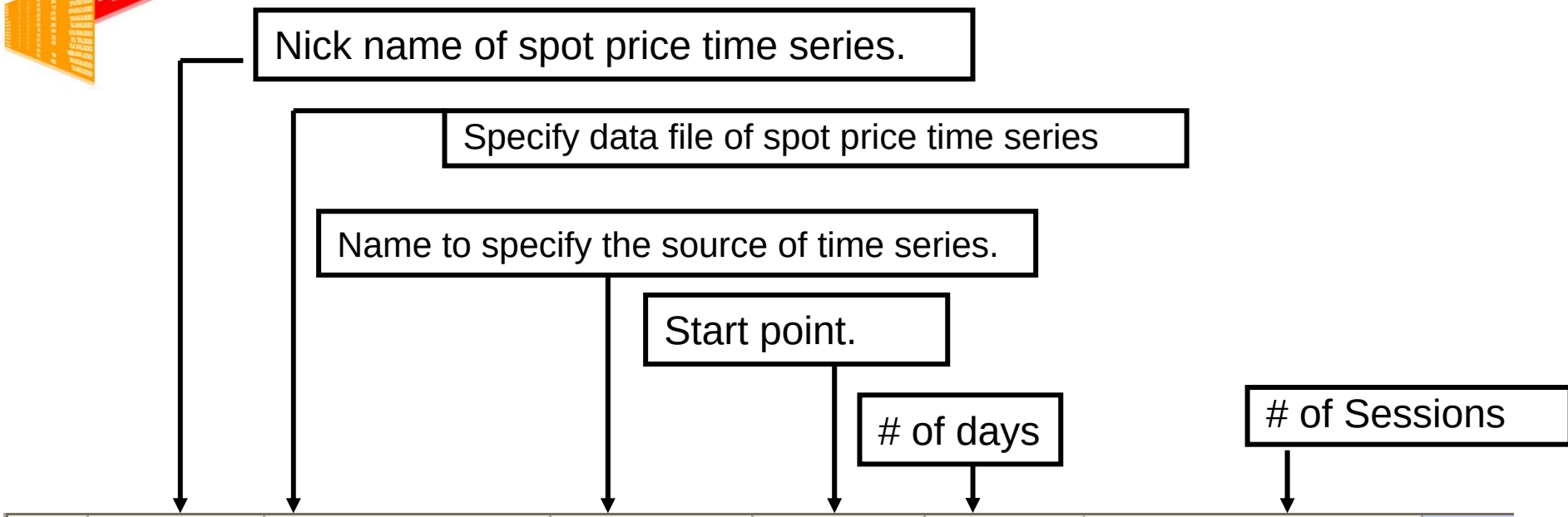
Setting of Days and Sessions

Setting of Random Seed

Setting of Agent Set CSV-File②

CSV-File 1 Setting of Spot Price Time Series

resource/csv/TimeSeriesDefinition.csv



	A	B	C	D	E	F	G
1	Nickname	Filename	BrandName	StartStep	MaxDate	NoOfSessionsPerDay	
2	Default	resource:J30.csv	J30	120	30	8	
3	Ex1	resource:J30.csv	J30	340	20	4	
4	Ex2	resource:J30.csv	J30	400	10	8	
5							

CSV-File 2　1 Settings of Human Agents

resource/csv/MembersNet.csv

- Set real name of human agent in “Real Name” column.
- Set unused Tabs (information windows) in “Access” column. If it is blank, the agent can use all information.
- Set Remote to “Connection” column.
- Set human to “Attribute” column.
- Set Login ID to “LogingName”, and set passwd as well.
- Other columns are common parameters of agents.
  - Passwd, Initial cash, interest rate, fee, … and so on

- Setting terms
  - LoginName
  - Password
  - Attribute
  - Connection
  - Access(Allow_All)
  - RealName
  - SystemParameters
  - Seed
  - InitialCash
  - TradingUnit
  - FeePerUnit
  - MarginRate
  - MaxLoan
  - Interest

CSV-File 2　2 Settings of Machine Agents

resource/csv/MembersSA.csv

- How to Set Machine Agent
- Set file name of machine-agent program in “Real Name”
- Set parameters for machine agents in “SystemParameters” column.
- Fill LoginName column, then you name an agent with program and a set of parameters.
- Other columns are common parameters of agents.
  - Passwd, Initial cash, interest rate, fee, … and so on

- Setting Terms
  - LoginName
  - Password
  - Attribute
  - Connection
  - Access(Allow_All)
  - RealName
  - SystemParameters
  - Seed
  - InitialCash
  - TradingUnit
  - FeePerUnit
  - MarginRate
  - MaxLoan
  - Interest

3. Institutions of Futures Market

1. Institutions of futures

- “Contract 1 unit of futures at 2200 point” means …
  - 1 trading unit is 1000 unit of stock index
  - This contract worth 1*1000*2200 =2.2 million point
  - If 1 point worth 1 Japanese yen, this contract worth 2.2 million yen!

Meanings of Contract futures

This is futures contract, so you don't have to pay now.

This contract is only a promise.

Guarantee of contract

1）for Exchange (market)： margin

2）for sharer ： mark to the market

Margin: guarantee for Exchange

<U-Mart>

uniformly 300,000 points for 1 unit.

In the case, that you make contract 1 unit of futures at 2200 point, then you make contract of 2.2 million points with 0.3 million points cash.

Margin of U-Mart

For example, you have 30 unit of short position, you need 30 * 300,000 = 9 million points for margin.
At default setting, all users start trading with 3 billion points, then you don't have to arrange cash additionally.
（BUT） Exchange attaches 9 million points.
Then, Available cash = Cash – Margin

Mark to the market: guarantee for sharer

- futures：Some one’s short position correspond to some one’s long position.
- Total units of short position equals that of long position.
- Then, some one’s profit correspond to some one’s loss.

Mark to the market:

Clearing profit and loss everyday !

Mark to the market

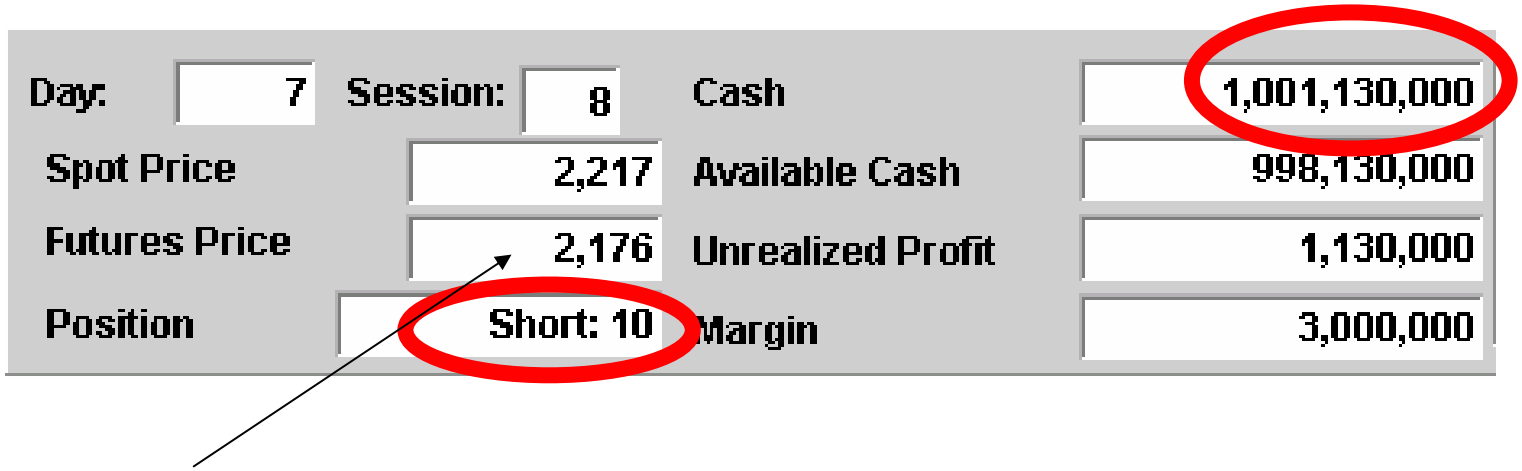
- Every day, calculate the current value of futures contract and estimate unrealized profit.
- Then, all contracts are settled, that is, Exchange moves cash from the account with losses to the account with profit.

Make Contract

Order ID	Day	Session	S/B	Volume	M/L	Price	Can-Vol	C-ID	C-Day	C-Board	C-Price	C-Vol
1019	7	2	Sell	10	Market	0	0	448	7	2	2289	10

In this case, The player have 10 units of short position at 2289 points.

After last session of the day,



At last session, futures price is 2176. Then the player make profit 2289-2176=113 points per unit.

Amount of cash in the player's account increase 113*10 units * 1000=1,130,000

Therefore, Cash = initial cash + unrealized profit

Bankrupt

The number of unit which you can make contract is (available cash/ 300,000) .

Initially, 1 billion / 0.3 million = 3333 units

You are bankrupted when you cannot arrange cash for mark to the market, not when you lose all your money. So you have to pay attention your position and available cash.

Closing Transaction

You had 10 units of long position.

Then you contract 10 units of short order.

At this situation,

1)your position become neutral.

2) Loss and profit from long position is canceled by profit and loss from your short position.

Your position can be seen as “zero”.

Settlement

- All positions are settled at the first spot price of one day after the last day of futures period.

At default setting,

futures period is 30 days.

then settlement is conducted at the first spot price of 31st day.

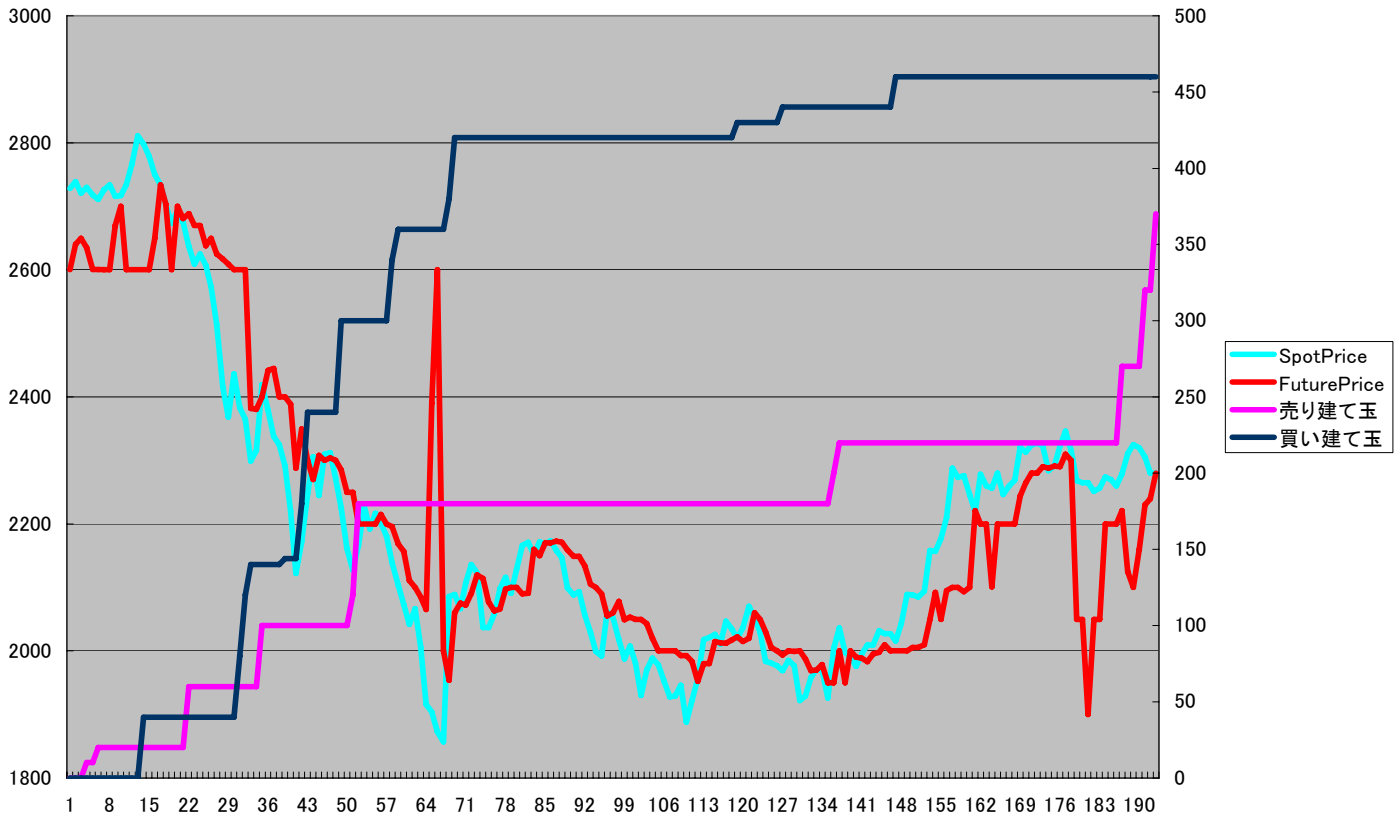
Before settlement, If your position become zero, your profit or loss is fixed

4. Example of Log Analysis

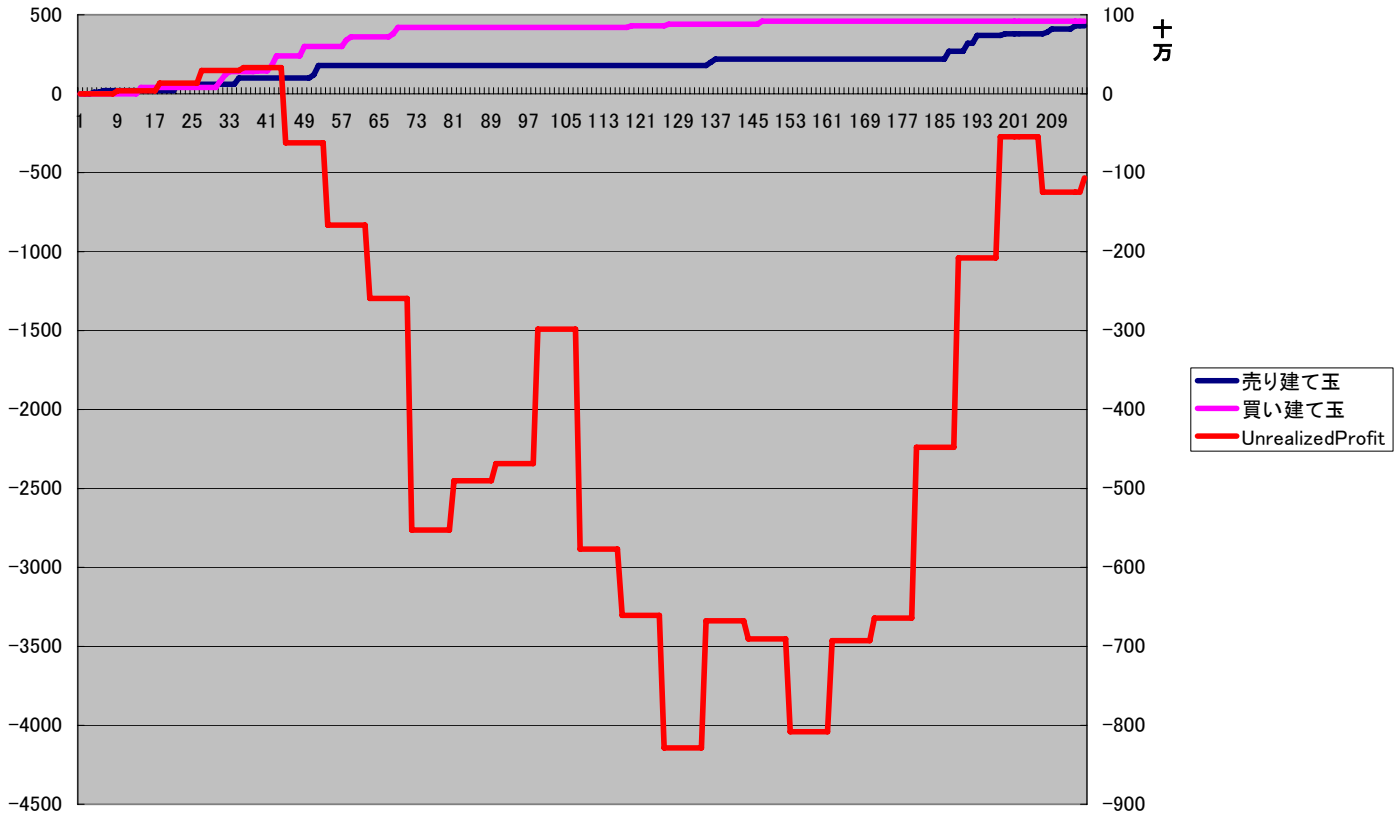
Experiment in Chiba Institute of Technology -

“Position control:
Learning trajectory of a student”

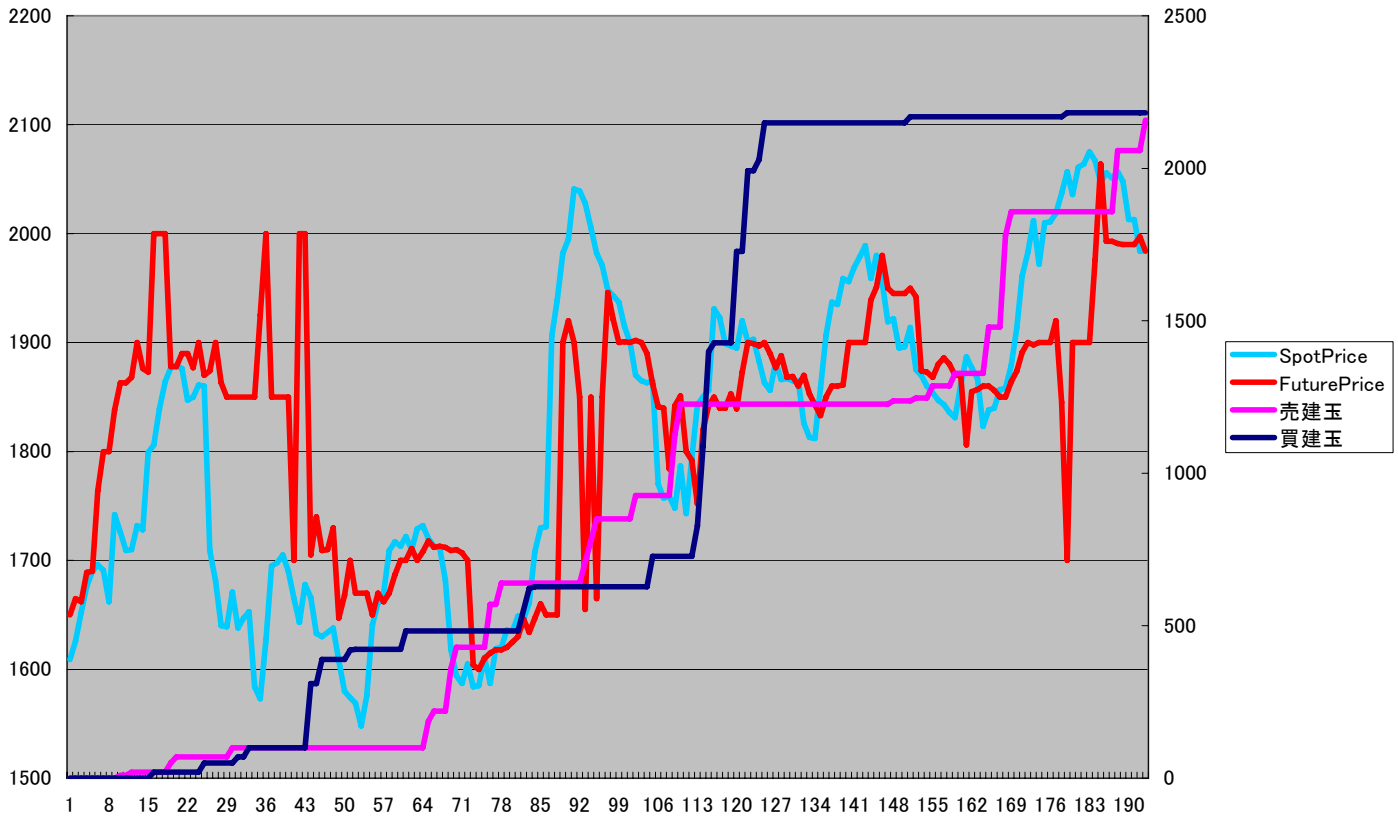
1st Experiment: She failed to trade



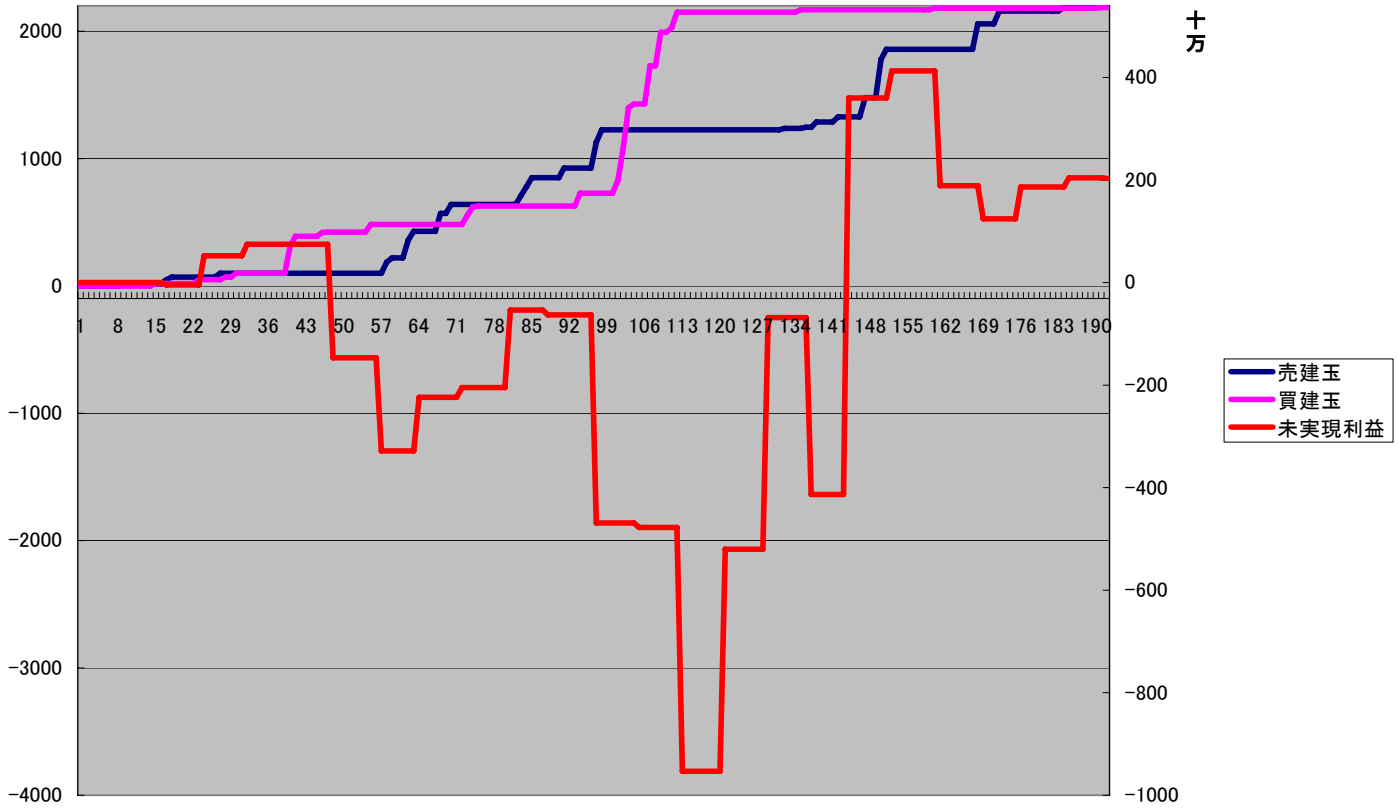
She couldn’t do “stop loss” trading.



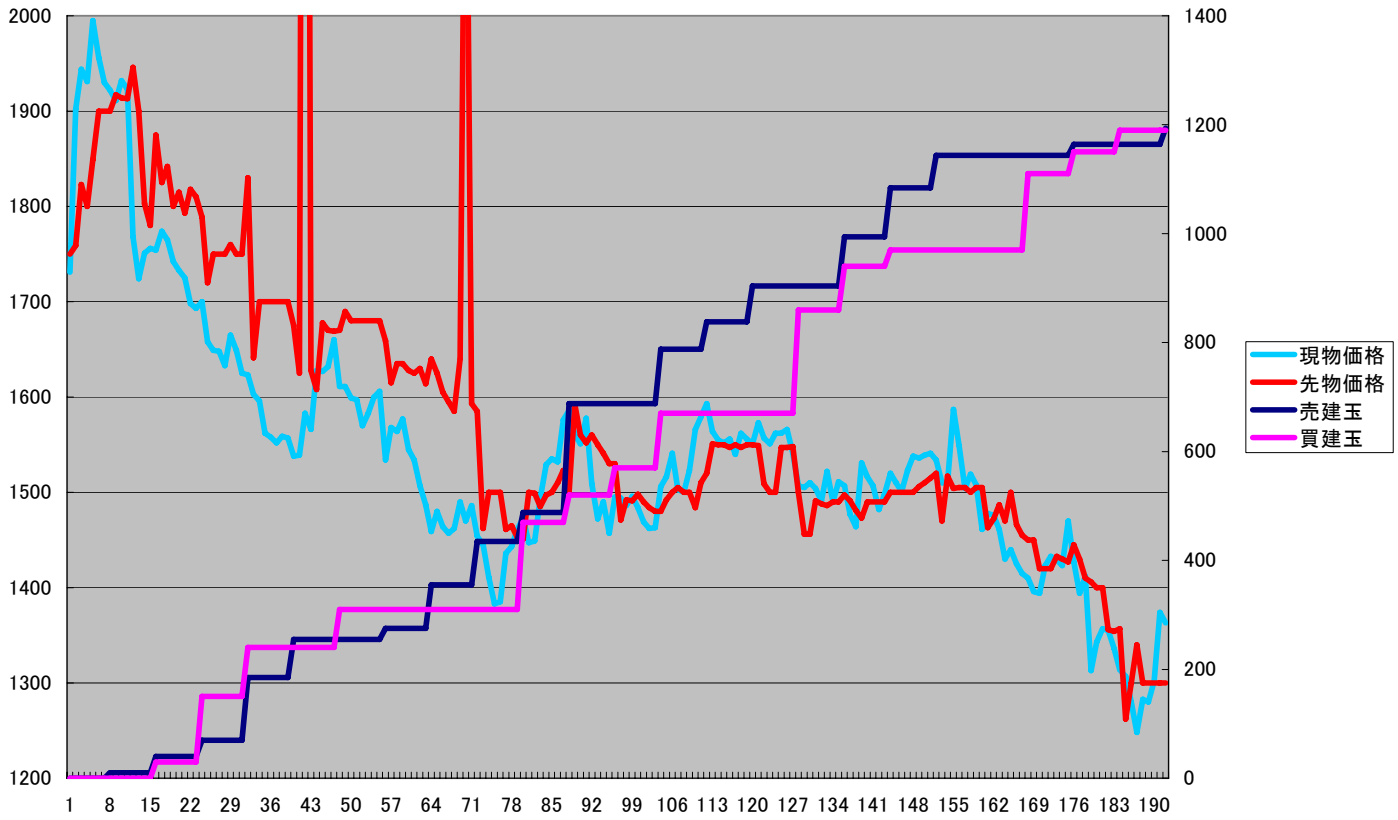
At next experiments: Doing better



With profit

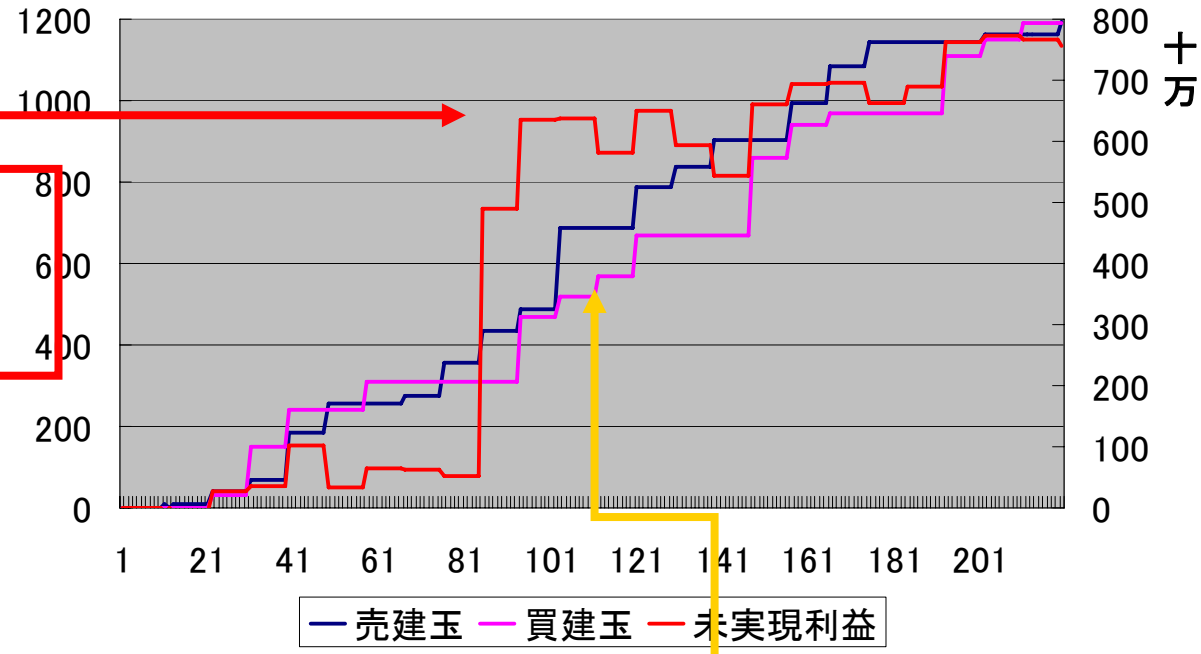

2000
1000
0
-1000
-2000
-3000
-4000
1 8 15 22 29 36 43 50 57 64 71 78 85 92 99 106 113 120 127 134 141 148 155 162 169 176 183 190
十万
400
200
0
-200
-400
-600
-800
-1000
売建玉
買建玉
未実現利益

The 3rd Experiment: She could control her position well



Following her position

She accumulated profit.



Short term trading.

Positions were changed continually.