

Tutorials

English Version



U-Mart Project

<http://www.u-mart.org>



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The logo for U-Mart is located in the top-left corner. It consists of a blue square with a white line graph, a red square with the text 'U-Mart' in white, and a yellow square with a grid pattern. The squares are arranged in a 3D perspective.

Preparation

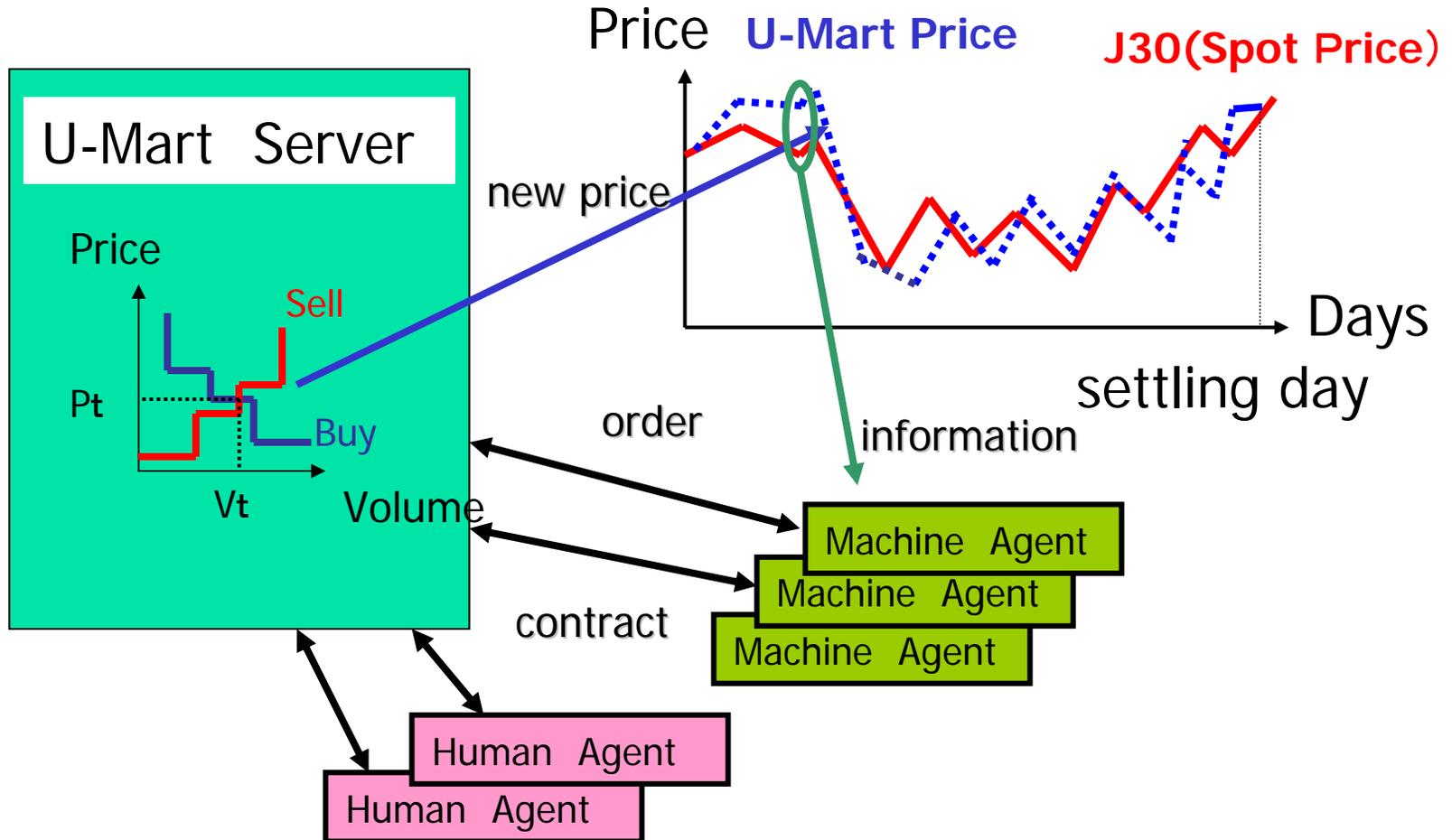
- Please seat and activate PC
- Please confirm U-Mart System
 - CD-ROM
 - The Folder on Desktop
 - etc
- Please check your U-Mart Account and Password
- Please wait others and read handout



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

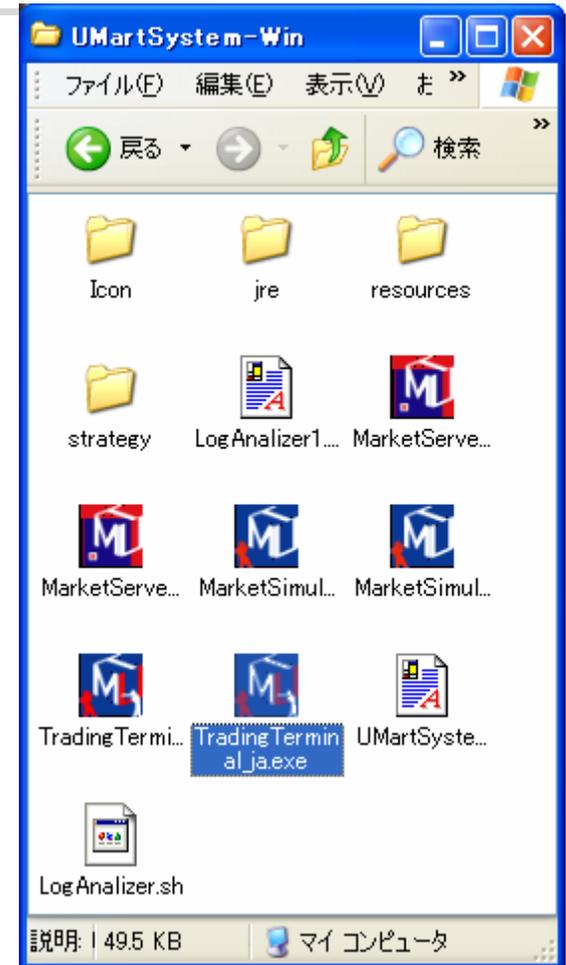
	Human Agent	Machine Agent
Stand Alone Environment	Market Simulator	Stand Alone CUI (Market Server)
Via Network	Human Agent Network Terminal	Machine Agent Adapter
	Market Server	

U-Mart System Version 2.0



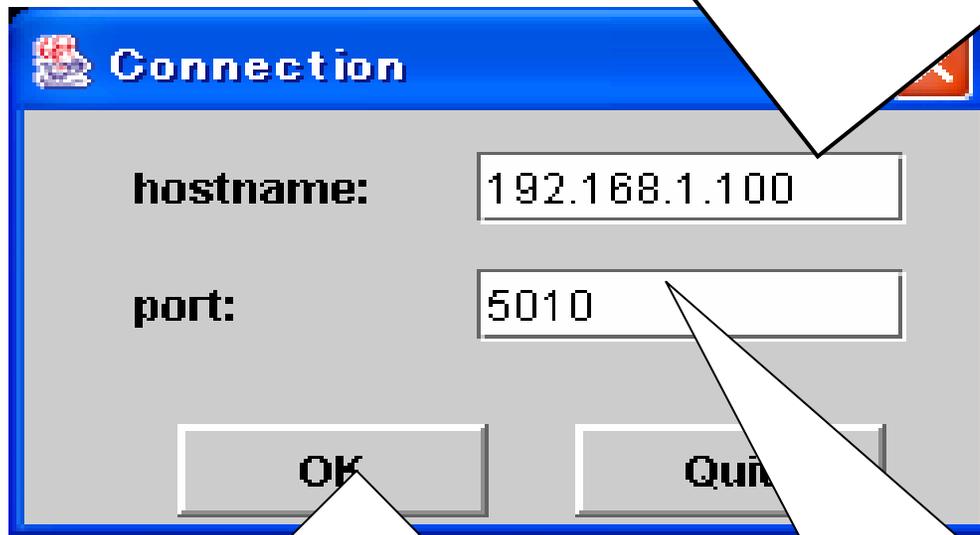
Activate U-Mart System

- Insert CD-ROM
- Double click Icon
 - **Trading Terminal**
 - For Experiment via network
 - **Market Server**
 - Server
 - **Market Simulator**
 - 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)



The image shows a screenshot of a 'Connection' dialog box. The dialog has a blue title bar with the text 'Connection' and a small icon on the left. Below the title bar, there are two input fields. The first field is labeled 'hostname:' and contains the text '192.168.1.100'. The second field is labeled 'port:' and contains the text '5010'. At the bottom of the dialog, there are two buttons: 'OK' on the left and 'Quit' on the right. A mouse cursor is pointing at the 'port:' field. A large white arrow points from the 'port:' field to a text box below the dialog.

3) Then, Click "OK"

2) Port is "5010"



Login U-Mart Server

A screenshot of a login window titled "Welcome to localhost:5010". The window has a blue title bar with a close button (X) in the top right corner. The main area is grey and contains two input fields: "Account:" with the text "h10" and "Password:" with three asterisks "***". Below the input fields are two buttons: "OK" and "Quit".

Welcome to localhost:5010

Account: h10

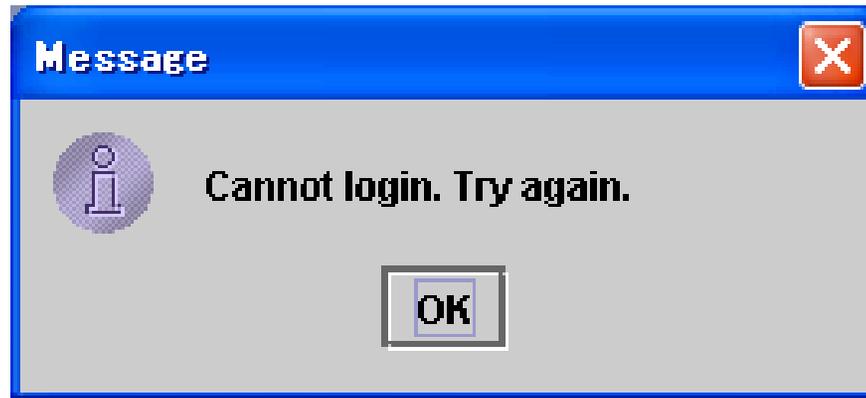
Password: ***

OK Quit

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

U-Mart: Market Server

File Help

Day: 1 Spot Price 2,020 Auto Update 10 sec. Update

Session: 1 Futures Price 2,020

Info Chart Order Book Contracts Profit Position STDOUT Exchange Info

	MemberID	Sell	Buy	TotalSell	TotalBuy	Cash	UnrealizedProfit	Margin
<input type="radio"/>	H h13	0	0	0	0	0	0	0
<input type="radio"/>	H h14	0	0	0	0	0	0	0
<input type="radio"/>	H h15	0	0	0	0	0	0	0
<input type="radio"/>	H h16	0	0	0	0	0	0	0
<input type="radio"/>	H h17	0	0	0	0	0	0	0
<input type="radio"/>	H h18	0	0	0	0	0	0	0
<input type="radio"/>	H h19	0	0	0	0	0	0	0
<input type="radio"/>	H h20	0	0	0	0	0	0	0
<input type="radio"/>	H h21	0	0	0	0	0	0	0
<input type="radio"/>	H h22	0	0	0	0	0	0	0
<input type="radio"/>	H h23	0	0	0	0	0	0	0
<input type="radio"/>	H h24	0	0	0	0	0	0	0
<input type="radio"/>	H h25	0	0	0	0	0	0	0
<input type="radio"/>	H h26	0	0	0	0	0	0	0
<input type="radio"/>	H h27	0	0	0	0	0	0	0
<input type="radio"/>	H h28	0	0	0	0	0	0	0
<input type="radio"/>	H h29	0	0	0	0	0	0	0
<input checked="" type="radio"/>	H h30	0	0	0	0	1,000,000,000	0	0
<input type="radio"/>	H h31	0	0	0	0	0	0	0
<input type="radio"/>	H h32	0	0	0	0	0	0	0
<input type="radio"/>	H h33	0	0	0	0	0	0	0
<input type="radio"/>	H h34	0	0	0	0	0	0	0
<input type="radio"/>	H h35	0	0	0	0	0	0	0
<input type="radio"/>	H h36	0	0	0	0	0	0	0
<input type="radio"/>	H h37	0	0	0	0	0	0	0
<input type="radio"/>	H h38	0	0	0	0	0	0	0
<input type="radio"/>	H h39	0	0	0	0	0	0	0
<input type="radio"/>	H h40	0	0	0	0	0	0	0
<input type="radio"/>	H h41	0	0	0	0	0	0	0

If login is succeeded,
toggle turns to Green

Order Area



UMart Trading Terminal

File Help

Day: Session: Cash: Auto Update
Spot Price: Available Cash: sec. Update
Futures Price: Unrealized Profit:
Position: Margin:

Confirmation Board Time:
 Price: Asked Quo.:
 Volume: Bid Quo.:

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
```

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)
Maximum:
Minimum:
 Auto (X)
Period:



How to send Order

Enter Limited Price, Amount of Order here

The image shows a trading interface with several buttons and input fields. On the left, there are two buttons: 'Market Sell' (top) and 'Market Buy' (bottom), both highlighted with a red rounded rectangle. In the center, there is a 'Confirmation' checkbox which is checked, and a 'Cancel' button. Below these are two input fields: 'Price' with the value '2500' and 'Volume' with the value '10', both highlighted with a red rounded rectangle. On the right, there are two buttons: 'Limit Sell' (top) and 'Limit Buy' (bottom), both highlighted with a red rounded rectangle. Lines connect the callout boxes to their respective elements in the interface.

Order at market price toggle

Order at limited price toggle

Let's order !

Then check in the "Order" window.



The screenshot shows the UMart Trading Terminal window. The title bar reads "UMart Trading Terminal". The menu bar includes "File" and "Help".

The main interface is divided into several sections:

- Account Information:** Day: 13, Session: 1, Cash: 1,000,000,000, Available Cash: 997,000,000, Unrealized Profit: 0, Margin: 3,000,000. There is an "Auto Update" checkbox checked and a "1 sec." timer with an "Update" button.
- Order Entry:** Includes "Market Sell", "Market Buy", "Limit Sell", and "Limit Buy" buttons. A "Confirmation" checkbox is checked, with a "Cancel" button. The "Price" is set to 2500 and "Volume" to 10.
- Market Data:** "Board Time" is 4:43:26 PM. "Asked Quo." and "Bid Quo." are both set to "-".
- Logs:** A list of transaction logs with columns for time and price. The logs show a sequence of transactions from 12:1 to 13:1.
- Navigation:** A tabbed interface with tabs for "Chart", "Order", "Order", "Contracts", "Profit", "Position", and "STDOUT". The "Order" tab is highlighted with a red box.
- Order Table:** A table with columns: Order ID, Time, M/L, S/B, Price, Volume, C-Vol. The first row shows: Order ID: 1961, Time: 16:34:49, M/L: Market, S/B: Buy, Price: 0, Volume: 10, C-Vol: 0.



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

UMart Trading Terminal

File Help

Day: Session: Cash: Auto Update
Spot Price: Available Cash: sec.
Futures Price: Unrealized Profit: Update
Position: Margin:

Market Sell Confirmation Limit Sell
Market Buy Price
 Volume

Board Time: Asked Quo.:
Bid Quo.:

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

Chart Order Book Order Contracts Profit Position **STDOUT**

— Spot Price — Futures Price

Auto (Y)
Maximum:
Minimum:

Auto (X)
Period:



The meanings of Digital Information

Current Date and Session

Default Setting : 8 sessions/day, 30 days

Day:	13	Session:	1	Cash	1,000,000,000	<input checked="" type="checkbox"/> Auto Update
Spot Price	2,234				10,000	<input type="text" value="1"/> sec.
Futures Price	2,234			Unrealized Profit	0	<input type="button" value="Update"/>
Position	Long: 10			Margin	3,000,000	

Today, please don't touch

Refresh rate of information



The meanings of Digital Information 2

Day:	13	Session:	1	Cash	1,000,000,000	<input checked="" type="checkbox"/> Auto Update
Spot Price	2,234	Available Cash	997,000,000			<input type="text" value="1"/> sec.
Futures Price	2,234	Unrealized Profit	0			<input type="button" value="Update"/>
Position	Long: 10	Margin	3,000,000			

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 bankrupt

Margin: 300,000 points per 1 unit of futures

Day:	<input type="text" value="13"/>	Session:	<input type="text" value="1"/>	Cash	<input type="text" value="1,000,000,000"/>	<input checked="" type="checkbox"/> Auto Update
Spot Price	<input type="text" value="2,234"/>	Available Cash	<input type="text" value="997,000,000"/>		<input type="text" value="1"/> sec.	
Futures Price	<input type="text" value="2,234"/>	Unrealized Profit	<input type="text" value="0"/>		<input type="button" value="Update"/>	
Position	<input type="text" value="Long: 10"/>	Margin	<input type="text" value="3,000,000"/>			

Current profit

Black: you win your money

Red : you lose your money



Visual Information Area

UMart Trading Terminal

File Help

Day: 13 Session: 1 Cash: 1,000,000,000 Auto Update Logs

Click the tab

Market Buy Volume: 10 Limit Buy Asked Quo. 13 1 2234 2234 Bid Quo.

Chart Order Book Order Contracts Profit Position STDOUT

Time	Spot Price	Futures Price
0	2100	2100
20	2100	2100
40	2300	2200
60	2400	2300
80	2400	2300
100	2300	2200

— Spot Price — Futures Price

Auto (Y) Update
Maximum: 3000
Minimum: 0

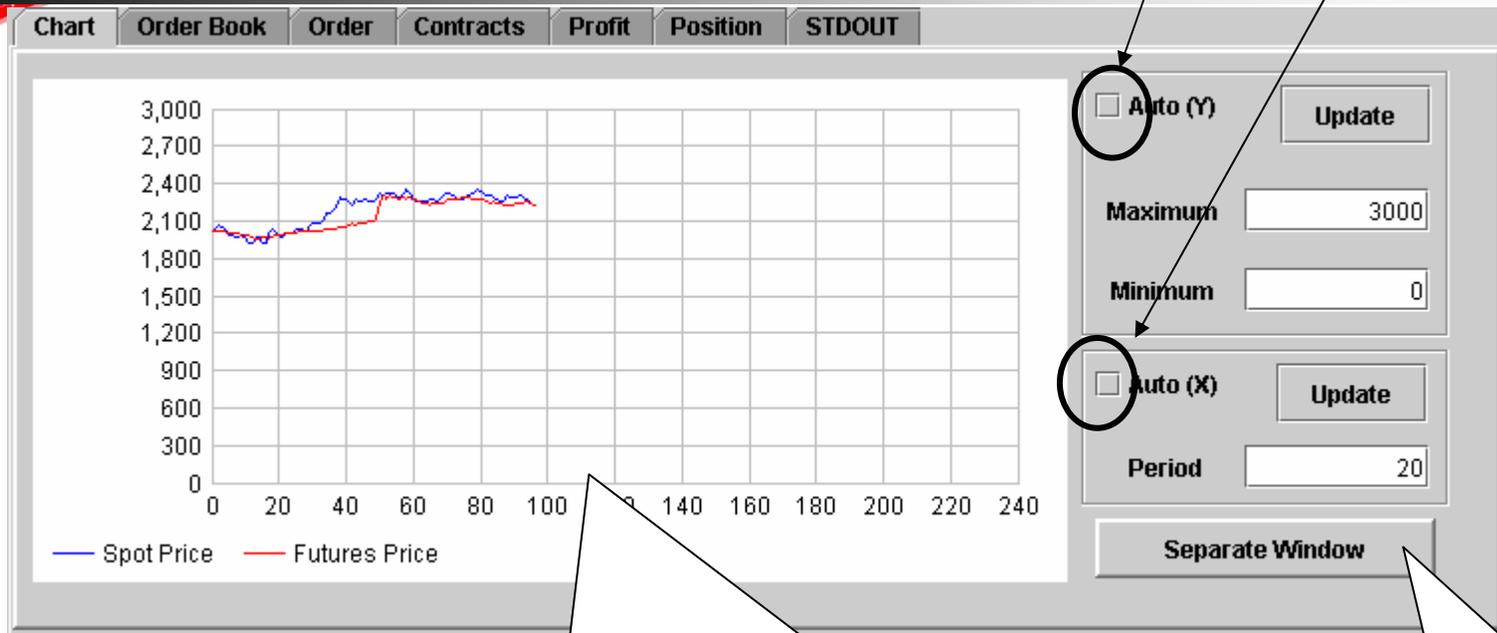
Auto (X) Update
Period: 20

Separate Window



Price Chart

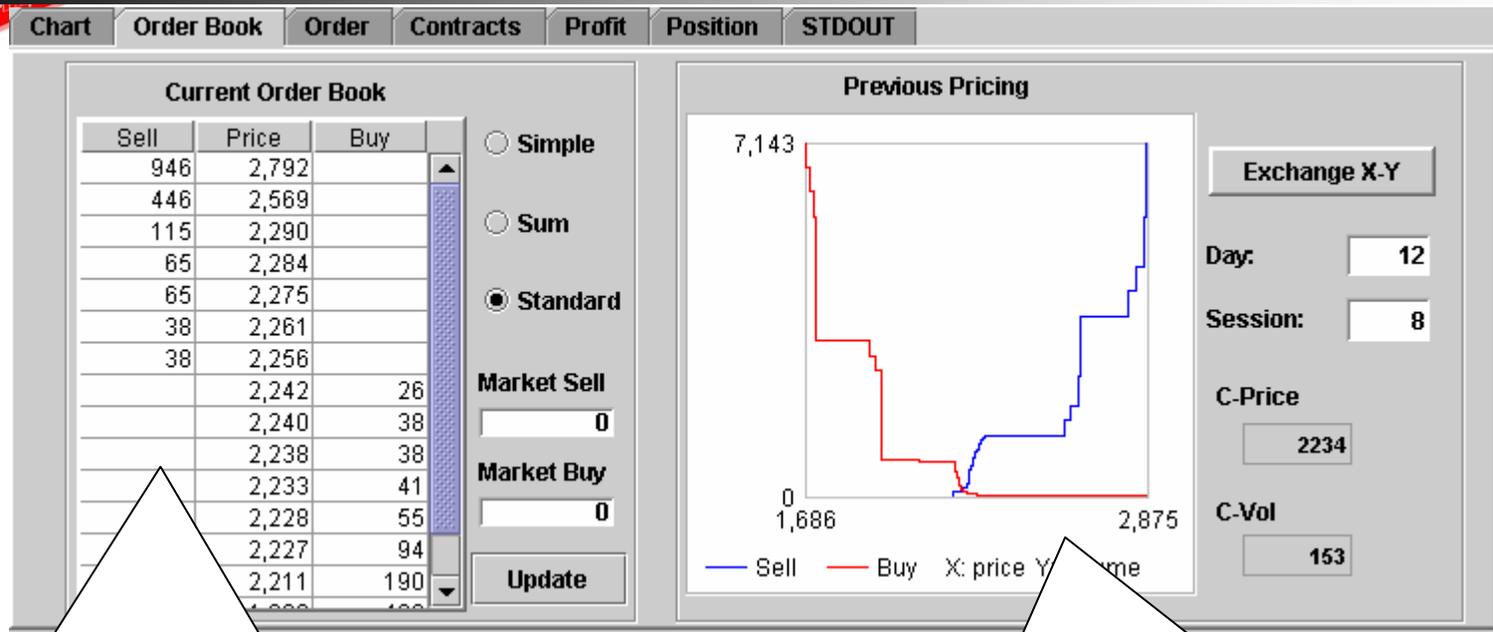
Size adjustment



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

Order ID	Time	M/L	S/B	Price	Volume	C-Vol	Cancel
1601	14:23:39	Market	Sell	0	10	10	<input type="checkbox"/>
1630	14:24:11	Limit	Sell	2,500	10	0	<input type="checkbox"/>
1631	14:24:12	Limit	Buy	2,500	10	0	<input type="checkbox"/>
1632	14:24:13	Limit	Buy	2,500	10	0	<input type="checkbox"/>

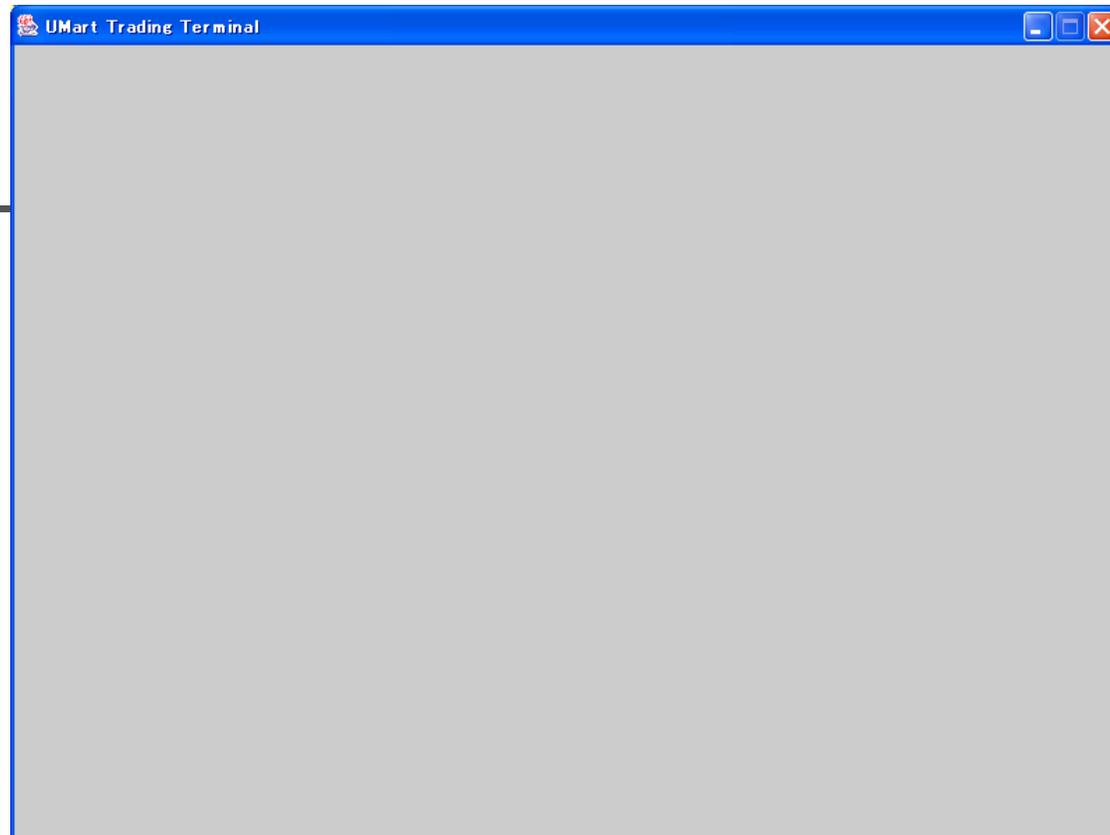
You can cancel orders by clicking here

“Contract” shows results of orders



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

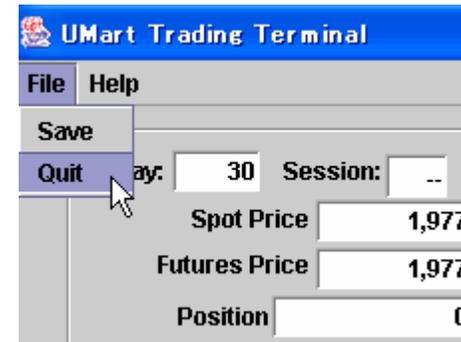


Result of the competition

Final Result

memberID	Property	status
You	1000000000	1
T02_Abe	1093304000	1
T03_Irie	1029895000	1
T01_Ayaki	1095901000	1
RsiStrategy	945183000	1
T01_Yamanaka	1226412000	1
TrendStrategy	1024209000	1
T04_Kitakubo2	707962000	1
T04_Kitakubo1	798850000	1
T04_Kitakubo0	709888000	1
SRsiStrategy3	1110647000	1
SRsiStrategy2	1058031000	1
SRsiStrategy1	1030245000	1
RandomStrategy	960516000	1
SRandomStrategy3	1063078000	1
SRandomStrategy2	1176531000	1
SRandomStrategy1	1010458000	1
SFSpreadStrategy2	1114290000	1
SFSpreadStrategy1	1102630000	1
DayTradeStrategy2	1005974000	1
DayTradeStrategy1	957250000	1
AntiTrendStrategy2	861570000	1
AntiTrendStrategy1	962789000	1
MovingAverageStrategy	981255000	1
SMovingAverageStrate...	1017591000	1
SMovingAverageStrate...	1021173000	1
SMovingAverageStrate...	987249000	1

OK



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.)

Please check your result and order



Let's have a game!

Setting

1 Session

Second

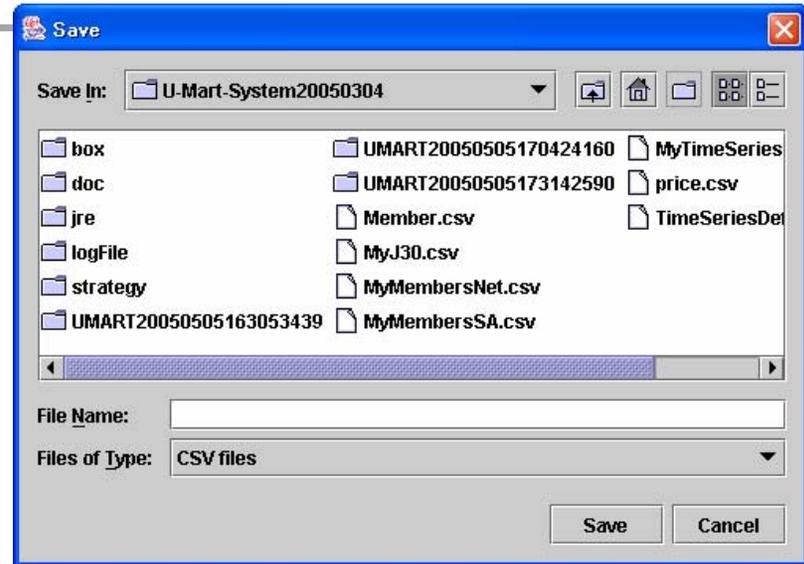
1 day

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)

The logo for U-Mart is located in the top-left corner. It consists of three overlapping rectangular shapes: a blue one at the top, a red one in the middle, and an orange one at the bottom. The text 'U-Mart' is written in white on the red shape. The blue shape contains a white line graph. The orange shape contains a grid of small white text.

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



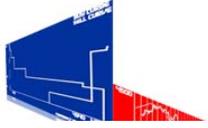
Reference



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

Experimental Setting

Setting: Default File

Brand Name : J30

Filename : resource:j30.csv

Trading Period: 30

#Sessions per Day: 8

Start Point: 120

Random Seed

System Clock

User

0

Agent Setting

Player's Setting

Tab Setting

Create Logs

Auto Run

OK Quit Default

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



Nick name of spot price time series.

Specify data file of spot price time series

Name to specify the source of time series.

Start point.

of days

of Sessions

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



MarketServe..



Setting [X]

Experimental Setting

Setting:

Brand Name : J30

Filename : resource:j30.csv

Trading Period:

#Sessions per Day:

Start Point:

Random Seed

System Clock

User

Create Logs

Port:

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

Nick name of spot price time series.

Specify data file of spot price time series

Name to specify the source of time series.

Start point.

of days

of Sessions

	A	B	C	D	E	F	G
1	Nickname	Filename	BrandName	StartStep	MaxDate	NoOfSessionsPerDay	
2	Default	resource:\30.csv	\30	120	30	8	
3	Ex1	resource:\30.csv	\30	340	20	4	
4	Ex2	resource:\30.csv	\30	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 “LoggingName”, 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

Day:	<input type="text" value="9"/>	Session:	<input type="text" value="8"/>	Cash	<input type="text" value="1,006,930,000"/>	<input type="checkbox"/> Auto Update
Spot Price	<input type="text" value="2,067"/>	Available Cash	<input type="text" value="997,930,000"/>		<input type="text" value="0.3"/> sec.	
Futures Price	<input type="text" value="1,950"/>	Unrealized Profit	<input type="text" value="6,930,000"/>		<input type="button" value="Update"/>	
Position	<input type="text" value="Short: 30"/>	Margin	<input type="text" value="9,000,000"/>			

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

Chart	Profit	Order	Contracts	Order Book	Position	STDOUT						
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.



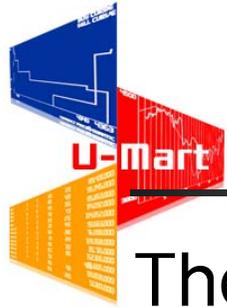
After last session of the day,

Day:	<input type="text" value="7"/>	Session:	<input type="text" value="8"/>	Cash	<input type="text" value="1,001,130,000"/>
Spot Price	<input type="text" value="2,217"/>	Available Cash		<input type="text" value="998,130,000"/>	
Futures Price	<input type="text" value="2,176"/>	Unrealized Profit		<input type="text" value="1,130,000"/>	
Position	<input type="text" value="Short: 10"/>	Margin		<input type="text" value="3,000,000"/>	

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 $113 * 10 \text{ units} * 1000 = 1,130,000$

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

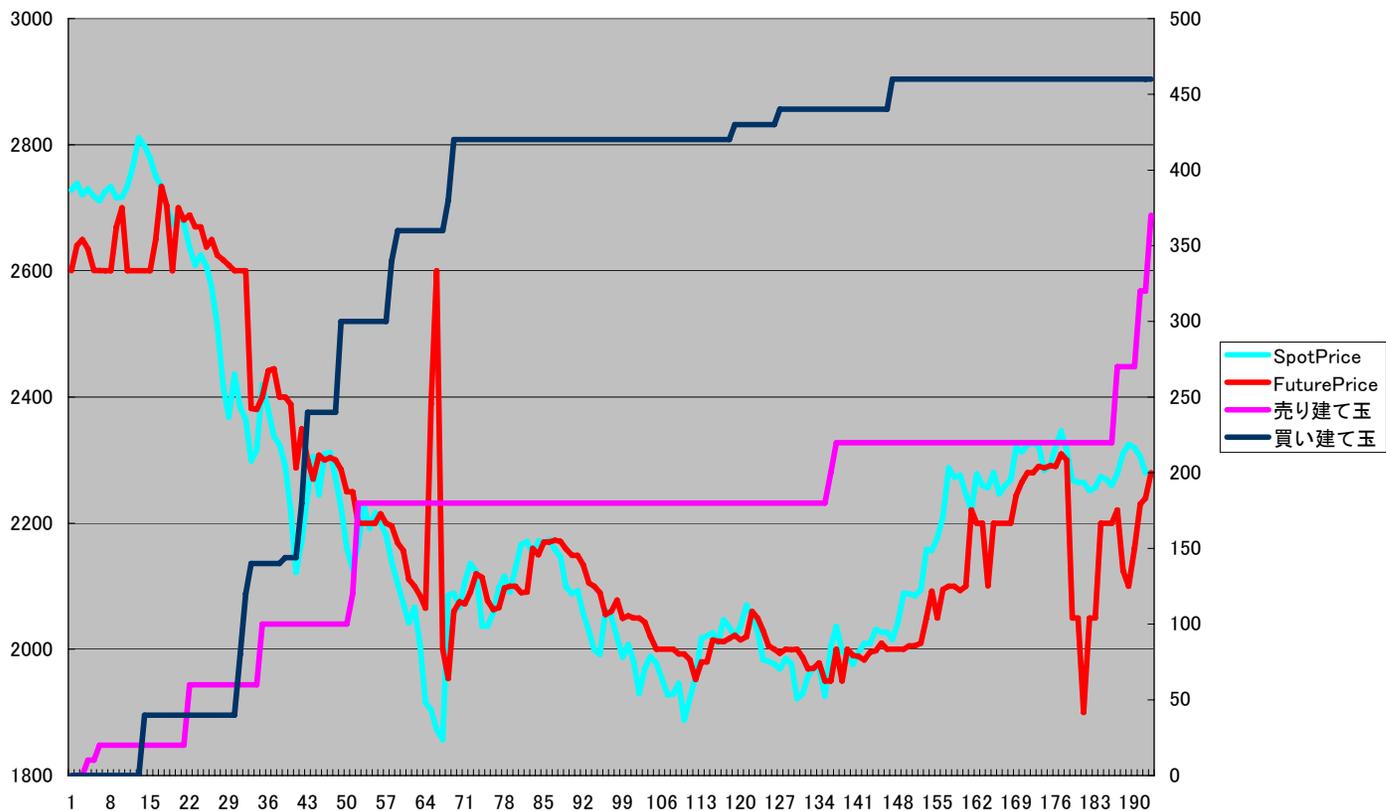


Experiment in Chiba Institute of Technology -

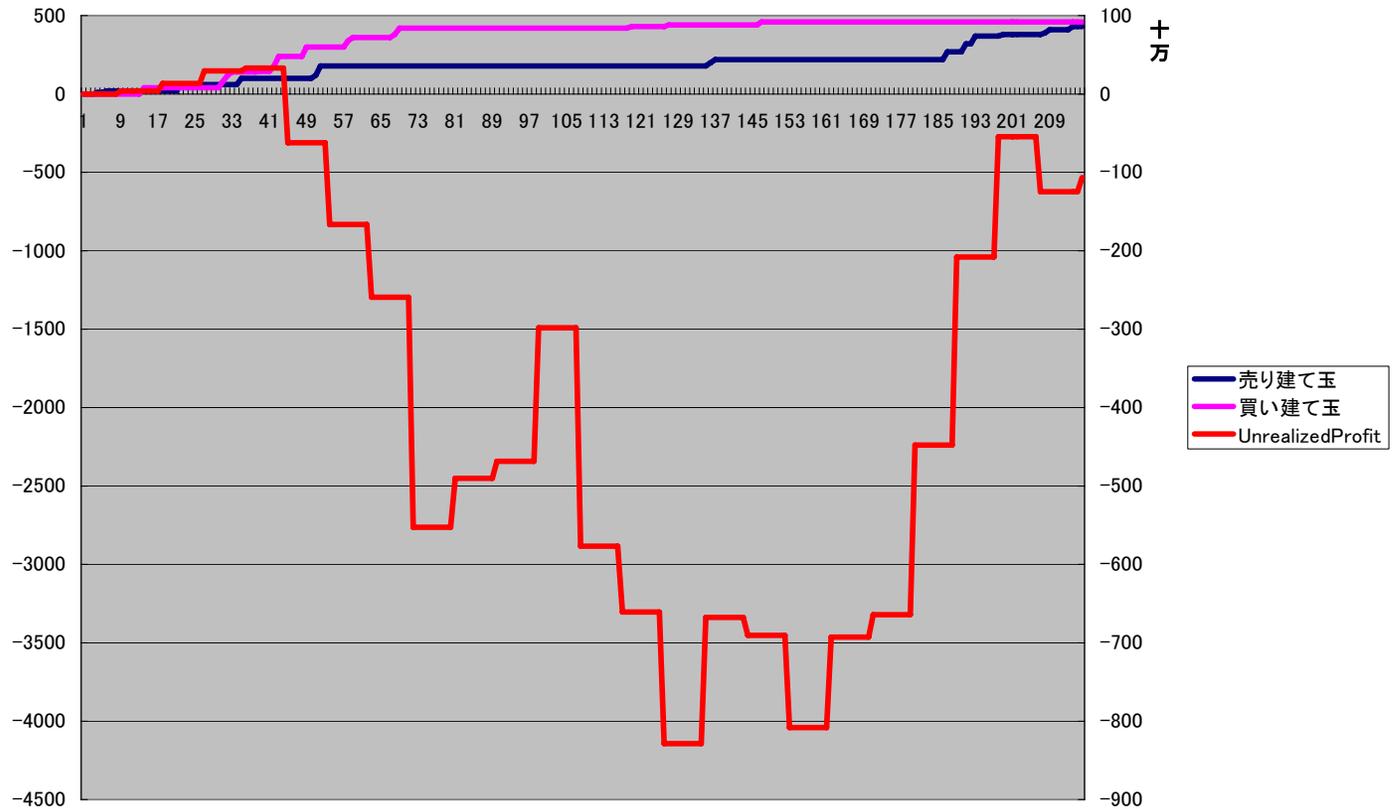
“Position control:
Learning trajectory of a student”



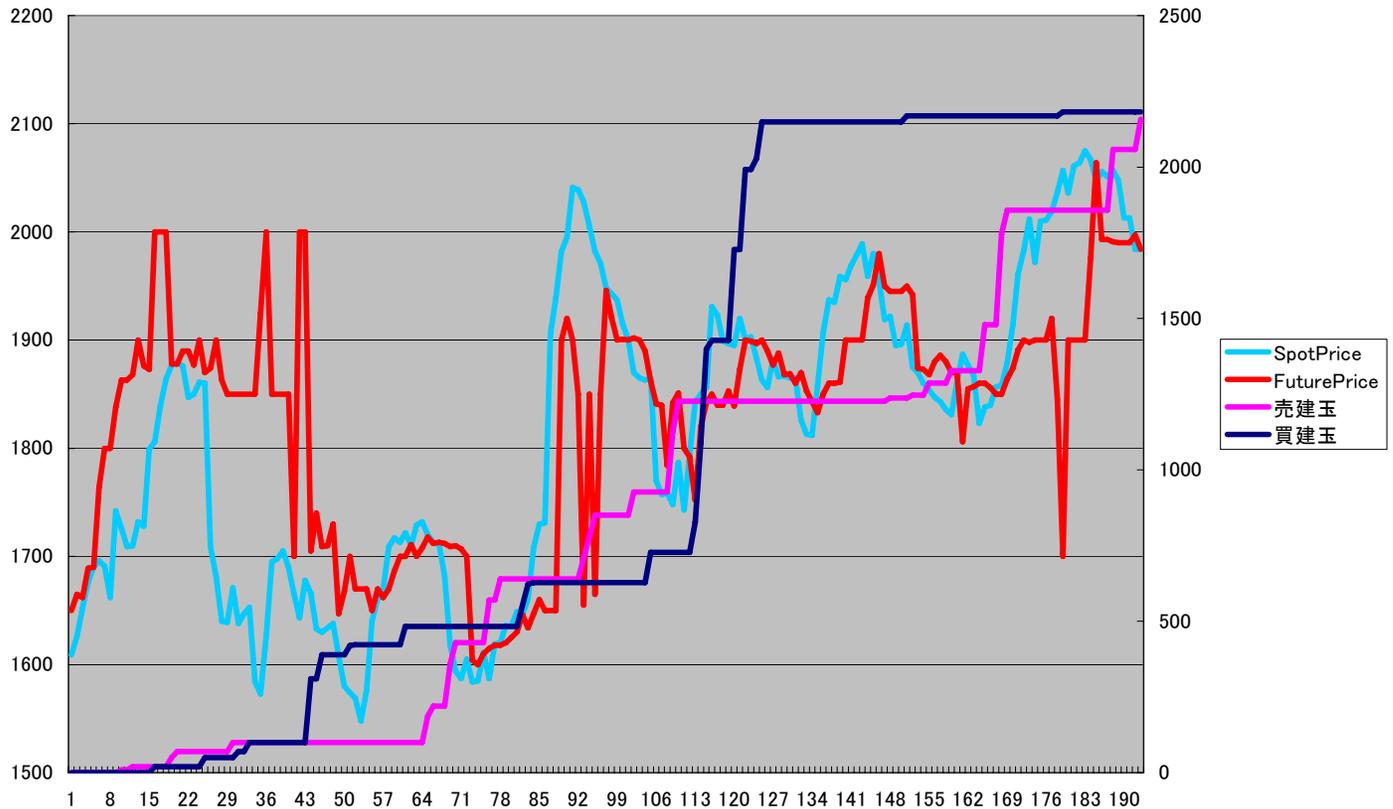
1st Experiment: She failed to trade



She couldn't do "stop loss" trading.

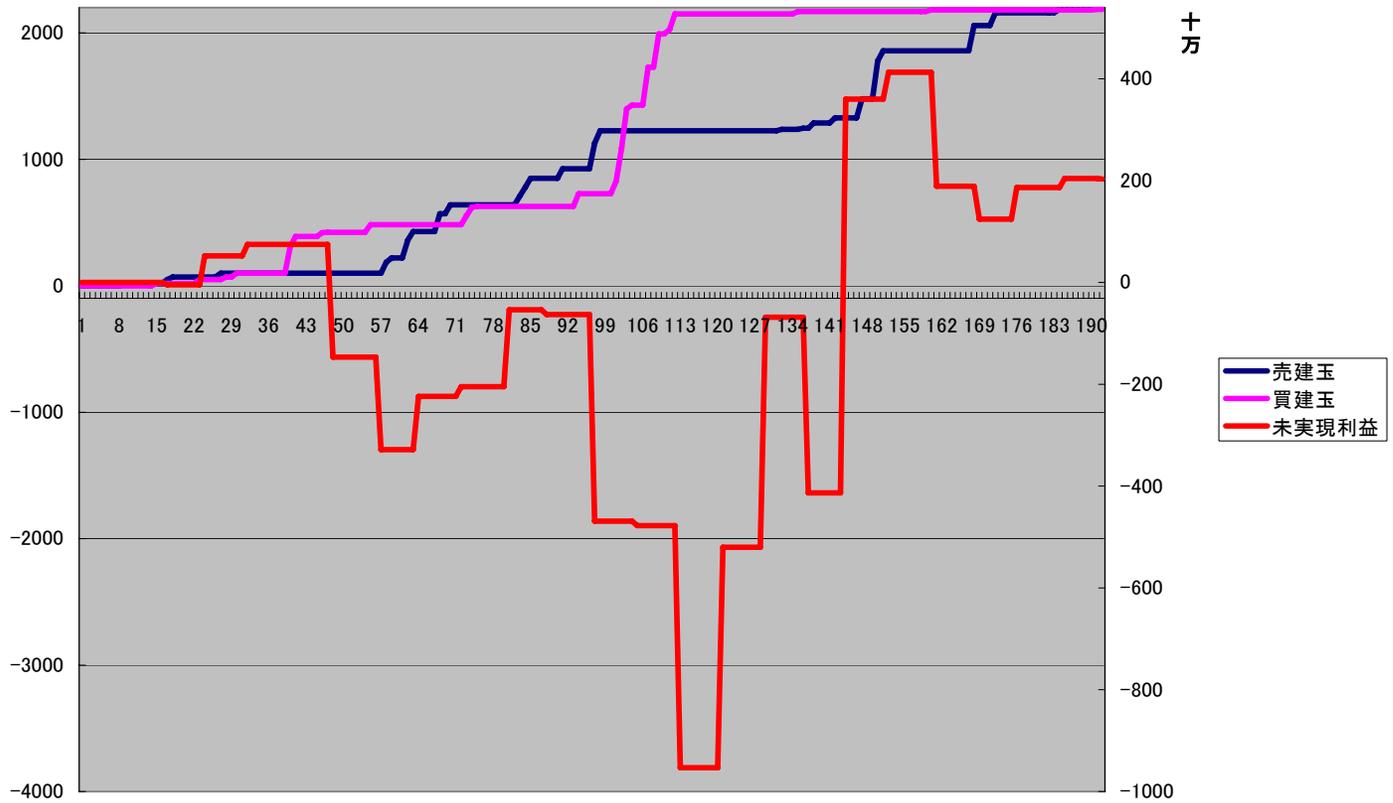


At next experiments: Doing better



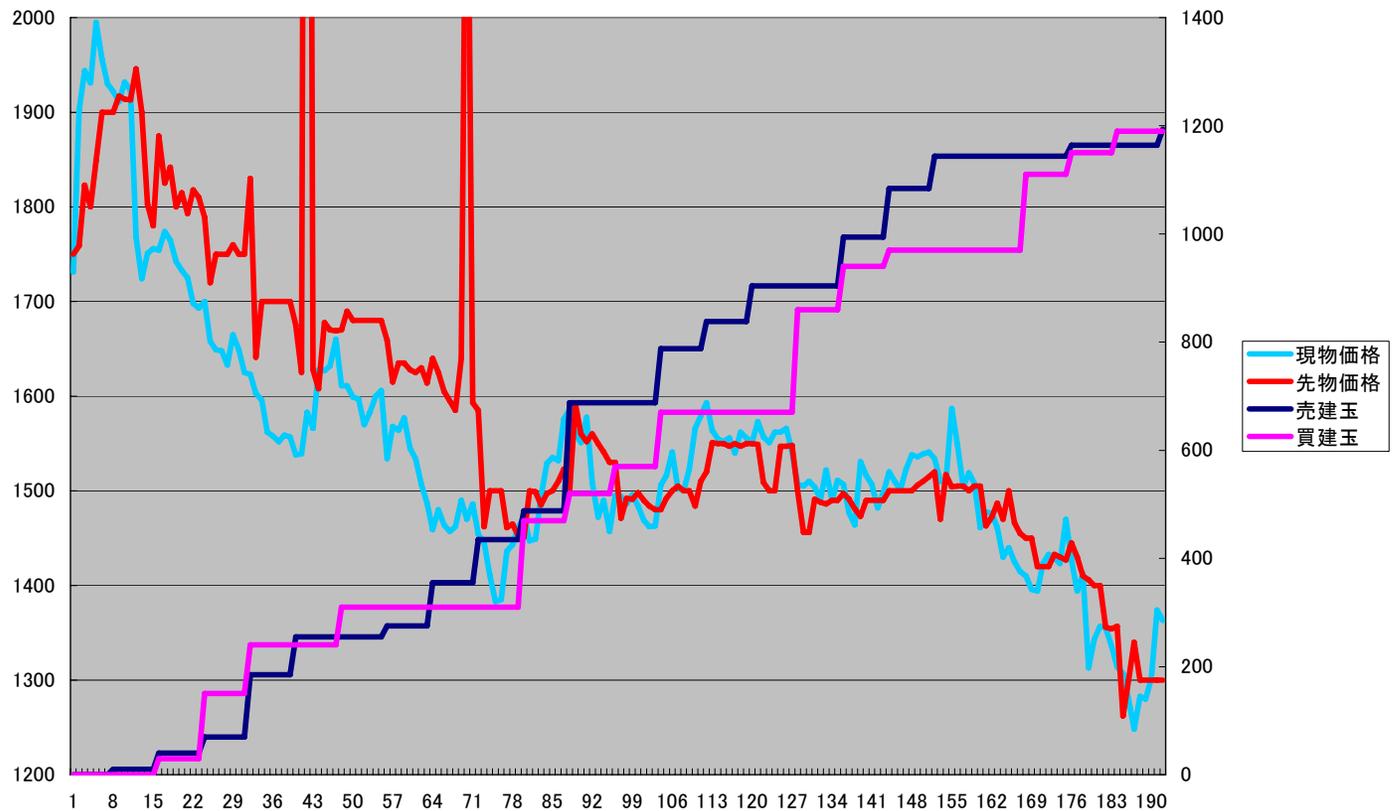


With profit





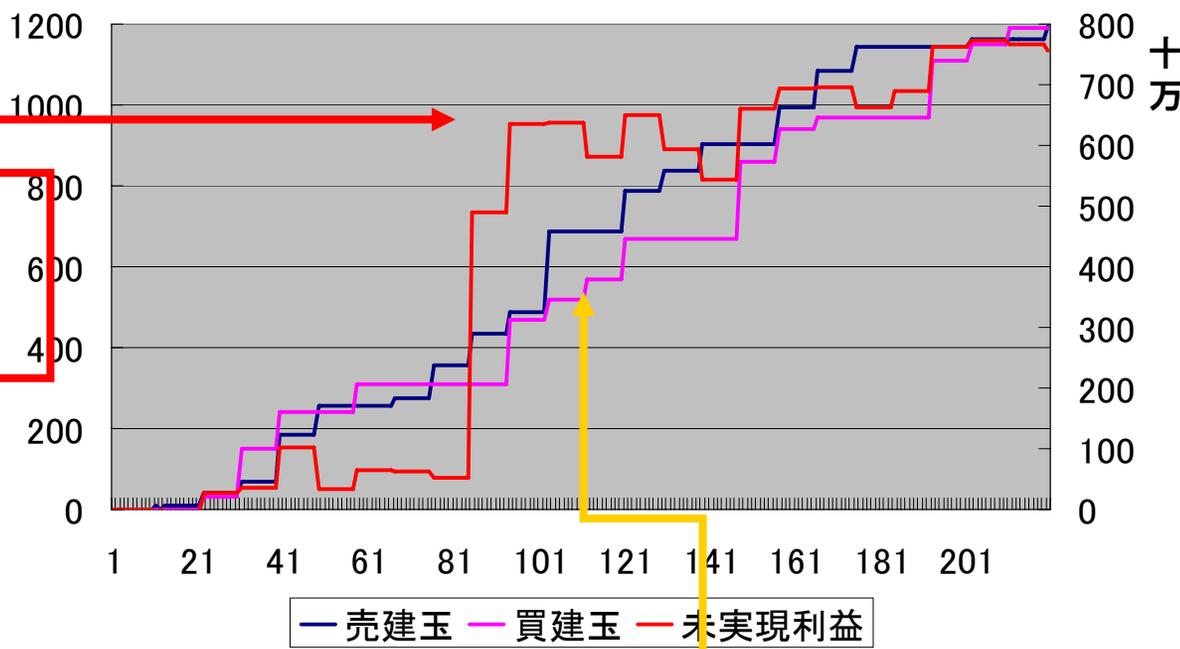
The 3rd Experiment: She could control her position well





Following her position

She accumulated profit.



Short term trading.
Positions were changed continually.