Trading Game Instructions

Sessions

There will 1 practice session and 4 actual sessions of trading. Each session will be 8 minutes long. If no one wants to submit any new orders, a session can terminate early. Students are divided into several groups. Your goal is to have the highest total profit among all the groups.

Asset

In each session, you trade one asset that has an unknown value. The value of the asset is an integer value distributed among [0,100] according to the bell-shaped distribution. At the end of each session, the value is announced.

Trader Types

There will be two types of traders in each trading session. Half of the groups are (partially) informed traders, and the other half are liquidity traders. You will get to be each type exactly 2 times in the 4 sessions. You only know your type, but not the others' types in each session.

Every trader starts with 0 cash and 0 position in the asset. There is no constraint on what cash and asset position one can reach. That is, even if a trader has 0 cash, he/she can still buy the asset, which will result in a positive position in the asset and a negative cash balance.

- Informed traders will be given the range of the asset value. More specifically, if the fair value is V, 4 informed trader will be given the range [V-10+e, V+10+e] and the other 4 informed trader will be given the range [V-10-e,V+10-e], where e is an error term (integer) drawn from a uniform

distribution with range [0,10]. That is, the fair value is always going to be in the range, but 4 informed trader will have a slightly higher range and the other 4 will have a slightly lower range. For example, if the fair value v=46 and the error e=1, 4 informed trader will be given [37,57] and the other 4 will be given [35,55]. In another example, if v=30 and e=9, informed traders will be given [29,49] and [11,31].

- Liquidity traders need to reach a "target" position for the asset. 4 liquidity traders will have positive targets (need to buy) and the other 4 will have negative targets (need to sell). The sum of all targets will be 0. Target will range from 10 to 15 units of the asset. Liquidity traders are penalized when they fail to meet the target.

Informed traders collectively have information to deduce the asset value, but individually they do not have enough information. Liquidity traders in aggregate have 0 net demand.

Profit and Loss in Each Session

For informed traders, P&L = cash balance + asset position * value

For liquidity traders, P&L = cash balance + asset position * value – 50 * |target position – asset position|

That is, for each unit difference between final asset position and target position, the liquidity trader will be penalized by 50. Therefore, liquidity traders are almost always better off by reaching the target asset position, even if they have to trade at unfavorable prices.

Note that you will profit whenever you buy at a price below the asset value, and sell at a price above the asset value. To win the trading game, always look for the best bargain (i.e., buy low and sell high).

Trading

1. Please bring your laptop to the classroom, and log into 10.28.0.253.
2. You need to connect to the University Wi-Fi in order to join the game.
3. Each group can only use one device.
4. Please name your group as "Group 1", "Group2" etc. based on the sign-up list. Do not change group name throughout the game. Example is shown below.

5. After each round, please refresh the webpage and then press "I am ready". Once all groups join the game, the game will start automatically.
6. Once you join the game, you will see your role in the game. Examples are as follows.

7. The trading environment will be in the form of continuous double auction. You can submit your order in the box below.

8. Normally, the highest bid will be below the lowest ask. A

trade will occur if the bid and ask cross. For example, suppose the order book is like this:

	Price	Size	By trader
Asks	52	2	G2
	51	6	G4
	50	4	G8
Bids	48	3	G1
	47	1	G3
	47	5	G5
	46	2	G8

Now group 3 submits a <u>bid of 53 for 5 units</u>. The ask order by group 8 will be executed. Furthermore, 1 unit of the ask order by group 4 will also be executed. So the new order book will look like:

	Price	Size	By trader
Asks	52	2	G2
	51	~~6~~ 5	G4
	~~50~~	~~4~~	~~G8~~
Bids	48	3	G1
	47	1	G3
	47	5	G5
	46	2	G8

The auction has **price-time priority**. That means when bid and ask cross, the orders with the most favorable prices with be executed first. If there are orders with the same price, the one that was submitted earlier will be executed. On the above order book, there are two bids at 47 and the one by G3 has the higher priority because the order was submitted earlier.
Now suppose group 7 submits a new <u>ask at 47 for 5 units</u>. The 48*3 bid by G1 will be executed first because it has the highest price among all bids. Then the 47*1 bid by G3 will be executed second. The 1 unit of the 47*5 bid by G5 will be executed, leaving 4 units outstanding. The resulting order

book will be:

	Price	Size	By trader
Asks	52	2	G2
	51	5	G4

Bids	48	3	~~G1~~
	47	1	~~G3~~
	47	~~5~~ 4	G5
	46	2	G8

9. After each round of trading game, you will see the cumulative P/L of your group on your screen. After the fourth round, you will see your rank. Examples are as follows:

On the last round (Round #4):

Your role: **Liquidity traders**

As a liquidity trader, your target: **11**

Final balance: **-440**

Final asset: **11**

Asset real value: **39**

P&L (Price and Loss): **-11**

Cumulative P&L: **15669**

For informed traders, P&L = cash balance + asset position * value
For liquidity traders, P&L = cash balance + asset position * value - 50 * |target position - asset position|

Your rank is #1.

All players' final results: shirleywu: 15669 pts, 小王: 6740 pts, weibei: -16900 pts, Ghost: -41809 pts

Hints

On average, liquidity traders will lose and informed trader will profit. When you play the role of the liquidity trader, you need to minimize your loss; when you are the informed trader, you need to maximize your profit.

Price tends to converge to the true value over time. For the liquidity traders, trading early means you will face higher price risk. On the other hand, waiting till the very end may entail execution risk, i.e., that you may not be able to reach the target position. There is also a risk that informed trader might price gouge the liquidity traders because they know liquidity traders have to trade a certain amount.

For informed traders, it might be worthwhile to hide your information. Releasing your information by biding at the lower

bound of your range and asking at the upper bound will only help the other informed traders and harm yourself, because they can then deduce the fair value. It might also be useful to pretend you are the liquidity trader to mislead the others.