## Readme file from Zhihao Wang(zwang238)

Server was created to host a auction

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_s erver.py 12345
Auctioneer is ready for hosting auctio ns!

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> []

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> []

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> []

Client 1 connected as Seller with its role prompt

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_s erver.py 12345
Auctioneer is ready for hosting auctio ns!

Seller is connected from 127.0.0.1:603

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_c lient.py 127.0.0.1 12345
Connected to the Auctioneer server.

Your role is : [Seller]
Please submit auction request:

 Client 2 tried to connected during Seller process and shows waiting and close the connection

PS C:\Users\Administrator\Desktop\work PS C:\Users\Administrator\Desktop\work PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_s desk\CSC573\_project1\src> python auc\_c desk\CSC573\_project1\src> python auc\_c erver.py 12345 lient.py 127.0.0.1 12345 lient.py 127.0.0.1 12345 Auctioneer is ready for hosting auctio Connected to the Auctioneer server. Connected to the Auctioneer server. Your role is : [Seller]
Please submit auction request: [] Server is busy. Try to connect again 1 Seller is connected from 127.0.0.1:603 PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src>

Seller sends incorrect auction request

PS C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_s erver.py 12345
Auctioneer is ready for hosting auctio ns!

Seller is connected from 127.0.0.1:603

99

C:\Users\Administrator\Desktop\work desk\CSC573\_project1\src> python auc\_c lient.py 127.0.0.1 12345
Connected to the Auctioneer server.

Your role is: [Seller]
Please submit auction request: yes Server: Incorrect format
Please submit auction request:

 Seller sends correct auction request and seller receives Auction Start prompt

```
PS C:\Users\Administrator\Desktop\work
                                           PS C:\Users\Administrator\Desktop\work
desk\CSC573 project1\src> python auc s
                                           desk\CSC573 project1\src> python auc c
erver.py 12345
                                           lient.py 127.0.0.1 12345
Auctioneer is ready for hosting auctio
                                           Connected to the Auctioneer server.
ns!
                                           Your role is : [Seller]
Seller is connected from 127.0.0.1:603
                                           Please submit auction request: yes
                                           Server: Incorrect format
>> New Seller Thread spawned
                                           Please submit auction request: 2 100 3
Auction Request received. Now waiting
for the Buyer.
                                           Server: Auction Start.
```

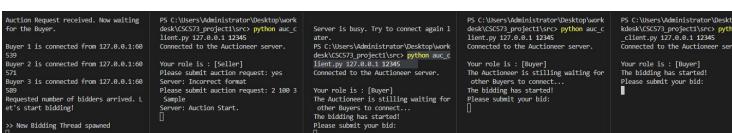
Buyer 1 is created with role prompt and waiting signal

```
desk\CSC573_project1\src> python auc_c
                                                                                           Connected to the Auctioneer server.
erver.py 12345
Auctioneer is ready for hosting auctio
                                              lient.py 127.0.0.1 12345
Connected to the Auctioneer server.
                                                                                            Server is busy. Try to connect again l
Seller is connected from 127.0.0.1:603
                                              Your role is : [Seller]
                                                                                           PS C:\Users\Administrator\Desktop\work
                                              Please submit auction request: yes
                                                                                           desk\CSC573_project1\src> python auc_c
                                              Server: Incorrect format
>> New Seller Thread spawned
                                                                                           lient.py 127.0.0.1 12345
Auction Request received. Now waiting
                                              Please submit auction request: 2 100 3
                                                                                           Connected to the Auctioneer server.
for the Buyer.
                                               Sample
                                              Server: Auction Start.
                                                                                           Your role is : [Buyer]
The Auctioneer is stilling waiting for
Buyer 1 is connected from 127.0.0.1:60
                                                                                            other Buyers to connect...
```

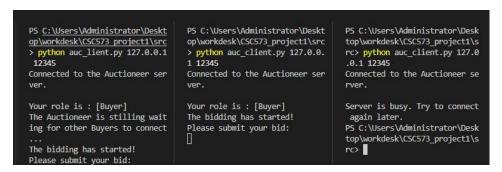
Buyer 2 is created with role prompt and waiting signal



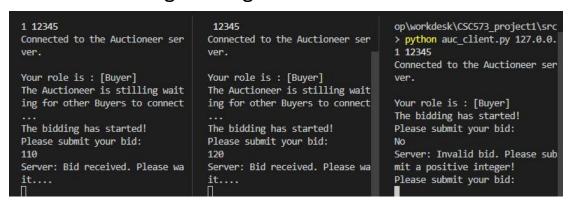
 Buyer 1-N is created with role prompt and waiting signal, and Buy N doesn't have waiting signal. After that, all buyers receive bidding start prompts



 Another client tries to connect during bidding and shows error message



 Buyers try different values and receive feedback, if returns an error message, will ask for one more input And for those clients have finished bid inputting will show the waiting message.



- Auctioneer (internally) displays all bids and auction
- And seller will receive the auction result(hear it is second price)
- Buyers receive auction result as well.
- All sockets are closed.



## Another round with a different auction type works

.0.1:61536 Auction finished! The bidding has started Requested number of bidders arr Success! Your item Sample has b Please submit your bid: ived. Let's start bidding! een sold for \$110 Disconnecting from the Auctione Server: Bid received. P er server. Auction is over! >> New Bidding Thread spawned it.... PS C:\Users\Administrator\Deskt >> Buyer 1 bid \$110 >> Buyer 2 bid \$120 op\workdesk\CSC573\_project1\src Auction finished! >> Buyer 3 bid \$20 > python auc\_client.py 127.0.0. Unfortunately you did n >> Item sold! The highest bid i 1 12345 n the last round. s \$120. The actual payment is \$ Connected to the Auctioneer ser Disconnecting from the er server. Auction is o ver. Seller is connected from 127.0. PS C:\Users\Administrat 0.1:61605 Your role is : [Seller] op\workdesk\CSC573 proj Please submit auction request:

# • If price is less than min price, the item will not be sold

aiting for the Buyer. The bidding has started! Please submit your bid: 2 2 40 2 Server: Incorrect format The bidding has started! Please submit your bid: Buyer 1 is connected from 127.0 Please submit auction request: 2 30 2 2 40 Server: Bid received. Please wa Server: Bid received. Please wa Buyer 2 is connected from 127.0 .0.1:61819 Server: Auction Start. Requested number of bidders arr Auction finished! Auction finished! Auction finished! Unfortunately you did not win i n the last round. Unfortunately your item 2 hasn' Unfortunately you did not win i n the last round. ived. Let's start bidding! t been sold >> New Bidding Thread spawned >> Buyer 1 bid \$40 >> Buyer 2 bid \$20 Disconnecting from the Auctione er server. Auction is over! Disconnecting from the Auctione er server. Auction is over! Disconnecting from the Auctione er server. Auction is over! PS C:\Users\Administrator\Deskt op\workdesk\CSC573\_project1\src PS C:\Users\Administrator\Deskt op\workdesk\CSC573\_project1\src PS C:\Users\Administrator\Deskt >> No! Item not sold! op\workdesk\CSC573 project1\src

### Detailed description on how to compile

Usage: python auc\_client.py <#ip> <#port>

Usage: python auc\_server.py <#port>

#### **EXTRA CERDIT:**

- 1. To know the true valuation of each Buyer: A second-price auction is better since it encourages truthful bidding.
- 2. In a first-price auction, the highest bidder wins the item and pays the price they bid. Bidders will typically shade their bids below their true valuation. That's because they want to pay less than their valuation to ensure a positive utility, but they also want to outbid others. However, In a second-price auctionBidders have an incentive to bid their true valuations. Here's why: If a bidder bids below their valuation and loses to a bid that was still below their valuation, they would regret not bidding truthfully. If they bid above their true valuation and win, they risk paying more than the item is worth to them. But if they bid their true valuation, they either win and pay less than or equal to what it's worth to them or lose without any regret.

In all, to sell the item for a reasonable price: A second-price auction ensures that the item is sold for the highest bid of the 'losing' bidders. This is likely a reasonable price because it reflects the valuation of the highest-valued buyer who didn't win.

- 3. Assume Buyer A has a true valuation of \$110 and Buyer B has a valuation of \$150. B will be the winner and pay the price of 100. its utility will be 150-110 = 40.
- If b >v , it doesn't increase their chances of winning, but they risk overpaying.
- If b < v and they win, they'll pay the second-highest bid which could be less than v but more than b. But they would regret not bidding their true valuation if the second-highest bid is between b and v.
- If b =v , and they win, they'll pay the second-highest bid, which is less than their valuation, maximizing their utility.

