

A Laboratory Investigation of Rank Feedback in Procurement Auctions

On-Line Supplement: Instructions for Experimental Treatments

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Instructions (Full)

You are about to participate in an experiment in the economics of decision making. If you follow these instructions carefully and make good decisions you will earn a considerable amount of money that will be paid to you in cash at the end of the session. If you have a question at any time, please raise your hand and I will answer it. We ask that you not talk with one another for the duration of the experiment.

On your desk you should have a check-out form, a pen and two copies of the consent form.

How to make money

You are a supplier of some product. To make money you must sell that product to a computerized buyer. In each auction you will be competing against one other randomly-chosen participant (supplier) in this room. To sell the product, you offer the buyer a price; this offer is **Your Bid**.

Before you make **Your Bid**, you will know your **Cost** of supplying one unit, and the **Quality** of your product.

The quality is either HIGH or LOW.

The supplier with the lowest **Quality Adjusted (QA) bid** wins and supplies one unit to the buyer. Low quality suppliers are assessed a quality penalty of 100 that is added to their bid. Your QA bid is determined as follows:

$$\begin{array}{lll} \text{QA Bid} & = \text{Your Bid} & \text{for bidders with HIGH quality} \\ & = \text{Your Bid} + 100 & \text{for bidders with LOW quality} \end{array}$$

For example, if your bid is 50 and your quality is LOW, your QA bid is $50 + 100 = 150$.

During the auction you will always know your own QA bid. You will know the bid of your competitor, but not the competitor's QA Bid.

You will bid in **30** consecutive auctions. You will be matched at random with a different person in the room for every auction. The cost of LOW quality bidders is an integer from 0 to 100, each integer in that range equally likely. The cost of HIGH quality bidders is an integer from 100 to 200, each integer in that range is equally likely. Your quality will be the same every round. Half of the participants in the room will have LOW quality and half will have HIGH quality. Your cost and cost of all participants in the session will be determined the same way and will change in each round.

You make money by winning at a good price. If you do not win in a round, your profit for the round is zero. If you win, then your profit is:

$$\text{Your Profit} = \text{Your Bid} - \text{Your Cost.}$$

Note: Whether you win is determined by **Your QA Bid**. Your Profit is determined by **Your Bid**.

Caution: If your bid is below your cost and you win, you will lose money. Bid carefully.

Examples

Recall that in this auction, the winning bid is the lowest quality adjusted bid:

$$\text{QA Bid} = \text{Bid} + \text{Quality Penalty}$$

Example (1):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 150; your QA bid is also 150.

Suppose your opponent's current bid is 70. Since his bid is below 100, it is fairly likely that opponent is LOW bidder (recall that a bid of 70 by a HIGH bidder would result in negative profits for that bidder), and therefore his QA bid is $70 + 100 = 170$.

If the auction were to end in this round (i.e., no further bids are placed), then you will win because your QA bid of 150 is lower than 170, and you will be paid your bid of 150. Your profit will be your bid minus your cost = $150 - 120 = 30$.

Example (2):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 145.

Suppose your opponent's current bid is 170. You do not know if your opponent is HIGH bidder or LOW bidder. If your opponent is HIGH bidder, his QA Bid is 170, but if he is a LOW bidder, his QA bid is 270.

If the auction were to end in this round, then you will win because your QA bid of 145 is lower than either of those two possible QA bids (170 or 270) and you will be paid your bid of 145. Your profit will be your bid minus your cost = $145 - 120 = 25$.

Example (3):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 81; your QA bid is 181.

Suppose your opponent's current bid is 150. Again, you do not know if your opponent is HIGH bidder or LOW bidder. His QA bid is also 150 if he is HIGH bidder, but 250 if he is LOW bidder.

If the auction were to end in this round, then your opponent will win if he is a HIGH bidder because his QA bid of 150 is lower than 181 and he will be paid his bid of 150. Your profit will be zero in this auction. If your opponent is a LOW bidder, then you will win because your QA bid of 181 is lower than 250. In this case you would earn $81 - 60 = 21$.

Example (4):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 58; your QA bid is 158.

Suppose your opponent's current bid is 70. Since his bid is below 100, it is fairly likely he is a LOW bidder (recall that a bid of 70 by a HIGH bidder would result in negative profits for that bidder), so his QA bid is 170.

If the auction were to end in this round, then you will win because your QA bid of 158 is lower than 170 and you will be paid your bid of 58. Your profit will be your bid minus your cost = $58 - 60 = -2$, because your bid of 58 was below your cost of 60, so you will lose money.

The mechanics placing a bid

Below is a sample snapshot of the screen you will be facing. As you can see under Your Information, you are given your Participant Number, your Cost and your Quality.

Period
2 of 10

<p style="text-align: center;"><u>Your information</u></p> <p>You are Bidder: B Your Cost is: 109 Your Quality is: HIGH Your Reserve is: 200</p>	<p style="text-align: center;">Enter Your Bid:</p> <div style="border: 1px solid gray; width: 100px; text-align: center; margin-bottom: 5px;">134</div> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="Submit Bid"/> </div>												
<p style="text-align: center;"><u>Auction information</u></p> <p style="text-align: center;">Your Last Bid: 134 Your Last QA Bid: 134 Seconds Left: 10</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Bidder</th> <th>Bid #</th> <th>Bid</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>2</td> <td>135</td> <td>2</td> </tr> <tr> <td>B</td> <td>3</td> <td>134</td> <td>1</td> </tr> </tbody> </table>	Bidder	Bid #	Bid	Rank	A	2	135	2	B	3	134	1
Bidder	Bid #	Bid	Rank										
A	2	135	2										
B	3	134	1										

Your own past history

Period	Quality	Cost	Your Bid	Your QA Bid	Winning Bid	Winner's Quality	Your Profit
1	HIGH	197	198	198	197	HIGH	0

To place a bid, you enter your bid amount in the Enter Your Bid box and then press the Submit Bid button. The software will check if your bid is valid. If it is, the bid will be placed after you confirm it.

The dynamics of Bidding

1. Every time someone enters a bid, you will see that bid on your screen in the table under the Submit Bid button.
2. The entries in each row of that table are:

- The bidder ID.
- The bid number which indicates the number of bids entered so far.
- The bid amount entered.
- The Rank of the Bid, which is 1 if Your Bid (not Your QA Bid) is the lowest and 2 if it is not.

Remember that the bidder with the lowest QA bid wins. Under Auction Information you can see your own last bid and your own last QA Bid.

3. You can enter as many bids as you wish, with the following exceptions:
 - Your bids cannot exceed the reserve. The reserve is always 200.
 - Each bid you enter must be a lower integer than the previous bid you entered
4. The clock will count down from 60 seconds to 0 seconds. When someone enters a bid, if there are fewer than 10 seconds remaining to the end of the auction, the clock will reset to 10 seconds. Note that this auction-extension rule bars you from being able to ‘sneak-in’ a ‘last-minute’ bid (snipe). As a result, you are encouraged to make use of the entire 60 seconds and NOT wait until the last 10 seconds to submit a bid.
5. The auction ends when no bids have been placed for 10 seconds.

Information you will see at the end of each round

At the end of each round you will see a list of all bids that have been placed.

You will also see the following information:

- The Winning Bid, the Quality, and the QA Bid of the Winner
- Your Bid, Your Quality, Your QA Bid, and Your Cost.
- Your Profit for the round

On the bottom of each screen you will also see this information for all previous rounds.

How you will be paid

At the end of the session, the computer will calculate the total profit you earned in all rounds and will convert it to US dollars at the exchange rate of **25** laboratory dollars for 1 US dollar. Your dollar earnings will be added to your **\$5** participation fee and displayed on your computer screen. Please use this information to fill out the check-out form on your desk. All earnings will be paid in cash at the end of the session.

Instructions (Rank)

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Before you make **Your Bid**, you will know your **Cost** of supplying one unit, the **Quality** of your product, and your **Competitor's Quality**.

The quality is either HIGH or LOW.

The supplier with the lowest **Quality Adjusted (QA) bid** wins and supplies one unit to the buyer. Low quality suppliers are assessed a quality penalty of 100 that is added to their bid. Your QA bid is determined as follows:

$$\begin{aligned} \text{QA Bid} &= \text{Your Bid} && \text{for bidders with HIGH quality} \\ &= \text{Your Bid} + 100 && \text{for bidders with LOW quality} \end{aligned}$$

For example, if your bid is 50 and your quality is LOW, your QA bid is $50 + 100 = 150$.

During the auction you will always know your own QA bid because you know if you are a HIGH or a LOW bidder. You will not know the bid of your competitor or the competitor's QA Bid. You will know the **rank** of your bid and whether your competitor is a HIGH or LOW bidder. Whenever your bid is below your competitor's, your bid's rank is one. When your competitor's bid is below yours, your bid's rank is 2.

You will bid in **30** consecutive auctions. You will be matched at random with a different person in the room for every auction. The cost of LOW quality bidders is an integer from 0 to 100, each integer in that range equally likely. The cost of HIGH quality bidders is an integer from 100 to 200, each integer in that range is equally likely. Your quality will be the same every round. Half of the participants in the room will have LOW quality and half will have HIGH quality. Your cost and cost of all participants in the session will be determined the same way and will change in each round.

The highest permissible bid from either a HIGH or Low quality bidder is 200.

You make money by winning at a good price. If you do not win in a round, your profit for the round is zero. If you win, then your profit is:

$$\mathbf{Your\ Profit = Your\ Bid - Your\ Cost.}$$

Note: Whether you win is determined by **Your QA Bid**. Your Profit and your rank is determined by **Your Bid**.

Caution: If your bid is below your cost and you win, you will lose money. Bid carefully.

Examples

Recall that in this auction, the winning bid is the lowest quality adjusted bid:

$$QA\ Bid = Bid + Quality\ Penalty$$

Example (1):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 150; your QA bid is also 150.

Suppose you see that your bid's rank is 2 and your competitor is a HIGH bidder. This means that if the auction were to end right now, then your competitor will win for sure.

Suppose you see that your bid's rank is 2 and your competitor is a LOW bidder. This means that if the auction were to end right now, then you will win as long as your competitor's bid turns out to be above 50.

For example, if the auction were to end in this round (i.e., no further bids are placed), and your competitor is a LOW bidder who placed a bid of 70, than you will win because your QA bid of 150 is lower than 170, and you will be paid your bid of 150. Your profit will be your bid minus your cost = $150 - 120 = 30$.

Example (2):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 145.

Suppose your bid's rank is 1. If the auction were to end in this round, then you will win for certain. If your opponent is either a LOW or HIGH bidder, your current rank of 1 implies that your bid (and QA bid) is below his – hence you will win.

Your profit will be $145 - 120 = 25$.

Example (3):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 81; your QA bid is 181.

Suppose your bid's rank is 1 and your opponent is a HIGH bidder. Suppose your opponent's bid turns out to be 150. If the auction were to end in this round, then your opponent will win

because his QA bid of 150 is lower than 181 and he will be paid his bid of 150. Your profit will be zero in this auction.

But if your opponent's (who you know is a HIGH bidder) bid turns out to have been 190 than you will win because your QA bid of 181 is lower than his QA bid of 190. In this case you would earn a profit of $81-60 = 21$.

Suppose, on the other hand you know that your opponent is a LOW bidder. Then you know for sure that you will win because your bid is in rank 1 and since you are both LOW bidders your QA bid must be lower. In this case you would earn a profit of $81-60 = 21$.

Example (4):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 158; your QA bid is 258.

Suppose your bid's rank is 2. If the auction were to end in this round, then your opponent will win for certain whether he is a HIGH or a LOW bidder and your profit will be 0.

Recall that the highest permissible bid by any bidder is 200. If your opponent is a HIGH bidder, his bid (and QA bid) will surely be below 258, and hence he will win. If you opponent is a LOW bidder, your current rank of 2 implies that his bid is below yours – hence your opponent's QA bid will be lower than your QA bid of 258 and he will win.

The mechanics placing a bid

Below is a sample snapshot of the screen you will be facing. As you can see under Your Information, you are given your Participant Number, your Cost and your Quality.

Period 3 of 30

Your information

You are Bidder: B
 Your Cost is: 146
 Your Quality is: HIGH
 Your Reserve is: 200

Enter Your Bid:

Auction information

Your Competitor's Quality is: LOW
 Your Last Bid: 145
 Your Current Rank: 2

Seconds Left: 7

Bidder	Bid #	Competitor's Quality	Rank
B	1	LOW	2
A	2	LOW	1

Your own past history

Period	Your Quality	Your Cost	Competitor's Quality	Your Bid	Your QA Bid	Winning Bid	Winner's Quality	Your Profit
1	HIGH	142	HIGH	145	145	115	HIGH	0
2	HIGH	146	LOW	150	150	150	HIGH	4

To place a bid, you enter your bid amount in the Enter Your Bid box and then press the Submit Bid button. The software will check if your bid is valid. If it is, the bid will be placed after you confirm it.

The dynamics of Bidding

6. Every time someone enters a bid, you will see that bid on your screen in the table under the Submit Bid button.
7. The entries in each row of that table are:
 - The bidder ID.
 - The bid number which indicates the number of bids entered so far.
 - The quality of that bidder (HIGH or LOW)
 - The Rank of the Bid, which is 1 if the Bid is the lowest and 2 if it is not.

Remember that the bidder with the lowest QA bid wins. Under Auction Information you can see your own last bid, your opponent's quality (HIGH or LOW) and your current rank. Your QA bid is your bid if you are a HIGH bidder and is your bid + 100 if you are a LOW bidder.

8. You can enter as many bids as you wish, with the following exceptions:
 - Your bids cannot exceed the reserve. The reserve is 200 for all bidders.
 - Each bid you enter must be a lower integer than the previous bid you entered

9. The clock will count down from 60 seconds to 0 seconds. When someone enters a bid, if there are fewer than 10 seconds remaining to the end of the auction, the clock will reset to 10 seconds. Note that this auction-extension rule bars you from being able to ‘sneak-in’ a ‘last-minute’ bid (snipe). As a result, you are encouraged to make use of the entire 60 seconds and NOT wait until the last 10 seconds to submit a bid.
10. The auction ends when no bids have been placed for 10 seconds.

Information you will see at the end of each round

At the end of each round you will see a list of all bids that have been placed and learn the quality amounts.

You will also see the following information:

- The Winning Bid, the Quality, and the QA Bid of the Winner
- Your Bid, Your Quality, Your Competitor’s Quality, Your QA Bid, and Your Cost.
- Your Profit for the round

On the bottom of each screen you will also see this information for all previous rounds.

How you will be paid

At the end of the session, the computer will calculate the total profit you earned in all rounds and will convert it to US dollars at the exchange rate of **25** laboratory dollars for 1 US dollar. Your dollar earnings will be added to your **\$5** participation fee and displayed on your computer screen. Please use this information to fill out the check-out form on your desk. All earnings will be paid in cash at the end of the session.

Instructions (Rank10)

You are about to participate in an experiment in the economics of decision making. If you follow these instructions carefully and make good decisions you will earn a considerable amount of money that will be paid to you in cash at the end of the session. If you have a question at any time, please raise your hand and I will answer it. We ask that you not talk with one another for the duration of the experiment.

On your desk you should have a check-out form, a pen and a copy of the consent form.

How to make money

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Before you make **Your Bid**, you will know your **Cost** of supplying one unit, the **Quality** of your product, and your **Competitor's Quality**.

The quality is either HIGH or LOW.

The supplier with the lowest **Quality Adjusted (QA) bid** wins and supplies one unit to the buyer. Low quality suppliers are assessed a quality penalty of 10 that is added to their bid. Your QA bid is determined as follows:

$$\begin{array}{lll} \text{QA Bid} & = \text{Your Bid} & \text{for bidders with HIGH quality} \\ & = \text{Your Bid} + 10 & \text{for bidders with LOW quality} \end{array}$$

For example, if your bid is 50 and your quality is LOW, your QA bid is $50 + 10 = 60$.

During the auction you will always know your own QA bid because you know if you are a HIGH or a LOW bidder. You will not know the bid of your competitor or the competitor's QA Bid. You will know the **rank** of your bid and whether your competitor is a HIGH or LOW bidder. Whenever your bid is below your competitor's, your bid's rank is one. When your competitor's bid is below yours, your bid's rank is 2.

You will bid in **30** consecutive auctions. You will be matched at random with a different person in the room for every auction. The cost of LOW quality bidders is an integer from 0 to 100, each integer in that range equally likely. The cost of HIGH quality bidders is an integer from 10 to 110, each integer in that range is equally likely. Your quality will be the same every round. Half of the participants in the room will have LOW quality and half will have HIGH quality. Your cost and cost of all participants in the session will be determined the same way and will change in each round.

The highest permissible bid from either a HIGH or Low quality bidder is 110.

You make money by winning at a good price. If you do not win in a round, your profit for the round is zero. If you win, then your profit is:

Your Profit = Your Bid – Your Cost.

Note: Whether you win is determined by **Your QA Bid**. Your Profit and your rank is determined by **Your Bid**.

Caution: If your bid is below your cost and you win, you will lose money. Bid carefully.

Examples

Recall that in this auction, the winning bid is the lowest quality adjusted bid:

QA Bid = Bid + Quality Penalty

Example (1):

Suppose in some auction you are a HIGH bidder, and your cost is 30. Suppose you bid 60; your QA bid is also 60.

Suppose you see that your bid's rank is 2 and your competitor is a HIGH bidder. This means that if the auction were to end right now, then your competitor will win for sure.

Suppose you see that your bid's rank is 2 and your competitor is a LOW bidder. This means that if the auction were to end right now, then you will win as long as your competitor's bid turns out to be above 50.

For example, if the auction were to end in this round (i.e., no further bids are placed), and your competitor is a LOW bidder who placed a bid of 55, then you will win because your QA bid of 60 is lower than 65, and you will be paid your bid of 60. Your profit will be your bid minus your cost = $60 - 30 = 30$.

Example (2):

Suppose in some auction you are a HIGH bidder, and your cost is 30. Suppose you bid 55.

Suppose your bid's rank is 1. If the auction were to end in this round, then you will win for certain. If your opponent is either a LOW or HIGH bidder, your current rank of 1 implies that your bid (and QA bid) is below his – hence you will win.

Your profit will be $55 - 30 = 25$.

Example (3):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 81; your QA bid is 91.

Suppose your bid's rank is 1 and your opponent is a HIGH bidder. Suppose your opponent's bid turns out to be 85. If the auction were to end in this round, then your opponent will win because his QA bid of 85 is lower than 91 and he will be paid his bid of 85. Your profit will be zero in this auction.

But if your opponent's (who you know is a HIGH bidder) bid turns out to have been 100 then you will win because your QA bid of 91 is lower than his QA bid of 100. In this case you would earn a profit of $81 - 60 = 21$.

Suppose, on the other hand you know that your opponent is a LOW bidder. Then you know for sure that you will win because your bid is in rank 1 and since you are both LOW bidders your QA bid must be lower. In this case you would earn a profit of $81 - 60 = 21$.

Example (4):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 108; your QA bid is 118.

Suppose your bid's rank is 2. If the auction were to end in this round, then your opponent will win for certain whether he is a HIGH or a LOW bidder and your profit will be 0.

Recall that the highest permissible bid by any bidder is 110. If your opponent is a HIGH bidder, his bid (and QA bid) will surely be below 118, and hence he will win. If you opponent is a LOW bidder, your current rank of 2 implies that his bid is below yours – hence your opponent's QA bid will be lower than your QA bid of 118 and he will win.

The mechanics placing a bid

Below is a sample snapshot of the screen you will be facing. As you can see under Your Information, you are given your Participant Number, your Cost and your Quality.

The screenshot shows an auction interface with the following components:

- Period:** 3 of 30
- Your information:**
 - You are Bidder: A
 - Your Cost is: 98
 - Your Quality is: LOW
 - Your Reserve is: 110
- Enter Your Bid:**
 - Input field containing 108
 - Submit Bid button
- Auction information:**
 - Your Competitor's Quality is: HIGH
 - Your Last Bid: 105
 - Your Current Rank: 2
 - Seconds Left: 10
- Competitor Bid Table:**

Bidder	Bid #	Competitor's Quality	Rank
B	1	HIGH	1
A	2	HIGH	2
- Your own past history:**

Period	Quality	Competitor's Quality	Cost	Your Bid	Your QA Bid	Winning Bid	Winner's Quality	Your Profit
1	LOW	LOW	64	80	90	50	LOW	0
2	LOW	HIGH	70	90	100	70	HIGH	0

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For example, if your bid is 50 and your quality is LOW, your QA bid is $50 + 100 = 150$.

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$$\mathbf{Your\ Profit = Your\ Bid - Your\ Cost.}$$

Note: Whether you win is determined by **Your QA Bid**. Your Profit and your rank is determined by **Your Bid**.

Caution: If your bid is below your cost and you win, you will lose money. Bid carefully.

Examples

Recall that in this auction, the winning bid is the lowest quality adjusted bid:

$$QA\ Bid = Bid + Quality\ Penalty$$

Example (1):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 150; your QA bid is also 150.

Suppose you see that your bid's rank is 2. This means that if the auction were to end right now and your competitor is a HIGH bidder, then your competitor will win for sure. But if the auction were to end right now and your competitor is a LOW bidder, then you will win as long as your competitor's bid turns out to be above 50.

For example, if the auction were to end in this round (i.e., no further bids are placed), and your competitor turns out to be a LOW bidder who placed a bid of 70, then you will win because your QA bid of 150 is lower than 170, and you will be paid your bid of 150. Your profit will be your bid minus your cost = $150 - 120 = 30$.

Example (2):

Suppose in some auction you are a HIGH bidder, and your cost is 120. Suppose you bid 145.

Suppose your bid's rank is 1. If the auction were to end in this round, then you will win for certain. If your opponent is either a LOW or HIGH bidder, your current rank of 1 implies that your bid (and QA bid) is below his – hence you will win.

Your profit will be $145 - 120 = 25$.

Example (3):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 81; your QA bid is 181.

Suppose your bid's rank is 1. Suppose your opponent's bid was 150 and he was a HIGH bidder. If the auction were to end in this round, then your opponent will win because his QA bid of 150 is lower than 181 and he will be paid his bid of 150. Your profit will be zero in this auction.

Suppose, on the other hand, your opponent's bid was 91 and he was a LOW bidder. Then you will win because your QA bid of 181 is lower than 191. In this case you would earn a profit of $81 - 60 = 21$.

Example (4):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 158; your QA bid is 258.

Suppose your bid's rank is 2. If the auction were to end in this round, then your opponent will win for certain and your profit will be 0.

Recall that the highest permissible bid by any bidder is 200. If your opponent is a HIGH bidder, his bid (and QA bid) will surely be below 258, and hence he will win. If you opponent is a LOW bidder, your current rank of 2 implies that his bid is below yours – hence your opponent's QA bid will be lower than your QA bid of 258 and he will win.

The mechanics placing a bid

Below is a sample snapshot of the screen you will be facing. As you can see under Your Information, you are given your Participant Number, your Cost and your Quality.

Period
2 of 10

<p><u>Your information</u></p> <p>You are Bidder: B Your Cost is: 145 Your Quality is: HIGH Your Reserve is: 200</p>	<p>Enter Your Bid:</p> <div style="border: 1px solid gray; padding: 2px; width: 100px; margin-bottom: 5px;">170</div> <p style="text-align: right; margin-top: 10px;">Submit Bid</p>									
<p><u>Auction information</u></p> <p>Your Last Bid: 170 Your Current Rank: 1 Seconds Left: 23</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Bidder</th> <th>Bid #</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1</td> <td>2</td> </tr> <tr> <td>B</td> <td>3</td> <td>1</td> </tr> </tbody> </table>	Bidder	Bid #	Rank	A	1	2	B	3	1
Bidder	Bid #	Rank								
A	1	2								
B	3	1								

Your own past history

Period	Quality	Cost	Your Bid	Your QA Bid	Winning Bid	Winner's Quality	Your Profit
1	HIGH	110	197	197	117	HIGH	0

To place a bid, you enter your bid amount in the Enter Your Bid box and then press the Submit Bid button. The software will check if your bid is valid. If it is, the bid will be placed after you confirm it.

The dynamics of Bidding

16. Every time someone enters a bid, you will see that bid on your screen in the table under the Submit Bid button.

17. The entries in each row of that table are:

- The bidder ID.
- The bid number which indicates the number of bids entered so far.
- The Rank of the Bid, which is 1 if the Bid is the lowest and 2 if it is not.

Remember that the bidder with the lowest QA bid wins. Under Auction Information you can see your own last bid and your current rank. Your QA bid is your bid if you are a HIGH bidder and is your bid + 100 if you are a LOW bidder.

18. You can enter as many bids as you wish, with the following exceptions:

- Your bids cannot exceed the reserve. The reserve is 200 for all bidders.
- Each bid you enter must be a lower integer than the previous bid you entered

19. The clock will count down from 60 seconds to 0 seconds. When someone enters a bid, if there are fewer than 10 seconds remaining to the end of the auction, the clock will reset to 10 seconds. Note that this auction-extension rule bars you from being able to 'sneak-in' a 'last-minute' bid (snipe). As a result, you are encouraged to make use of the entire 60 seconds and NOT wait until the last 10 seconds to submit a bid.

20. The auction ends when no bids have been placed for 10 seconds.

Information you will see at the end of each round

At the end of each round you will see a list of all bids that have been placed and learn the quality amounts.

You will also see the following information:

- The Winning Bid, the Quality, and the QA Bid of the Winner
- Your Bid, Your Quality, Your QA Bid, and Your Cost.
- Your Profit for the round

On the bottom of each screen you will also see this information for all previous rounds.

How you will be paid

At the end of the session, the computer will calculate the total profit you earned in all rounds and will convert it to US dollars at the exchange rate of **25** laboratory dollars for 1 US dollar. Your dollar earnings will be added to your **\$5** participation fee and displayed on your computer screen. Please use this information to fill out the check-out form on your desk. All earnings will be paid in cash at the end of the session.

Instructions (Rank10_N)

You are about to participate in an experiment in the economics of decision making. If you follow these instructions carefully and make good decisions you will earn a considerable amount of money that will be paid to you in cash at the end of the session. If you have a question at any time, please raise your hand and I will answer it. We ask that you not talk with one another for the duration of the experiment.

On your desk you should have a check-out form, a pen and a copy of the consent form.

How to make money

You are a supplier of some product. To make money you must sell that product to a computerized buyer. In each auction you will be competing against one other randomly-chosen participant (supplier) in this room. To sell the product, you offer the buyer a price; this offer is **Your Bid**.

Before you make **Your Bid**, you will know your **Cost** of supplying one unit, and the **Quality** of your product.

The quality is either HIGH or LOW.

The supplier with the lowest **Quality Adjusted (QA) bid** wins and supplies one unit to the buyer. Low quality suppliers are assessed a quality penalty of 10 that is added to their bid. Your QA bid is determined as follows:

$$\begin{array}{lll} \text{QA Bid} & = \text{Your Bid} & \text{for bidders with HIGH quality} \\ & = \text{Your Bid} + 10 & \text{for bidders with LOW quality} \end{array}$$

For example, if your bid is 50 and your quality is LOW, your QA bid is $50 + 10 = 60$.

During the auction you will always know your own QA bid because you know if you are a HIGH or a LOW bidder. You will not know the bid of your competitor or the competitor's QA Bid. You will know the **rank** of your bid. Whenever your bid is below your competitor's, your bid's rank is one. When your competitor's bid is below yours, your bid's rank is 2.

You will bid in **30** consecutive auctions. You will be matched at random with a different person in the room for every auction. The cost of LOW quality bidders is an integer from 0 to 100, each integer in that range equally likely. The cost of HIGH quality bidders is an integer from 10 to 110, each integer in that range is equally likely. Your quality will be the same every round. Half of the participants in the room will have LOW quality and half will have HIGH quality. Your cost and cost of all participants in the session will be determined the same way and will change in each round.

The highest permissible bid from either a HIGH or Low quality bidder is 110.

You make money by winning at a good price. If you do not win in a round, your profit for the round is zero. If you win, then your profit is:

Your Profit = Your Bid – Your Cost.

Note: Whether you win is determined by **Your QA Bid**. Your Profit and your rank is determined by **Your Bid**.

Caution: If your bid is below your cost and you win, you will lose money. Bid carefully.

Examples

Recall that in this auction, the winning bid is the lowest quality adjusted bid:

QA Bid = Bid + Quality Penalty

Example (1):

Suppose in some auction you are a HIGH bidder, and your cost is 30. Suppose you bid 60; your QA bid is also 60.

Suppose you see that your bid's rank is 2. This means that if the auction were to end right now and your competitor is a HIGH bidder, then your competitor will win for sure. But if the auction were to end right now and your competitor is a LOW bidder, then you will win as long as your competitor's bid turns out to be above 50.

For example, if the auction were to end in this round (i.e., no further bids are placed), and your competitor turns out to be a LOW bidder who placed a bid of 55, than you will win because your QA bid of 60 is lower than 65, and you will be paid your bid of 60. Your profit will be your bid minus your cost = $60 - 30 = 30$.

Example (2):

Suppose in some auction you are a HIGH bidder, and your cost is 30. Suppose you bid 55.

Suppose your bid's rank is 1. If the auction were to end in this round, then you will win for certain. If your opponent is either a LOW or HIGH bidder, your current rank of 1 implies that your bid (and QA bid) is below his – hence you will win.

Your profit will be $55 - 30 = 25$.

Example (3):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 81; your QA bid is 91.

Suppose your bid's rank is 1. Suppose your opponent's bid was 85 and he was a HIGH bidder. If the auction were to end in this round, then your opponent will win because his QA bid of 85 is lower than 91 and he will be paid his bid of 85. Your profit will be zero in this auction.

Suppose, on the other hand, your opponent's bid was 91 and he was a LOW bidder. Then you know for sure that you will win because your bid is in rank 1 and since you are both LOW bidders your QA bid must be lower. In this case you would earn a profit of $81 - 60 = 21$.

Example (4):

Suppose in some auction you are a LOW bidder, and your cost is 60. Suppose you bid 108; your QA bid is 118.

Suppose your bid's rank is 2. If the auction were to end in this round, then your opponent will win for certain and your profit will be 0.

Recall that the highest permissible bid by any bidder is 110. If your opponent is a HIGH bidder, his bid (and QA bid) will surely be below 118, and hence he will win. If you opponent is a LOW bidder, your current rank of 2 implies that his bid is below yours – hence your opponent's QA bid will be lower than your QA bid of 118 and he will win.

The mechanics placing a bid

Below is a sample snapshot of the screen you will be facing. As you can see under Your Information, you are given your Participant Number, your Cost and your Quality.

- Period
3 of 30

<p style="text-align: center;"><u>Your information</u></p> <p>You are Bidder: A Your Cost is: 45 Your Quality is: HIGH Your Reserve is: 110</p>	<p style="text-align: center;">Enter Your Bid:</p> <div style="border: 1px solid gray; width: 80px; text-align: center; margin: 5px;">66</div> <p style="text-align: right; margin-top: 10px;">Submit Bid</p>									
<p style="text-align: center;"><u>Auction information</u></p> <p>Your Last Bid: 66 Your Current Rank: 1</p> <p style="text-align: center; margin-top: 10px;">Seconds Left: 35</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Bidder</th> <th>Bid #</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>B</td> <td>1</td> <td>2</td> </tr> <tr> <td>A</td> <td>2</td> <td>1</td> </tr> </tbody> </table>	Bidder	Bid #	Rank	B	1	2	A	2	1
Bidder	Bid #	Rank								
B	1	2								
A	2	1								

Your own past history

Period	Quality	Competitor's Quality	Cost	Your Bid	Your QA Bid	Winning Bid	Winner's Quality	Your Profit
1	HIGH	HIGH	52	60	60	60	HIGH	0
2	HIGH	LOW	56	70	70	70	HIGH	14

To place a bid, you enter your bid amount in the Enter Your Bid box and then press the Submit Bid button. The software will check if your bid is valid. If it is, the bid will be placed after you confirm it.

The dynamics of Bidding

21. Every time someone enters a bid, you will see that bid on your screen in the table under the Submit Bid button.
22. The entries in each row of that table are:
 - The bidder ID.
 - The bid number which indicates the number of bids entered so far.
 - The Rank of the Bid, which is 1 if the Bid is the lowest and 2 if it is not.

Remember that the bidder with the lowest QA bid wins. Under Auction Information you can see your own last bid and your current rank. Your QA bid is your bid if you are a HIGH bidder and is your bid + 10 if you are a LOW bidder.

23. You can enter as many bids as you wish, with the following exceptions:
 - Your bids cannot exceed the reserve. The reserve is 110 for all bidders.
 - Each bid you enter must be a lower integer than the previous bid you entered
24. The clock will count down from 60 seconds to 0 seconds. When someone enters a bid, if there are fewer than 10 seconds remaining to the end of the auction, the clock will reset to 10 seconds. Note that this auction-extension rule bars you from being able to ‘sneak-in’ a ‘last-minute’ bid (snipe). As a result, you are encouraged to make use of the entire 60 seconds and NOT wait until the last 10 seconds to submit a bid.
25. The auction ends when no bids have been placed for 10 seconds.

Information you will see at the end of each round

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