

PLEASE DO NOT REFRESH THIS PAGE. PLEASE COMPLETE THE TASK AT ONCE.  
Please answer all the questions.

# Strategic Manipulation Game

This is a fun game in which you have to **think carefully, act strategically, and cheat as much as you can** to maximize your winnings!

[Begin intro](#)

## Strategic Game

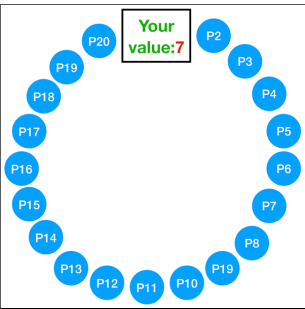
You are one of **20 players** participating in the **strategic game**. You will play 5 independent rounds of the game and each round is organized as follows:

- Step A.** Each player is privately assigned a unique number from 1 to 20 which becomes their value. Each player knows their value, but nobody knows the values of other players.
- Step B.** Each player is informed about the values assigned to 4 of their counterparts.
- Step C.** Each player privately reports the **ranking** of 4 peers they know.
- Step D.** Rankings received in **Step C** are used to construct a total ordering of players (will be explained below).

**Your goal is to manipulate your ranking and improve your position in the total ordering.**

Let's go through an example to better understand the rules.

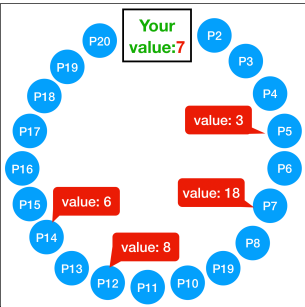
[Example](#)



### Step A

Each player is privately assigned a value. You don't know the values of other players and they don't know your value, but everyone knows their own value. In this example, your value is 7.

[Go to step B](#)

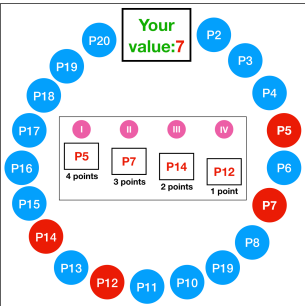


### Step B

You are informed about the values received by 4 of your counterparts: **player 5 (value is 3), player 7 (value is 18), player 12 (value is 8) and player 14 (value is 6).**

Your value also becomes available to some 4 other players.

[Go to step C](#)

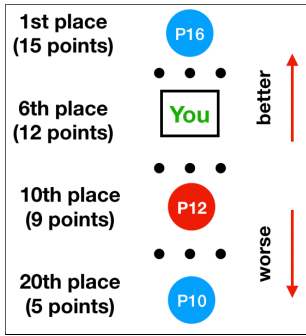


### Step C

You now need to rank the 4 players whose values were communicated to you. **The player you rank first will get 4 points, the second in your ranking will get 3 points, the third will get 2 points and the last player will get 1 point.**

For example, suppose you rank these players as in the left image, then this gives 4 points to player 5, 3 points to player 7, 2 points to player 14 and 1 point to player 12.

[Go to step D](#)



#### Step D

When rankings received from everyone in **Step C** are mapped into scores, players are ordered by the total number of points they receive: **the player with the highest total score gets the first place, the player with the lowest total score gets the last place, and so on. Your goal is to manipulate your ranking and improve your position in this ordering!**

Got it!

## Part 1. Playing against truthful competitors

In the first 4 rounds of the game, you play against 19 computer bots who are guaranteed to **truthfully rank their peers according to their values** (the highest value gets the first place and the lowest value gets the last place). **Your goal is to manipulate the ranking you return to improve your position.**

In each round, **you win if your strategy improves your position.** In the above example, your value is 7 which means that 13 other players have larger values (i.e., values 20, 19, 18, ..., 8). If you choose the right strategy and improve your position (i.e., end up 13th or higher in the final ordering), you win. Otherwise, you lose.

In Part 1, you will play 4 rounds of the game and you should maximize your winnings!

Lets begin!

## Round 1 (out of 5)

### Step A

Your value in this round:

your  
value  
17

To win in this round, you need to **find a strategy that improves your position** in the final ordering.

### Step B

Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d
value 16	value 19	value 6	value 1

### Step C

Please provide your ranking

Keep in mind that your competitors are guaranteed to rank players according to their values.

First place: Player

Second place: Player

Third place: Player

Fourth place: Player

My ranking is ready!

Please carefully describe the strategy you used to rank other players.

Ready!

### Step D

## Outcome of round 1

There were 3 players with values larger than yours. **The ranking you provided did not improve your position** in the aggregated total ordering. **Unfortunately, you lose in this round.**

Continue!

Round 2 (out of 5)

Step A

Your value in this round:

your  
value  
4

To win in this round, you need to find a strategy that improves your position in the final ordering.

Step B

Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d
value 19	value 12	value 7	value 8

Step C

Please provide your ranking

Keep in mind that your competitors are guaranteed to rank players according to their values.

First place:	Player <input type="text" value="a"/>
Second place:	Player <input type="text" value="b"/>
Third place:	Player <input type="text" value="c"/>
Fourth place:	Player <input type="text" value="d"/>

My ranking is ready!

Have you changed your strategy as compared to one used in the previous round? If yes, please explain the new strategy.

Ready!

Step D

Outcome of round 2

There were 16 players with values larger than yours. The ranking you provided helped you to improve your position in the aggregated total ordering. Congratulations, you win in this round!

Continue!

Hint

To get the bonus point, it is enough to improve your position by at least one place. Keep this in mind and think about the following 3 questions that will help you understand the mechanism of the game:

Q1: Consider the settings in the image below, do you think that you (with value 9) can manipulate your ranking to overtake Player a?

☐ Yes ☒ No

You are right!

Intuition 1: Player a has a value much larger than yours and 3 other players who rank Player a will put them at the top of the rankings, which will give them 11-12 points even without your ranking. In contrast, 4 players who rank you will likely put you only in the middle of their rankings, which will give you 9-11 points total. Even if you give only 1 point to Player a, it is unlikely that you will get over them.

Got it!

Q2: In the settings depicted in the image below, which player can you (with value 9) most realistically improve over?

☐ Player a ☐ Player b ☒ Player c ☐ Player d

You are right!

Intuition 2: The closer the value of a competing player to your value, the better your chances of overtaking that player by selecting the right manipulation. Think what should be the position of Player c in your ranking so you improve over them?

Got it!

Q3: When thinking how to improve over Player c, be aware of another player that has chances to overtake you if you do not place them in the right position. Who is this player?

☐ Player a ☐ Player b ☒ Player d

You are right!

**Intuition 3:** The closer the value of a competing player to your value, the larger the cost of the mistake you can make. If you put **Player d** too high in the ranking, they may end up higher than you in the final ordering despite having a lower value. Take care of such players!

I'll think about this! **Scroll down**

### Example

#### Step A

**Your value** in this round:

your  
value  
9

#### Step B

Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d
value 19	value 2	value 10	value 8

### Round 3 (out of 5)

#### Step A

**Your value** in this round:

your  
value  
19

#### Step B

Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d
value 11	value 8	value 2	value 13

#### Step C

**Please provide your ranking**

Keep in mind that your competitors are guaranteed to rank players according to their values.

First place: Player

Second place: Player

Third place: Player

Fourth place: Player

My ranking is ready!

Have you changed your strategy as compared to one used in the previous round? If yes, please explain the new strategy.

Resful

Step D  
Outcome of round 3

There was 1 player with values larger than yours. **The ranking you provided helped you to improve your position** in the aggregated total ordering. **Congratulations, you win in this round!**

Continue!

Round 4 (out of 5)

Step A  
Your value in this round:

your  
value

15

To win in this round, you need to **find a strategy that improves your position** in the final ordering.

Step B  
Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d
value 16	value 13	value 6	value 20

Step C  
Please provide your ranking  
Keep in mind that your competitors are guaranteed to rank players according to their values.

First place: Player

Second place: Player

Third place: Player

Fourth place: Player

My ranking is ready!

Have you changed your strategy as compared to one used in the previous round? If yes, please explain the new strategy.

Ready!

Step D  
Outcome of round 4

There were 5 players with values larger than yours. **The ranking you provided did not improve your position** in the aggregated total ordering. **Unfortunately, you lose in this round.**

Continue!

Part 2. Playing against your classmates

We hope you've fully warmed up since in this last round you will **play against your classmates!** **Your goal remains the same: manipulate the ranking YOU return to improve YOUR position**, but you are no longer guaranteed that your competitors always rank players by their values.

There will be no real-time feedback available as we need to analyze your responses together with responses of your classmates, but we will let you know the results soon!

Lets begin!

Round 5 (out of 5)

Step A  
Your value in this round:

Step B  
Now you know the values of 4 other players which are as follows:

Player a	Player b	Player c	Player d

your  
value

12

To win in this round, you need to **find a strategy that improves your position** in the final ordering.

value 3	value 6	value 20	value 9
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**Step C**  
**Please provide your ranking**  
Keep in mind that you play against your classmates who may behave strategically as well.

First place: Player

Second place: Player

Third place: Player

Fourth place: Player

My ranking is ready!

Please carefully describe the strategy you used to rank other players.

Ready!

Thank you for your participation.