

Let's Imagine

You committed a minor crime with your friend. You two have been arrested and put in separate rooms since the police think you two have committed a more serious crime. Both of you can either stay silent or betray. Staying silent would be cooperating, and betraying would be defecting.

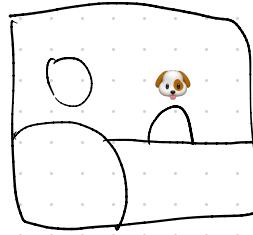
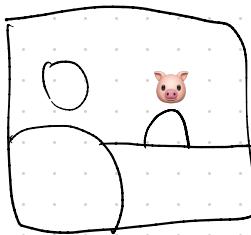


Stay silent



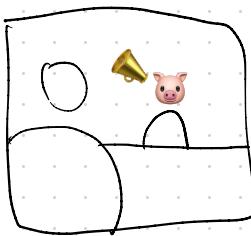
betray

You can't talk to each other, and you have no idea whether your friend will stay silent or testify against you.

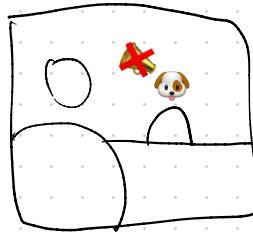


If you betray by admitting your friend committed the crime, you will go free, but your friend won't.

text and
images
change,
but the
text and
images are
still displayed
at the
same position

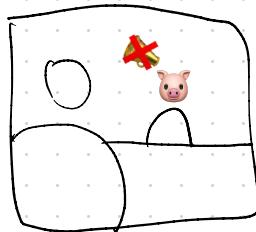


0 year



3 years

But if you stay silent, but your friend betrays you, you'll have to spend 3 years in prison.

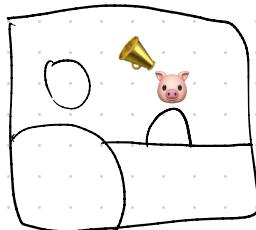


3 years

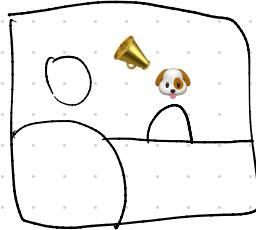


0 year

If you both betray each other, both have to spend 2 years in prison

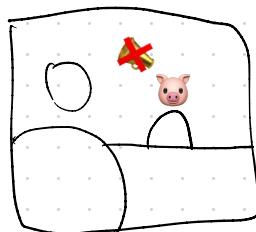


2 years

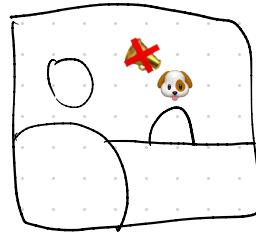


2 years

If both of you cooperate and stay silent, each of you will spend 1 year in prison for the minor crime that you did committed.



1 year



1 year

let's summarize them into a matrix.

		
	 Cooperate	 defect
 Cooperate		
	 detect	

If both of you stay silent:

		
	 Cooperate	 defect
 Cooperate		
	 detect	

If one of you betrays, the betrayer goes free and the silent one spends 3 years in prison.

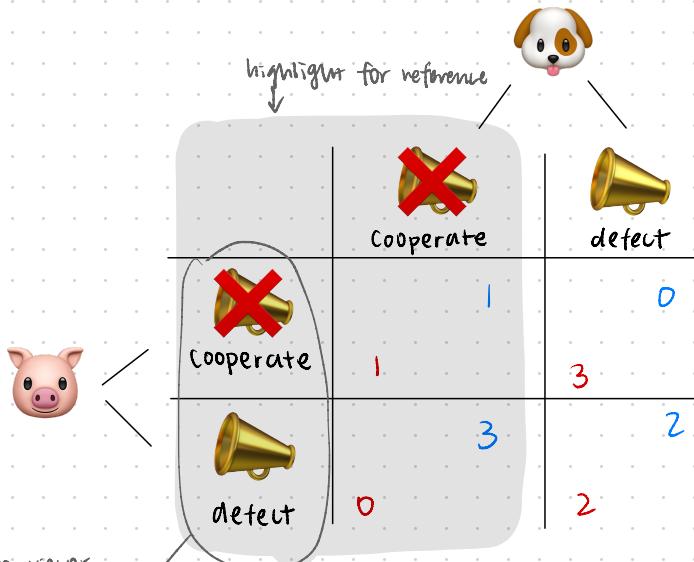
		
	 Cooperate	 defect
	 Cooperate	1 0
	 defect	3 3

If both of you betray, both of you spend 2 years in prison.

		
	 Cooperate	 defect
	 Cooperate	1 0
	 defect	3 2

What are you going to do?

What's the best move if you think your friend is going to cooperate?



(if chose to cooperate)

Choosing to cooperate (i.e. stay silent) will still make you have to spend 1 year in prison.

Choosing to defect will free you instead. Therefore, the best move considering that

Your friend is going to cooperate is still defect them, so that you can be free.

		Cooperate	defect
Cooperate	Cooperate	1	0
	defect	3	2
defect	Cooperate	1 1 > year 3	2
	defect	0	2

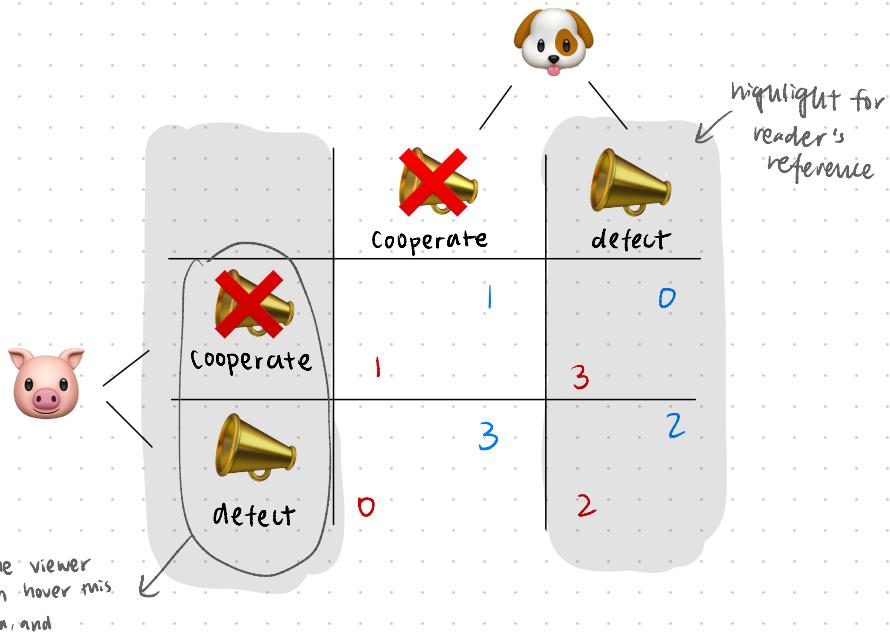
(if chose to defect)

Since defecting will exempt you from going to jail, it's reasonable why you choose to defect

		Cooperate	defect
Cooperate	Cooperate	1	0
	defect	3	2
defect	Cooperate	1 0 < 1 year 3	2
	defect	0	2

What are you going to do?

What's the best move if you think your friend is going to defect?



(if chose to cooperate)

Choosing to cooperate (i.e. stay silent) will make you have to spend 3 years in prison

Choosing to defect will reduce 1 year instead. Therefore, the best move considering that

Your friend is going to defect you is to defect them.

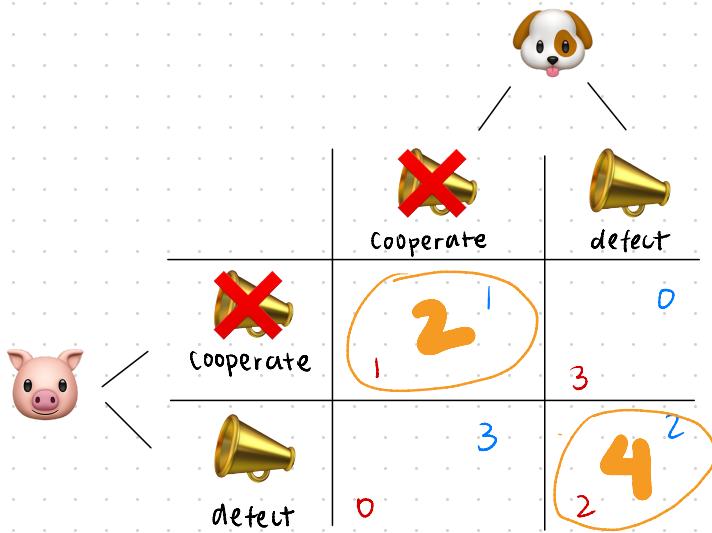
		
	 Cooperate	 defect
	Cooperate 	1 0
	 defect	3 3 > 2 years ² 2

(if chose to defect)

Since defecting will reduce the sentence from 3 to 2 years. It's reasonable why you choose to defect.

		
	 Cooperate	 defect
	Cooperate 	1 0
	 defect	3 2 < 3 years ² 2

The best move regardless of your friend's actions is to testify against them. If your friend is also rational, and has chosen individual reward as the priority, they will also defect you. This will lead to each of you spending 2 years in prison. However, if you both are determined to cooperate for mutual benefits, each of you will only spend 1 year in prison.



(summary)

Prisoner's dilemma explains the situation when people don't want to work together