A variation of the iterated Prisoner's Dilemma

In the galactic quadrant of Veridian Prime, a rare phenomenon known as the Celestial Convergence occurred once every thousand years. During this cosmic event, a planet with unparalleled resources and ancient relics emerged from the depths of space, attracting the attention of multiple interstellar species.

Among those vying for control were the human Consortium, the reptilian Drak'ul Empire, and the ethereal beings known as the Luminescents. Each species saw the potential of the planet to elevate their civilization to new heights of power and prosperity.

As tensions escalated, the leaders of each faction convened aboard the neutral space station, Nexus Prime, to negotiate a resolution. Admiral Sarah Khatri represented humanity, General Vrak'tor stood for the Drak'ul, and High Priestess Aeloria spoke on behalf of the Luminescents.

Faced with the complexity of the situation, the leaders realized they were entangled in a prisoner's dilemma of cosmic proportions. The allure of claiming the planet for themselves was undeniable, but the risks of conflict threatened to engulf them all.

In a galaxy teeming with diverse life forms and boundless potential, the fate of the Celestial Convergence hangs in the balance. As the leaders of humanity, the Drak'ul Empire, and the Luminescent beings embark on their journey of cooperation and discovery, what challenges will they face? How will their alliance withstand the pressures of greed, mistrust, and unforeseen obstacles? And ultimately, what legacy will they leave for future generations among the stars? The answers lie within the vast expanse of the cosmos, waiting to be explored and shaped by the choices of those who dare to seek them…

The Prisoner's Dilemma is a classic scenario in game theory where two individuals, acting in their own self-interest, may not cooperate even when it seems mutually beneficial to do so. In this dilemma, two suspects are arrested and isolated from each other, given the option to either cooperate with each other by remaining silent or betray each other by confessing to the crime. The outcomes depend on the choices made by both parties, leading to four possible outcomes with different payoffs.

1. If both prisoners remain silent (cooperate), they will each serve a short sentence, say 1 year, for the lesser charge.
2. If one remains silent while the other confesses (betray), the one who confesses will go free (goes to jail for 0 years), and the other will serve a long sentence, say 3 years.
3. If both confess (both betray), they will each serve a moderately long sentence, say 2 years.

In the Iterated Prisoner's Dilemma, the scenario is played repeatedly over multiple rounds, allowing players to remember and react to each other's previous choices. This iteration introduces the possibility of building trust, fostering cooperation, or retaliating against betrayal based on past interactions. Strategies can evolve as players adapt to their opponent's behaviour, leading to complex dynamics of cooperation and competition over time. Various strategies have been developed and studied extensively in the context of the Iterated Prisoner's Dilemma, revealing insights into human behaviour and decision-making strategies.

The Prisoner's Dilemma by The Place: https://youtu.be/t9Lo2fgxWHw?feature=shared

The Iterated Prisoner's Dilemma by The Place: https://youtu.be/BOvAbjfJ0x0?feature=shared

What Game Theory Reveals About Life by Veritasium: https://youtu.be/mScpHTIi-kM?feature=shared

The intent of this version however is to emphasize the human/institutional aspect i.e. long-term relations lead to long-term benefits, but also harbours the risk of great loss.

The payoff matrix is as follows:

	Co-op	Defect
Co-op	20+5N	-10N|45
Defect	45|-10N	-5N|-5N

Here N increases with 5 successive co-operations. There are 150-20 rounds.

Note that there sometimes, about 1-2%, a co-operation from your opponent can be misinterpreted as a defection. In such a case the streak is halved. You are sceptical but not distrustful. But if either party defects, the streak is reset.

Here's how you can code your own strategy:

return 1 to co-operate

return -1 to defect

```
1   from agent import BaseAgent
2
3   class Agent(BaseAgent):
4       def __init__(self, id):
5           super().__init__(id=id)
6
7       def next_move(self, state):
8           op_id = 1 if self.id == 2 else 2
9           itr = state["current_iter"]
10          if itr == 1:
11              return 1
12          return state["history"][itr - 1][op_id]
```

Line 1-8 is your template. Don't touch that.

Line 9 itr = state["current_iter"] will give you the number of the round yet to be played.

Line 10 – 11 returns 1 on the first round

Line 12 returns the what the opponent played the previous round

```
state["history"][itr - 1][op_id]
```

"history" contains a record of all the moves played.

Then we write the round which we want access to. [itr-1] is the previous round, [itr-2] is the one before that and so on.

[op_id] tells you your opponent's move, [self.id] tells you your own move for that round.

Note: If your index goes beyond the rounds played, your code won't work. There are no global variables you have access to other the history. Anything you compute in one round will be forgotten in the next. Your code will get 0.01 s to come up with the next move.

Choose with utmost care, for in your hands rests the destiny of humanity, a future shaped by the echoes of your decision…