Introduction to Game Theory

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Exercise Sheet 9

Due: Friday, July 3rd, 2015

Exercise 9.1 (Extensive games with simultaneous moves, 4 points)

There is a group of 1000 pirates, who are all extremely greedy, heartless, and rational. Also, every pirate knows that every other pirate has this attitude as well. Their respective position in the group is higher the earlier they joined the group, from pirate 1 down to pirate 1000.
The pirates found a treasure and have to decide how to split it among themselves. Every day they vote whether to kill the lowest ranked pirate or to split the treasure among the living pirates. If at least 50% vote for splitting the treasure, they will do so. Otherwise, the lowest ranked pirate is killed and the procedure continues on the next day.
When will the treasure be split up and how does the voting proceed?

Exercise 9.2 (Repeated Prisoner's Dilemma, 4 points)

Your task is to write a player for the finitely repeated prisoner's dilemma. The framework you are supposed to extend can be found on the course website[1]. Please extend the `Player` class similar to the `TitForTatPlayer` provided in the Python module. Do not modify the classes `GameMaster` and `Player`. Implement your player's strategy in the way you expect to perform best against other players from the game theory class. We will run a tournament where each player competes against each of the other players. The authors of the player with the overall maximum score earn 2 additional points for this exercise. Each encounter consists of 100 repetitions. We use the scores according to the following payoff matrix and no discounting:

		Player 2	
		C	D
Player 1	C	$1,1$	$4,0$
	D	$0,4$	$3,3$

The exercise sheets may and should be worked on and handed in in groups of two students. Please indicate both names on your solution.

[1] `http://gki.informatik.uni-freiburg.de/teaching/ss15/gametheory/prisoners.py`