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Modeling Multi-agent Scenarios

Homework #1

1)Socializer

The purpose of the game is to get as many "happiness coins" as possible, at the same time to be socialized and get new friends through this game ☺ . The idea is simple but it seems interesting to me.

	Yes	No
Yes	5,5	-1,3
No	3,-1	0,0

It is a 2-player game. Each of them will be given the question: "Do you like her/him?" The choices are "Yes" or "No". If both agents' answer is "Yes", then both of them receive 5 happiness coins. This joint action is the most profitable for both of players and eventually repeated outcome of it will be the logical culmination of the game (they both like each other, consequently they are going to be good friends ☺), however if they both answer "No", then the payoff is 0 happiness coins for both of them. If one of the players answers "Yes", whereas the other's answer is "No", then the latter will receive -1 coins, while the other player will get 3. This joint action has positive outcome for one agent and negative for the other.

Socializer is a conflicting interest game. It is a simultaneous-move game, both players don't know each other's answers before making a step. Players are aware of each other's actions and payoffs.

While it can be played both as a one-shot and a repeated game, it is more interesting and funny to play as a repeated game because it will become more and more interesting after each step.

The purpose of the game is not only getting more happiness coins and winning, but also getting new friends. From my perspective, for a group of people who don't know each other (e.g. for first year students on their first lesson) the best and fastest way of getting acquainted is to play this game. This way they can get acquainted with each other easily and won't be ashamed of that (We all enjoy playing games).

2)Stay Alive

	Shoot right	Shoot straight	Shoot left
Keep right	-1,1	1,-1	1,-1
Keep standing	1,-1	-1,1	1,-1
Keep left	1,-1	1,-1	-1,1

This is a constant-sum game (specifically zero-sum) between 2 players, each of them has different goals. After every joint action, players receive "life coins". Blue player's aim is to have not less than 0 coins after each action, while for Gray one it is not to let that happen. In other words, the Blue player is the "target" and the Gray is the hunter. The game is finished in two cases:

- The Blue player's coins are under 0, the Gray player wins;
- The Gray player's coins are less than -3, Blue player wins.

It is a repeated, simultaneous-move game. Players are aware of each other's actions and payoffs.

From my point of view, if the players are not familiar to each other, there is no winning strategy, however in the opposite case a player can observe the other player's turns and find out which turn he/she did most of the time and bet mostly on that choice.