Game theory

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Exercise Sheet 2
Due: Monday, April 29, 2013

Exercise 2.1 (Strategic Games, 4 points)

Formalize the game "Rock, Paper, Scissors, Lizard, Spock"[1] as a strategic game, i.e., specify a set of players, sets of actions for all players, and utility functions in terms of a payoff matrix. The winners of the possible pairings follow from the following graph.
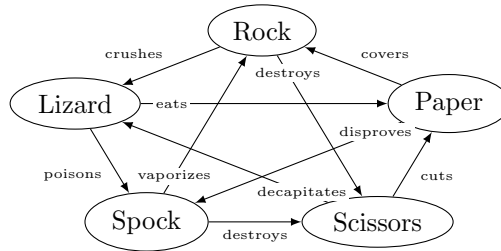
Exercise 2.2 (Elimination of strictly dominated strategies, 3+1 points)

Consider the game $G = \langle N, (A_i)_{i \in N}, (u_i)_{i \in N} \rangle$ with $N = \{1, 2\}$, $A_i = \{a_i, b_i, c_i, d_i\}$, $i = 1, 2$, and the following payoff matrix.

Player 2

	a_2	b_2	c_2	d_2
a_1	6, 2	2, 7	1, 4	0, 3
b_1	1, 0	3, 2	2, 1	1, 1
c_1	7, 0	2, 2	1, 5	6, 1
d_1	8, 4	1, 2	0, 2	3, 9

Player 1

(a) Perform the iterative procedure of eliminating strictly dominated strategies until no further strategies can be eliminated. In each step, specify which strategy of which player was eliminated and due to which dominating strategy this occurred.

(b) Specify the set of Nash equilibria in this game. Which action should player 1 play accordingly?

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[1] http://www.slashfilm.com/2008/11/27/votd-rock-paper-scissors-lizard-spock/

Exercise 2.3 (Games and Behavior, 2 points)

As explained in class, you will occasionally be asked to participate in "on-line experiments" that will help you understand games and decision problems to be discussed later on in the course.

There are no "right" and "wrong" answers to the posted problems. Please respond to them as naturally as possible.

We will be able to monitor which sets you have completed. We will *not* have any access to your individual answers. We will only have access to aggregate statistics of the class' responses and will use these in class discussions.

In order to participate in the experiments you will first need to register. Please login at `http://gametheory.tau.ac.il/student/` .

You will need to enter the course number which is *2245* and your E-mail address. The initial password was handed out in class (if you missed it, ask us!), but you will need to select a new personalized password.

Please remember the login name and the personalized password you have selected. (You will be able to retrieve the password if it is lost.)

Following registration you will be automatically directed to the first problem set. Please respond to all the problems in the set. Once you have completed the set you will receive confirmation (by means of a red checkmark) and your session will be recorded.

In case you are interrupted before you finish the set you will be able to login again and resume the set from the point you stopped at.

The deadline for responding to the first set is 11 PM on Monday, April 29, 2013.