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Algorithmic Game Theory
Winter Term 2020/21
Tutorial Session - Week 2

As last week, once entered the Zoom Breakout-Rooms, make sure your camera and microphone are switched on. Start with a quick introduction. Afterwards, you are supposed to discuss the exercises on this sheet and in addition talk about definitions, proof ideas and techniques used in the lecture. Also, feel free to open the lecture notes and have a look if you don't remember a certain definition or theorem by hard.

Exercise 1:
Consider the following cost-minimization game. Two car drivers approach a junction. Both drivers can either stop at (S) or cross (C) the junction. If a driver decides to stop, small costs emerge to her because of the waiting time. If both drivers decide to cross the junction, they will crash - resulting in high costs for both drivers. List all pure and mixed Nash equilibria.

	C(ross)	S(top)
C(ross)	100 / 100	1 / 0
S(top)	0 / 1	1 / 1

Exercise 2:

a) Specify the payoff matrix for the well-known game rock-paper-scissors[1]. Assume that winning has a cost of -1, losing a cost of 1, a tie a cost of 0.

b) Mark the best responses with boxes. Do we have a pure Nash equilibrium?

c) Compute a mixed Nash equilibrium. Could you have guessed it?

Exercise 3:
Consider the following symmetric network congestion game with two players. Rewrite the game as a bimatrix game. Why is it sufficient to state only the upper or lower triangular matrix?

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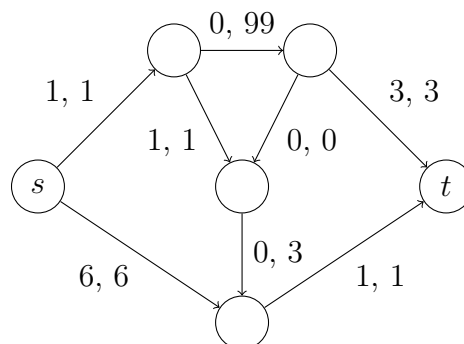
[1]https://en.wikipedia.org/wiki/Rock_paper_scissors