Algorithmic game theory — Homework 3[1]

(Coarse) correlated equilibria

assigned 18.11.2024, deadline 2.12.2024

Homework 1. *Let $G = (P = \{1, 2\}, A, u)$ be a normal-form game of two players with $A_1 = \{a, b, c\}$ a $A_2 = \{d, e, f\}$ and with the utility function from Table 1.*

	d	e	f
a	(1,1)	(-1,-1)	(0,0)
b	(-1,-1)	(1,1)	(0,0)
c	(0,0)	(0,0)	(-1.1,-1.1)

Table 1: The game from Exercise 1.

Show that the probability distribution p on A with $p(a, d) = p(b, e) = p(c, f) = 1/3$ is a coarse correlated equilibrium in G (CCE), but it is not a correlated equilibrium in G (CE). **[3]**

Homework 2. *Let $G = (P = \{1, 2\}, A, u)$ be a normal-form game of two players with $A_1 = \{U, D\}$ and $A_2 = \{L, R\}$ with payoff function u depicted in Table 2. Determine the set of all correlated equilibria of G.* **[4]**

	L	R
U	(4,4)	(1,5)
D	(5,1)	(0,0)

Table 2: The game from Exercise 2.

[1] Information about the course can be found at http://kam.mff.cuni.cz/~balko/