

TUTORIAL 2 – DUE TO OCTOBER 14TH, 2016

Please respond in detail to each question. Any unjustified or unexplained response will be considered as false.

Exercise 1 – World war II game

Throughout the twentieth century, some soldiers in battle refused to fire their weapons. Some studies of the WWII found that up to 80 percent of weapons were not fired when the enemy was engaged. Why is this an example of the prisoner dilemma?

Exercise 2 – Auctions

A single and indivisible object (for example a smartphone) is to be sold at auctions. There are $n > 1$ bidders. The auction proceeds as follows:

- Each bidder i submits a proposal in an envelope b_i
- The bidder who submits the highest bid wins the item and pays for getting it the second best bid price: $y = \max_{i \neq j} b_j$

We assume that each bidder has an evaluation v_i for this item that reflects the value of this item for him. Then if i wins and j has made the next highest bid then i 's payoff is $u_i = v_i - b_j$ and the payoff for every other bidder is zero.

1. Show that truth telling is the best strategy and does not depend on whether other players use this strategy
2. Is there a dominant strategy equilibrium? Which one?

Exercise 3 – Eliminating dominated strategies

Applied the iterated elimination of dominated strategies to the following strategic form game. Note that it may be possible that there remain more than one strategy for each player. Say exactly in what order you eliminate rows and columns and if you get a sophisticated equilibrium

	N	C	J
N	73,25	57,42	66,32
C	80,26	35,12	32,54
J	28,27	63,31	54,29

	a	b	c	d	e
A	63, -1	28, -1	-2, 0	-2, 45	-3, 19
B	32, 1	2, 2	2, 5	33, 0	2, 3
C	54, 1	95, -1	0, 2	4, -1	0, 4
D	1, -33	-3, 43	-1, 39	1, -12	-1, 17
E	-22, 0	1, -13	-1, 88	-2, -57	-3, 72

Exercise 4 – Eliminating dominated strategies

1. Provide an example of a two-player strategic form game in which Player 1 has 3 strategies, Player 2 has 4 strategies and in which the iterated elimination of dominated strategies leads to different results depending on the order in which strategies are eliminated. This means that in the first case you begin by player 1; and in the second case you begin by player 2. In one case, the game is solvable while it is not solvable in the other case.
2. Provide an example of a two-player strategic form game in which Player 1 has 3 strategies, Player 2 has 4 strategies and in which the iterated elimination of dominated strategies leads to the same result if you change the order in which strategies are eliminated. This means that in the first case you begin by player 1; and in the second case you begin by player 2. In the two cases, the game is not solvable.
3. Provide an example of a two-player strategic form game in which Player 1 has 3 strategies, Player 2 has 4 strategies and in which the iterated elimination of dominated strategies leads to the same result if you change the order in which strategies are eliminated. This means that in the first case you begin by player 1; and in the second case you begin by player 2. In the two cases, the game is solvable.