CUR 412 - Game Theory and its Applications

Homework #5

- Due Date: June 14. Late homeworks will have a 50% penalty.
- Everyone must individually write up their own answers.
- Please write your names in English.

Note: the numbers of the exercises **may be different** if you are using an electronic copy of the textbook! Please check that the **name** of the exercise is the same.

0) We define the following strategies for the Repeated PD:
    a. "Tit-for-Tat-D" is the same as "Tit-for-Tat", except it plays D at the beginning of the game instead of C.
1) Suppose the following two strategies are played against each other in the Repeated Prisoner's Dilemma. Write down the outcomes of the first 5 rounds of the game, and calculate the discounted average payoff for each player's infinite sequence of payoffs, for a given discount factor δ.
    a. "Grim Trigger" vs. "Grim Trigger"
    b. "Tit-for-Tat" vs. "Always Defect
    c. "Tit-for-Tat-D" vs. "Tit-for-Tat"
2) Now, suppose that the first player in the following matchups does a *one-shot deviation* at the beginning of the game: it deviates in the first round, then *reverts* to the specified strategy in future rounds. Write down the outcomes of the first 5 rounds of the game, and calculate the discounted average payoff for each player's infinite sequence of payoffs, for a given discount factor δ.
3)
    a. "Tit for Tat" vs. "Tit for Tat"
    b. "Modified Grim Trigger" vs. "Modified Grim Trigger"
    c. ""Tit-for-Tat-D" vs. "Tit-for-Tat-D"

Exercises from Chapter 14 in textbook:

- 442.1 (Deviations from grim trigger strategy)
- 445.1 (Tit-for-tat as a subgame perfect equilibrium)