PS/Ec 172, Homework 7
Due Wednesday, May 25th

Collaboration on homework is encouraged, but individually written solutions are required. Also, please name all collaborators and sources of information on each assignment; any such named source may be used.

(1) *A repeated game.* Consider the following base game G_0:

	D	C	F
D	$0,0$	$1,0$	$0,1$
C	$0,1$	$2,2$	$-2,3$
F	$1,0$	$3,-2$	$-2,-2$

(a) *20 points.* Calculate the feasible and enforceable sets for this game.

(b) *20 points.* Find a subgame perfect Nash equilibrium for the G_0-infinitely repeated game with limit of means utilities whose payoff profile is $(2,2)$.

(2) *A market for lemons.* Ajay is shopping for a used car in Chujun's used car lot. Every car that arrives at the lot is with probability one half in bad condition (worth \$1,000), and with probability one half in good condition (worth \$3,000). Chujun observes the condition of the car, but Ajay does not. Chujun sets a price for the car (an integral number of dollars between \$0 and \$10,000), and Ajay learns this price and decides whether or not to buy.

If Ajay decides to buy, his utility is the value of the car minus the price. Otherwise his utility is zero. Chujun's utility is explained below.

(a) *20 points.* Draw the tree of this extensive form game. That is, draw the graph whose vertices are the histories and whose edges correspond to possible actions. What are Ajay's information sets?

(b) *20 points.* Assume first that Chujun's utility, if Ajay buys, is the price, minus the value of the car, plus \$100. If no trade occurs her utility is zero (this describes a situation in which Chujun buys the cars for a \$100 discount).
Construct a pure equilibrium in which good cars are sold with positive probability, or explain why no such equilibria exist.

(c) *20 points.* Assume now that Chujun's utility is \$1 for a sale at or above the car's worth, -\$1 for a sale below the car's worth, and \$0 if there is no sale (this describes a situation in which Chujun earns a fixed commission per sale).
Construct a pure equilibrium in which good cars are sold with positive probability, or explain why no such equilibria exist.

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