Game Theory Day 9
Homework

Please complete on a separate piece of paper.

1. For the following games, determine the set of rationalizable (or undominated) strategies.
    a. NE (Nash Equilibrium)?
    b. DSS (dominance)?
    c. IEDS (iterated dominance)?

Player 1 \ Player 2	L	M1	M2
U	1, 0	4, 2	2, 4
D	4, 2	1, 4	2, 0

Player 1 \ Player 2	L	M1	M2
U	1, 1	4, 5	2, 4
M	4, 2	1, 2	2, 0
D	5, 4	5, 5	2, 3

Player 1 \ Player 2	L	C	R
U	6, 3	5, 1	0, 2
M	0, 1	4, 6	6, 0
D	2, 1	3, 5	2, 8

2. Consider a group of 10 hunters who are trying to catch a stag. Each hunter has two options: she may remain attentive to the pursuit of the stag, or she may catch a hare instead.

   A hunter's utility is simply the number of calories of food he gets from the hunt. If all 10 hunters pursue the stag, they catch it and share it equally, getting 100 calories each. However, if one or more hunters decide to catch a hare instead, the stag escapes and only each hare-hunter catches a hare worth 5 calories (which he eats for himself and does not share with those who pursued the stag).

   a. Describe the set of strategies for each player.
   b. Show that all players hunting the stag is a Nash equilibrium in this game.
   c. Find another Nash equilibrium.
   d. Is the game the same for any N number of hunters, given $1 < N < \infty$?

3. Suppose that you manage a firm and are engaged in a dispute with one of your employees. The process of dispute resolution is modeled by the following game, where your employee chooses either to "settle" or to "be tough in negotiation," and you choose either to "hire an attorney" or to give in.

Employee \ You	Give in	Hire attorney
Settle	1, 2	0, 1
Be tough	3, 0	x, 1

   In the cells of the matrix, your payoff is listed second; x is a number that both you and the employee know. Under what conditions can you rationalize selecting "give in"? Explain what you must believe for this to be the case.