Statistics 473: Game Theory
Problem Set 11

Due: Thursday April 25:

From the text do problems: 335.2

1) Consider the Trainee/Manager game from class (see page 2)
    Show that there is no sequential equilibrium where a Lazy Trainee works 40 hours, an Industrious Trainee works 60 hours and the Manager fires a trainee who works 40 hours and hires a trainee who works 60 or 80 hours.

2) With probability 1/2 a job trainee is strong and with probability 1/2 he is mediocre. The candidate had a choice of going to two universities one of which is Challenging (C) the other is Fun (F). The learning cost and productivity of a worker for depends both on the type of worker and which university the attended. They are given by the following table.

Type	University	Learning Cost	Productivity
S	C	2	12
S	F	0	4
M	C	8	10
M	F	2	2

When the trainee is hired the manager gives the a low-tech (L) or high-tech (H) job. In a low tech job the wage is 2 while in a high tech job the wage is 6. The payoff to the trainee is the wage minus the learning cost. If assigned to a high-tech job, the payoff to the manager is the productivity minus the wage. If assigned to a low-tech job, the payoff to the manager is one half the productivity minus the wage (i.e., $\frac{p}{2} - w$).

a) Draw the game tree.
b) Write out the strategic form of the game and find all pure-strategy Nash equilibria.
c) Find all pure strategy sequential equilibria. Decide if they are separating or pooling. If there are Nash equilibria that are not sequential explain why.

Chance

Lazy 3/4

Industrious 1/4

T

M — H 80,25
M — F 20,60
40

60

H 55,25
M — F -5,60

T

80

M — H 10,25
F -50,60

M — H 100,100
F 40,60
40

M — H 8,100
F 20,60
60

T

80

M — H 50,100
F -10,60