Exercise 1: Consider the following strategic game:

$$
\begin{array}{c|ccc}
1 & L & M & R \\
\hline
l & 6,1 & 1,2 & 0,0 \\
m & -1,4 & 0,2 & 1,3 \\
r & 4,0 & 2,1 & 2,2 \\
\end{array}
$$

a. Is any action of either player strictly dominated? If yes, what is it. Is any action of either player dominant? If yes, what is it.

b. Find the Nash Equilibrium of the game. (Give both the equilibrium action profiles and the payoffs associated with them.)

Exercise 2: Consider the following Prisoners’ Dilemma.

$$
\begin{array}{c|cc}
1 & Confess & Don't \\
\hline
Confess & -1,-1 & 3,-3 \\
Don't & -3,3 & 2,2 \\
\end{array}
$$

1. One shot game.

   (a) Find the Nash Equilibrium of the game.

   (b) Is there a contradiction between what is individually rational and what is collectively rational? Why? (2 sentences)

2. Repeated Game.

   Suppose two players play this simultaneous move game twice, observing the outcome of the first play before the second play begins. Suppose the payoff for the entire game is simply the sum of the payoffs from the two stages (no discounting).

   (a) What will be the equilibrium in the second stage? Explain.

   (b) Find the equilibrium of this repeated game.

   (c) If the game were to be repeated an infinite number of time, what would be different?
Exercise 3: Nash Equilibrium
An old lady is looking for help crossing the street. Only one person is needed to help her; more are okay but no better than one. You and I are the two people in the vicinity who can help; each has to choose simultaneously whether to do so. Each of us will get a pleasure worth a 3 from her success (no matter who help her). But each one who goes to help will bear a cost of 1, this being the value of our time taken up in helping. Set this up as a game. Write the payoff table and find all pure strategy Nash Equilibrium.

Problem 1 page 224 (Pepall, Richards and Norman, 2005)