Homework #3

ISCI 330 Game Theory

Due February 27, 2007 (Tuesday after reading week) at the start of class

1) **(Points TBD)** In class we have talked about how Game Theory can be a useful way of thinking about situations in everyday life. Your task is to pick some interesting situation from your own life (or some one familiar to you) and represent it as a game and then analyze it. For this exercise pick a situation where those that interact (the players) do not know what strategy others will use, but they do know the possible strategies.

   Note: Although it would be easy to pick a game that is trivial to analyse, the goal here is to take your new skills out for a test drive. So pick a situation that is interesting enough to allow you to demonstrate these skills.

   Your homework should contain the following components:
   a) A brief (1 paragraph) description of the situation you are going to model with a game.
   b) A list of actions (action profile) for each player.
   c) A representation of the game in normal form with your estimates of the utility values for each player, for each outcome.
   d) Your analysis of the game:
      i) Are there any Pareto optimal outcomes?
      ii) What is (are) the Nash Equilibria strategy (strategies) for each player?
      iii) What is (are) the maximin strategy (strategies) for each player?
   e) Briefly discuss your experience (in a paragraph or two). Things to consider:
      i) What did you learn about the situation by modeling it as a game?
      ii) Which parts of this exercise were easy vs. difficult to do?
      iii) What is your confidence that your game and analysis accurately represent the original situation?
   f) Be prepared to explain your game and your analysis to the class.