Econ 101 Discussion Section-Handout 14

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1 Problems: Game Theory

1. Game or not? (If yes, what's the strategy for each player?)
   (a) Deciding whether to buy an umbrella or not before you leave the house
   (b) Auction, in which the buyer with a highest bid will get the object
   (c) A bull decides to fight or flee when faced with a wolf
   (d) Buying a second-hand car from your friend Sam
2. Cournot model from the perspective of Game Theory .Consider Question 1 on last week's handout. There are two firms in the market for CPUs, Intel and AMD, with identical cost structures: MC=AC=30. Market demand is given by P=120-Q. Now as the first step, each firm will decide whether to enter the market or not. If chooses not to enter, the firm will get zero. If both firms choose to enter, each of them will get the payoff from the Cournot model. If only one firm chooses to enter, it will act as a monopolist in the market.

	Enter	Not
Enter		
Not		

   (a) Fill the right numbers into the payoff matrix.
   (b) What's the dominant strategy for Intel? For AMD?
   (c) What's the equilibrium for this game?
   (d) What's the outcome of the collusion game?
   (e) Now assume that to enter the market, each firm has to pay a fixed cost of $1000 (now the cost function of each firm becomes TC=30Q+1000). The payoff from choosing not to enter doesn't change. Write down the payoff matrix
   (f) Does Intel have dominant strategy now? How about AMD?
   (g) What's the Nash Equilibrium in this scenario?
   (h) From your perspective, which NE is more likely to appear?
   (i) What's the outcome if both firms play their max-min strategy?
   (j) How could you change the payoff matrix above so that the equilibrium will be like the one in prisoner's dilemma? That is: at equilibrium both firms have to accept a second-best outcome.
3. Monopolistic Competition in the oatmeal market Consider the market for oatmeal. There are many firms selling similar products, each faced with a market demand curve: P=16-q. The total cost of each firm is given by TC=q2+4, and marginal cost given by MC=2q.
   (a) What quantity and price will each firm choose?
   (b) What's the profit of each firm?
   (c) Is this market in long-run monopolistically competitive equilibrium? If not, what needs to happen to bring it to LR equilibrium?