Discussion 14

Important Topics

- Game Theory
  - Best Response
  - Dominant Strategy
  - Nash Equilibrium
  - Collusion Outcome
  - Maxmin Strategy
- Monnopolistic Competition

Warm Up Problem

The local Best Buy will only have one Nintendo Switch available for sale tomorrow. Bruce and Korinna Hansen both want to purchase the Nintendo, and can either get to the store early or late. Getting to the store early incurs a cost of $100, as they don't like to wake up early. If Bruce gets to the store early before it opens, he will get the Nintendo which he values at $1000, and Korinna will get nothing. If Korinna gets to the store early, she will get the Nintendo which she values at $700 and Bruce will get nothing. If they either both go early, or both go late, Bruce will get a value of $500 and Korinna will get a value of $350.

a. Draw the Payoff Matrix for Bruce and Korinna

		Korinna	
		Early	Late
Bruce	Early		
	Late		

b. Identify the Nash Equilibria

c. Identify any Dominant Strategies

d. What is the outcome if they play Maxmin strategies?

Problem 1

A parent with two children, Peyton and Eli, decide that each child is to decide the allowance that their sibling will receive. Eli can choose whether his elder brother's allowance will be $7 or $2, and Peyton can choose whether his younger brother's allowance will be $5 or $1. We will call these two outcomes as either the altruistic outcome or the selfish outcome.

		Eli			
		Altruistic		Selfish	
Peyton	Altruistic	P: 7	E: 5	P: 2	E: 5
	Selfish	P: 7	E: 1	P: 2	E: 1

a. Identify the Nash Equilibria

b. Identify any Dominant Strategies

Problem 2

A criminal steals a car on the isthmus in Madison. The criminal can choose to try and escape by driving east or west. The police are notified of the theft, however they only have enough time to set up a road block on either the east or the west side. If both the criminal and the police choose the same outcome, the police get a utility of 1000 by catching the criminal and the criminal gets a utility of -500 because they have to go to jail. If the criminal escapes the police get a utility of -200 (their reputation has taken a hit), and the criminal gets a utility of the value of the car which is X$>$ 0.

		Police	
		East	West
Criminal	East	C: -500 P: 1000	C: X P: -200
	West	C: X P: -200	C: -500 P: 1000

a. Identify the Nash Equilibria

b. Identify any dominant strategies

c. For what values of X is the collusion outcome (East, East) or (West, West)? For what values of X is the collusion outcome (East, West) or (West, East)? Interpret.

Problem 3 - Monopolistic Competition

Fiji water is a brand of artisinal bottled water with the following costs and demand:

- $TC = q^2 + 4$
- $MC = 2q$
- Demand: $P = 16 - q$

a. What quantity and price will this firm choose?

b. Does this firm have excess capacity?

c. Solve for the firm's profit.

d. What will happen in the long run? Comment on excess capacity.