Microeconomics III: Problem Set 7[a]

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[a]Slides created for exercise class 3 and 4, with reservation for possible errors.

Outline

PS7, Ex. 1 (A): Imperfect recall (imperfect information)

In this course we normally consider games in which there is 'perfect recall': players can always remember what they themselves have done in the past.

We have seen an example in class of a game with 'imperfect recall' where the player forgets his own actions. But what would a game where he forgets the opponent's actions look like? Construct a game with two players. The timing is as follows: Player 1 moves first, then Player 2, and then Player 2 again. Everytime they move, the players choose one of two actions: $\{L, R\}$.
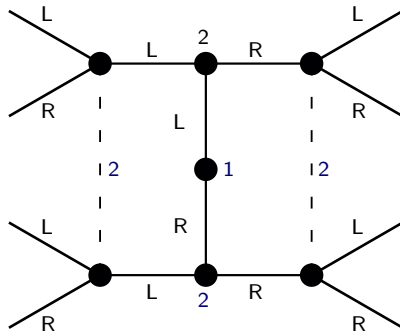
Draw the game tree and construct the information sets such that (a) Player 2 observes Player 1's action the first time he moves, but (b) when Player 2 moves the second time, he has forgotten what Player 1 chose. However, he recalls his own action.

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PS7, Ex. 2 (A): Three conditions for a subgame (imperfect information)

Recall that under imperfect information we have three conditions that define a subgame. Construct an example of a violation of each of the three conditions (pick different examples than those seen in the lectures).

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1. It begins at a decision node n that is a singleton information set.

Example of violation of condition 1:

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Example of violation of condition 1:
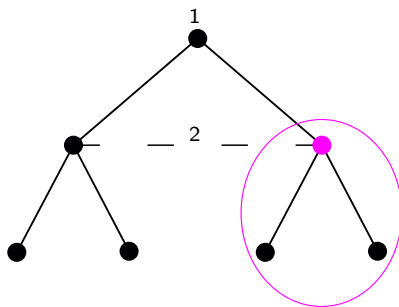

The purple decision node to the right is not a singleton information set.

PS7, Ex. 3 (A):
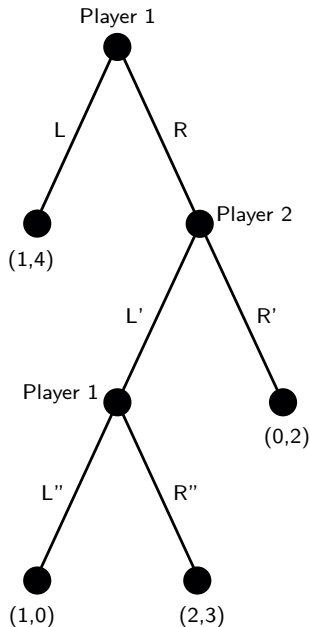
PS7, Ex. 4:

PS7, Ex. 5:

PS7, Ex. 6:

PS7, Ex. 7:

PS7, Ex. 7.a:

PS7, Ex. 8:

PS7, Ex. 9:

PS7, Ex. 10:

Code examples

Player 1

L   R

(1,4)   Player 2

L'   R'

Player 1

(0,2)

L"   R"

(1,0)   (2,3)

Matrix, no player names:

	L (q)	R (1-q)
T (p)		
B (1-p)		

Matrix, no colors:

		Player 2	
		L (q)	R (1-q)
Player 1	T (p)		
	B (1-p)		

Matrix, with colors:

		Player 2	
		L (q)	R (1-q)
Player 1	T (p)	1, 1	
	B (1-p)		