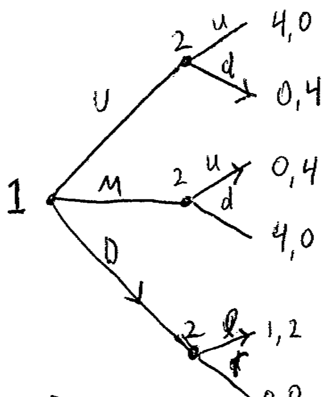
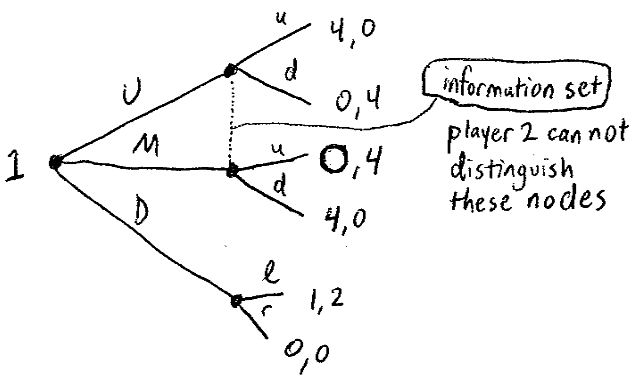
Lecture 18 7 Nov 07



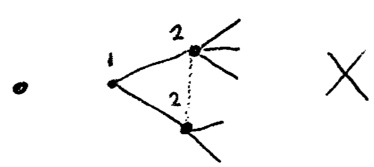
1 chooses D

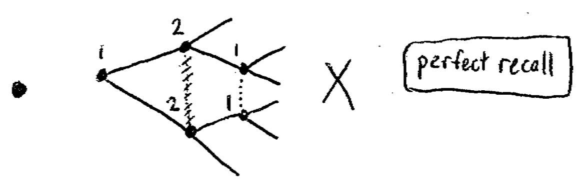


Here 1 might randomize between U and M.

Formal Defn An information set of player i is a collection of player i's nodes among which i cannot distinguish.

rules not allowed

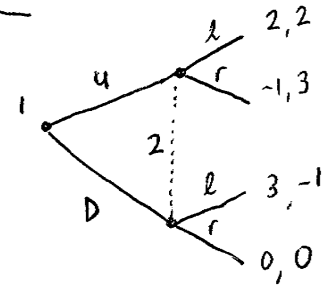




Defn Perfect Information: all information sets in the tree have just one node

Imperfect Information: NOT perfect information

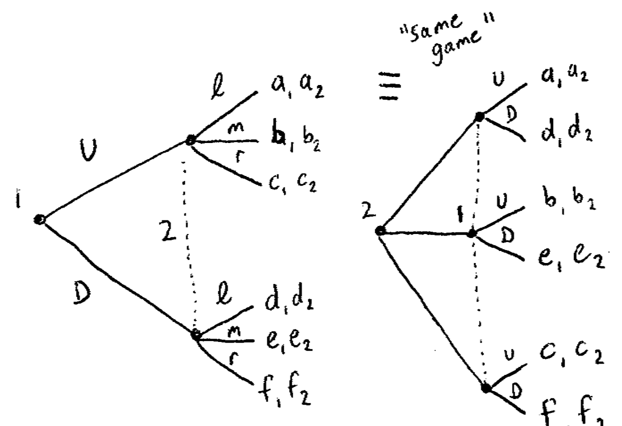
example



1 \ 2	l	r
U	2,2	-1,3
D	3,-1	0,0

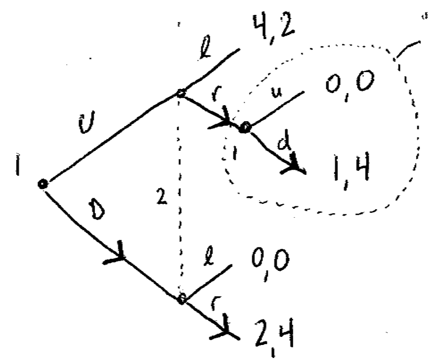
Prisoner's Dilemna

Defn A pure-strategy of player i is a complete plan of action: it specifies what player i will do at each of its information sets



1 \ 2	l	m	r
U	a_1, a_2	b_1, b_2	c_1, c_2
D	d_1, d_2	e_1, e_2	f_1, f_2

what matters is information, not time



strategies for 1 : Uu , Ud , Du , Dd

$\underbrace{\text{Du , Dd}}_{\text{redundant}}$

strategies for 2 : l , r

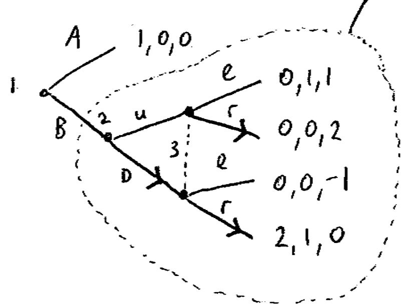
		2: l	r
1	Uu	4,2	0,0
	Ud	4,2	1,4
	Du	0,0	2,4
	Dd	0,0	2,4

NE: (Uu, l), (Du, r) } NOT BI

(Dd, r) BI

SPE

example 3 players



SPE:
(B, D, r)
↳ (D, r)

A

		3: l	r
2	U	1,0,0	1,0,0
	D	1,0,0	1,0,0

B

		3: l	r
2	U	0,1,1	0,0,2
	D	0,0,-1	2,1,0

lots of NE : eg [A, U, l]

look at the green subgame :

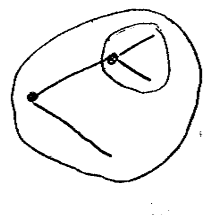
matrix B ...

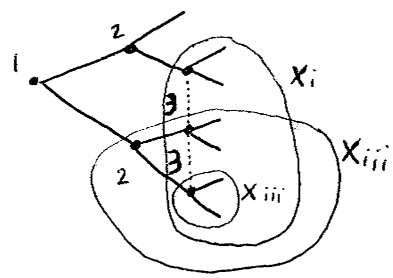
		3: l	r
2	U	1,1	0,2
	D	0,-1	1,0

NE of the subgame:
(D, r)

Defn A subgame is a part of the game that looks like a game within the tree.
it satisfies:

i) it starts from a single node
ii) it comprises all successors to that node
iii) it does not break up any information sets





Defn A NE $(s_1^*, s_2^*, \dots, s_N^*)$ is a subgame perfect equilibrium ("SPE") if it induces a NE in every subgame of the game

Open Yale courses