GAME THEORY (CSI4006)

MODULE 7

LECTURE 3

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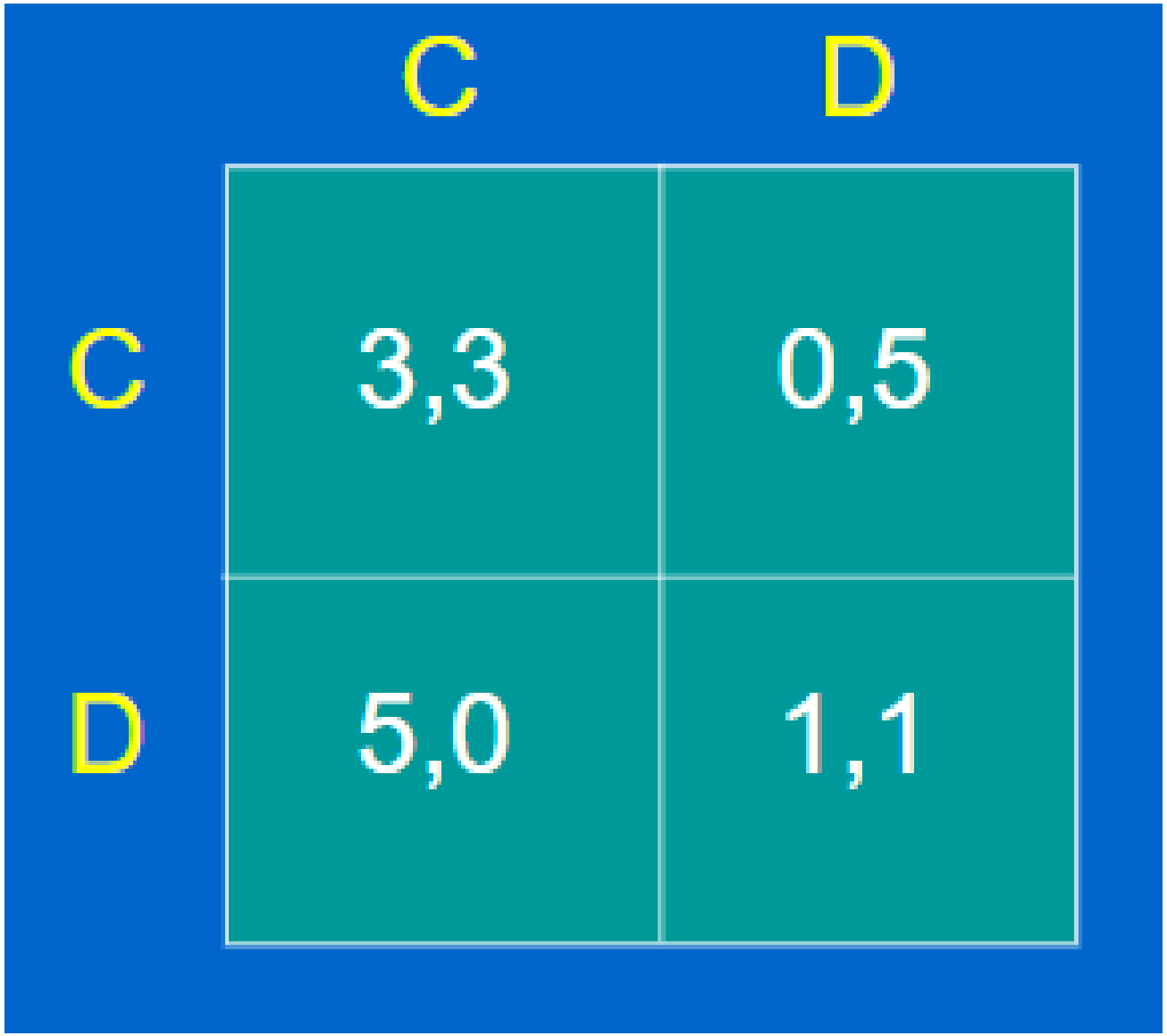
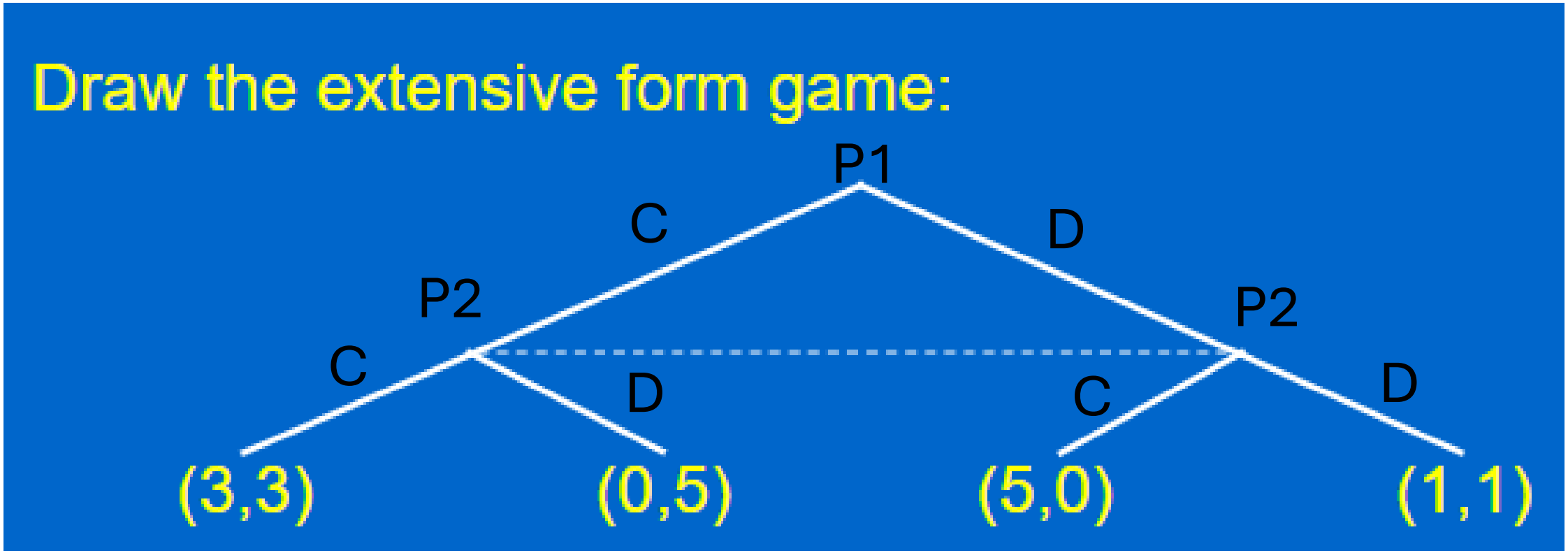
REPEATED GAME

A repeated game is an extensive game with perfect information and simultaneous moves.

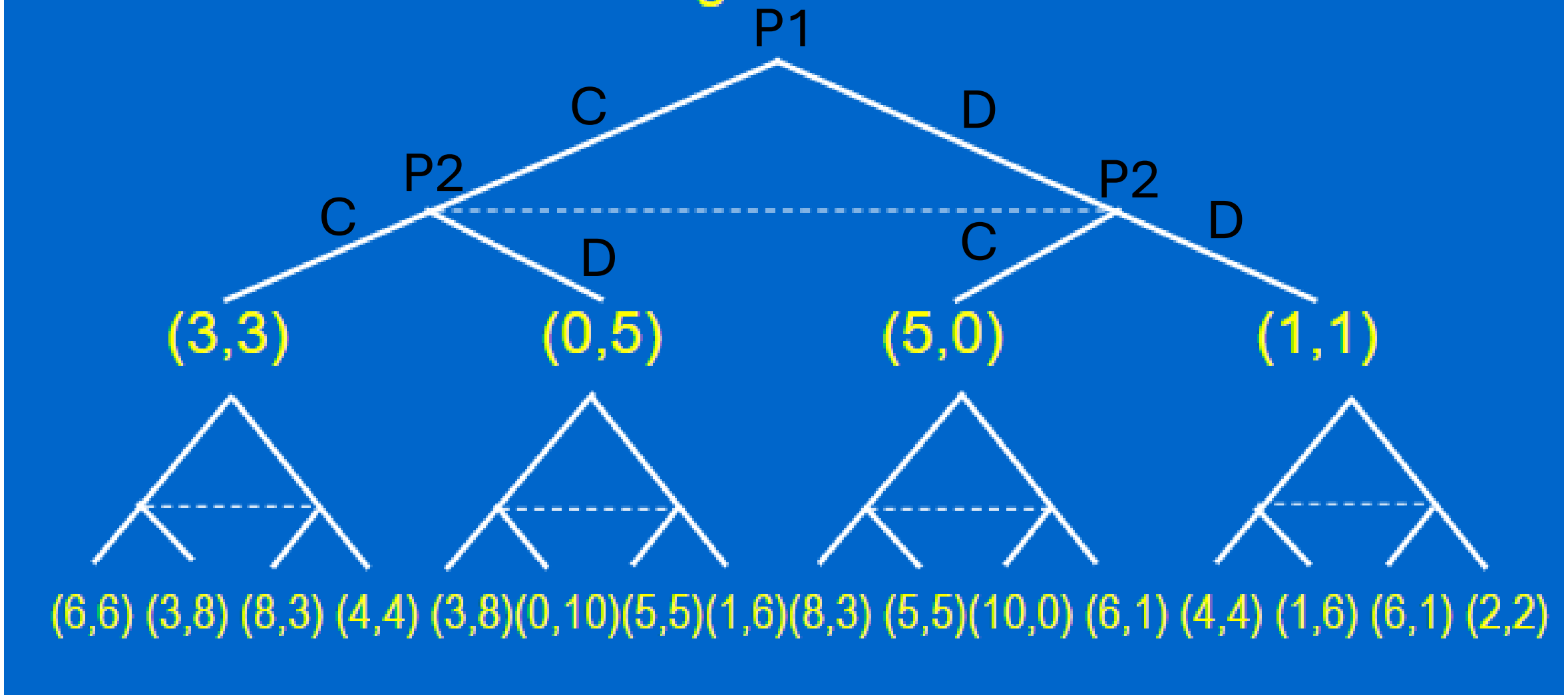
1. Players
2. Terminal histories
3. Player function
4. Preferences for the players


C
D
C
3,3
0,5
D
5,0
1,1

Draw the extensive form game:



Draw the extensive form game:



Now, consider three repeated game strategies:

D	(ALWAYS DEFECT):	Defect on every move.
C	(ALWAYS COOPERATE):	Cooperate on every move.
T	(TRIGGER):	Cooperate on the first move, then cooperate after the other cooperates. If the other defects, then defect forever.

TOTAL PAYOFF OF P1 AFTER 2 GAMES

V (D/D)	=	1 + 1	=	2,
V (C/C)	=	3 + 3	=	6
V (T/T)	=	3 + 3	=	6
V (D/C)	=	5 + 5	=	10
V (D/T)	=	5 + 1	=	6
V (C/D)	=	0 + 0	=	0
V (C/T)	=	3 + 3	=	6
V (T/D)	=	0 + 1	=	1
V (T/C)	=	3 + 3	=	6

TOTAL PAYOFF OF P1 AFTER 3 GAMES

V (D/D)	=	1 + 1 + 1	=	3
V (C/C)	=	3 + 3 + 3	=	9
V (T/T)	=	3 + 3 + 3	=	9
V (D/C)	=	5 + 5 + 5	=	15
V (D/T)	=	5 + 1 + 1	=	7
V (C/D)	=	0 + 0 + 0	=	0
V (C/T)	=	3 + 3 + 3	=	9
V (T/D)	=	0 + 1 + 1	=	2
V (T/C)	=	3 + 3 + 3	=	9

AVERAGE PAYOFF OF P1 AFTER 3 GAMES

n=3

V (D/D)	=	1 + 1 + 1	=	3	/3	= 1
V (C/C)	=	3 + 3 + 3	=	9	/3	= 3
V (T/T)	=	3 + 3 + 3	=	9	/3	= 3
V (D/C)	=	5 + 5 + 5	=	15	/3	= 5
V (D/T)	=	5 + 1 + 1	=	7	/3	= 7/3
V (C/D)	=	0 + 0 + 0	=	0	/3	= 0
V (C/T)	=	3 + 3 + 3	=	9	/3	= 3
V (T/D)	=	0 + 1 + 1	=	2	/3	= 2/3
V (T/C)	=	3 + 3 + 3	=	9	/3	= 3