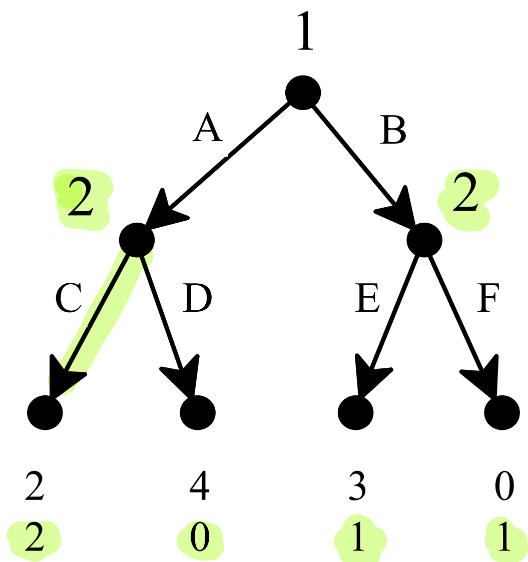
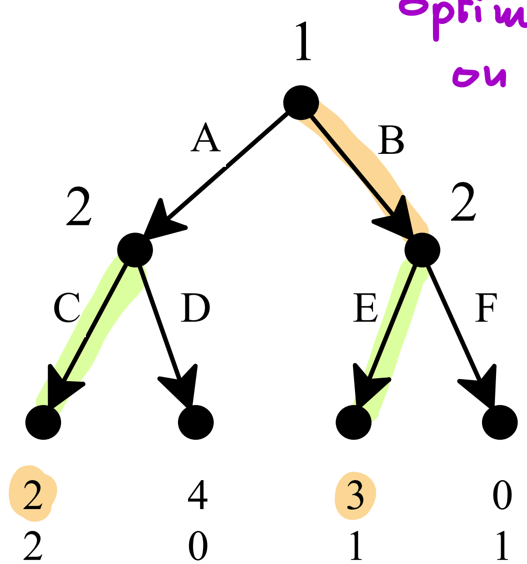
Multiple backward-induction solutions



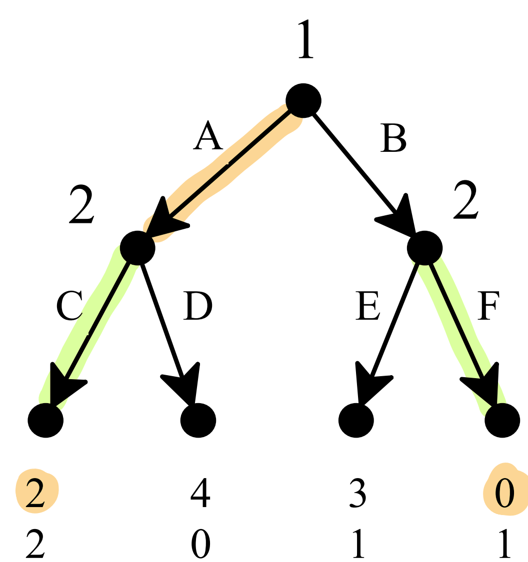
(B, CE)

reflecting optimism on Player 1's part



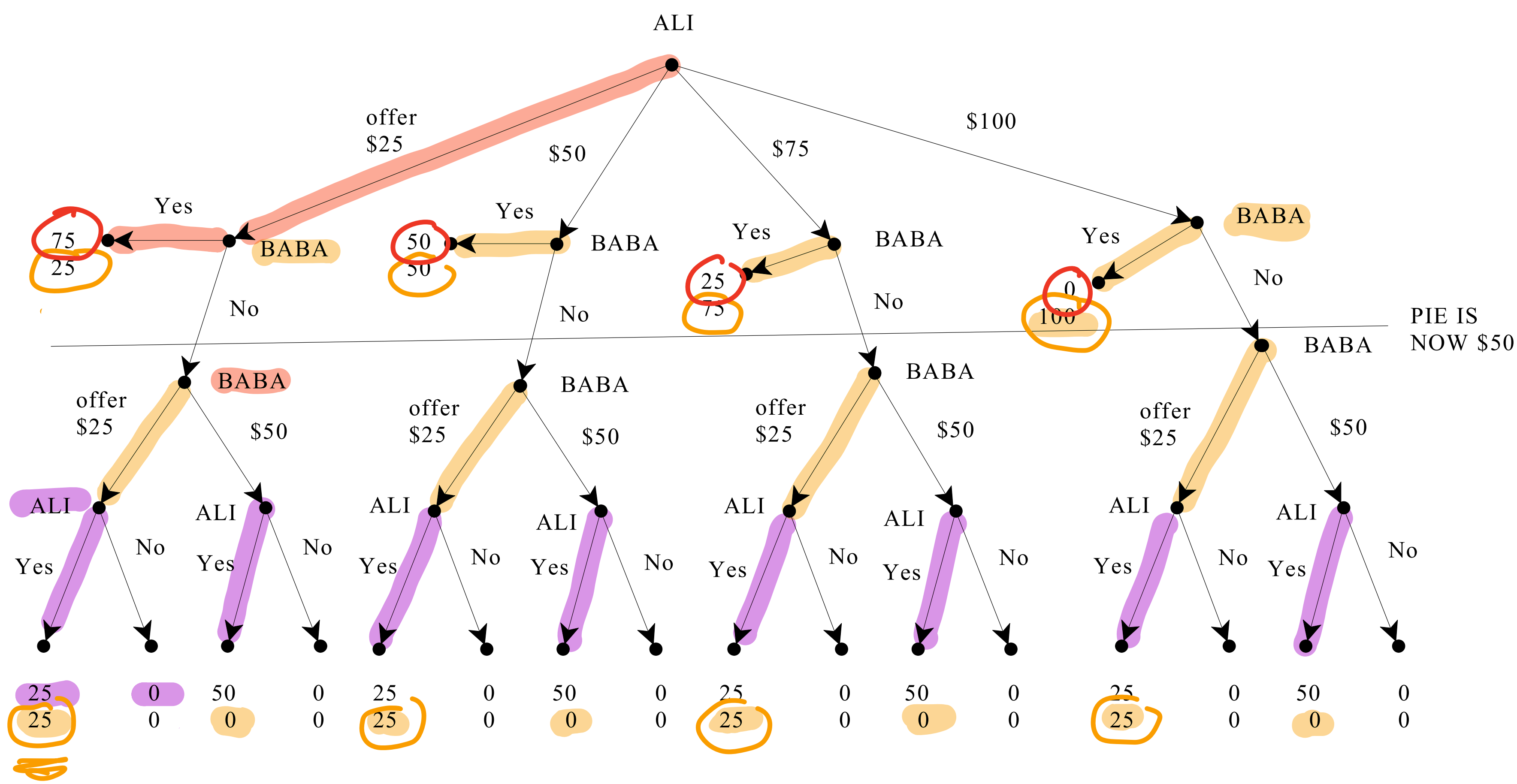
(A, CF)

reflects pessimism



Bargaining game between Ali and Baba.

They have $100 to divide. Ali makes an offer to Baba. Offers can only be multiples of $25. The minimum offer is $25. Baba can accept or reject. If he rejects the money to be divided shrinks to $50 and he makes an offer. If Ali rejects then they both get nothing. Thus only two rounds of offers.



Selfish

$U_A(\$75, \$25) = 75$ $U_B(\$75, \$25) = 25$

$U_A(\$50, \$50) = 50$ $U_B(\$50, \$50) = 50$

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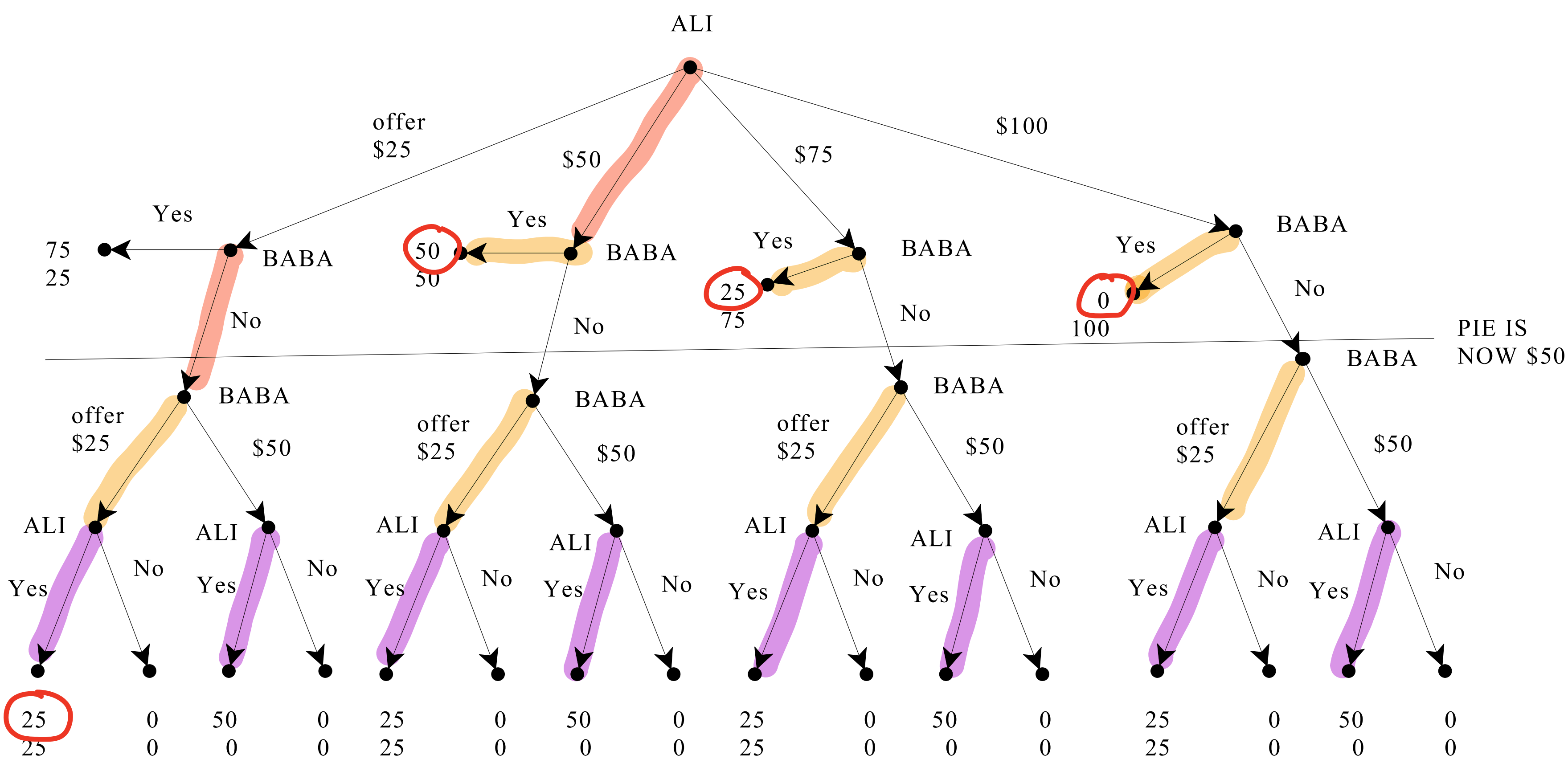
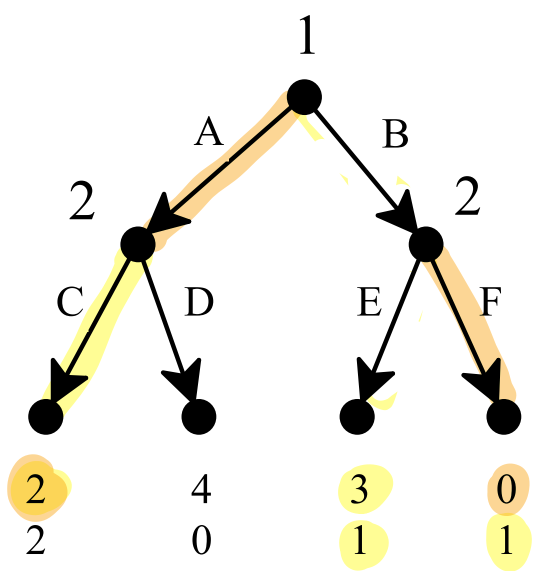


Definition: A *strategy* for player i in a perfect-information game is a list of choices, one for each node that belongs to player i .



For Player 1 : (_)   A , B

either A or B

A strategy for Player 2 :

- if Player 1 plays A then ... _
- " " B "

(_ , _)

either C or D

either E or F

(C, E)

(C, F)

(D, E)

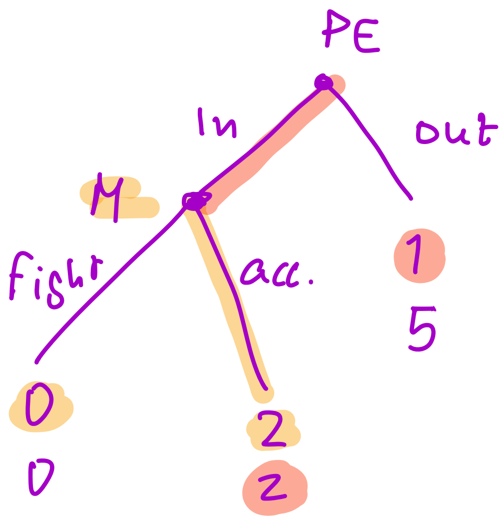
(D, F)

2

1		CE	CF	DE	DF
	A	2, 2	2, 2	4, 0	4, 0
	B	3, 1	0, 1	3, 1	0, 1

Nash equilibria are :

(B, CE) and (A, CF)



Only one BI solution

(In, Acc)

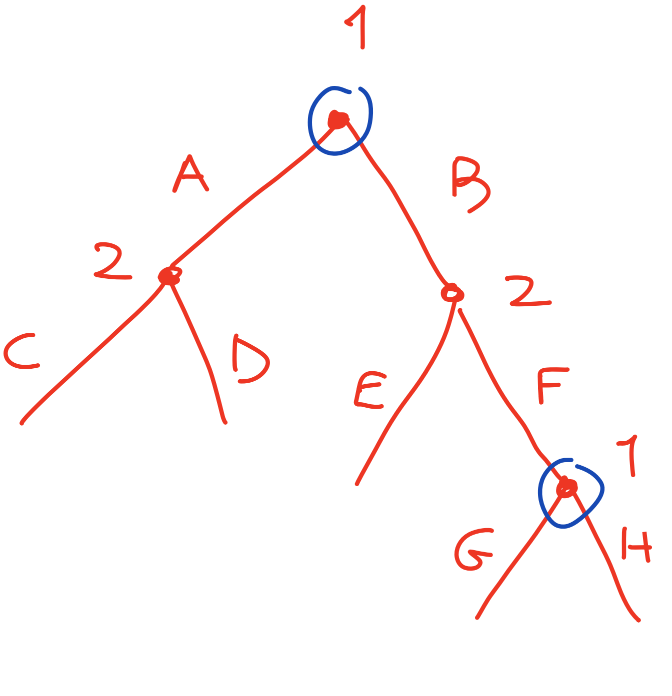
		M: Fight	M: Accommodate
PE	In	0, 0	2, 2
	Out	1, 5	1, 5

Two N.E.:

(In, Acc.)

(Out, Fight) reject this NE

because it incorporates an incredible threat ("if In I will fight")



(___ , ___)

A or B — G or H

(A,G), (A,H), (B,G)

(B,H)

A

(B,G)

Strategies of Player 2: (___ , ___)

C or D — E or F

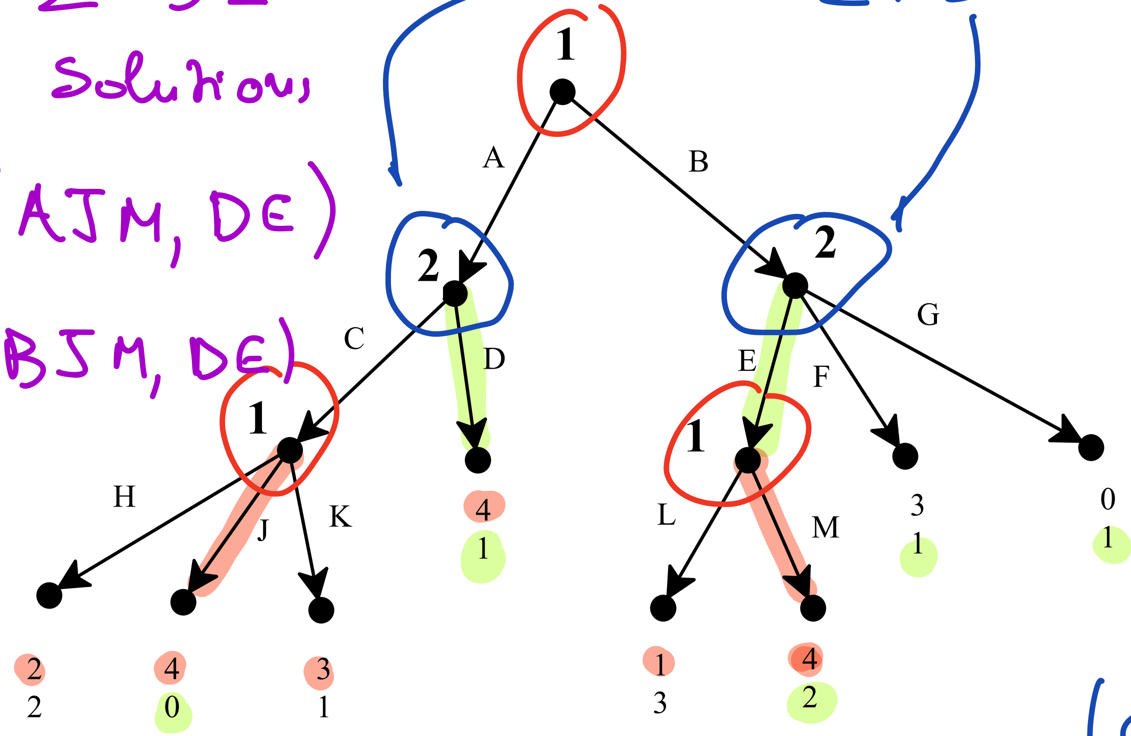
(C,E), (C,F), (D,E), (D,F)

2 BI Solutions

(AJM, DE)

(BJM, DE)

$2 \times 3 = 6$



How many strategies does Player 2 have? 6

(___ , ___)

C or D

E, F, G

(C,E), (C,F), (C,G)

(D,E), (D,F), (D,G)

$2 \times 3 \times 2 = 12$

(___ , ___ , ___)

A or B

H or J or K

L or M

Is AD a BI solution?

No but it is the outcome of the BI solution (AJM, DE)