Jon Kleinberg / David Easley — Ch 6 — Games

Game
1. Participants — You
2. actions — $a \in \{0, 1, \ldots 30\}$
3. rewards — $r(a) = \left[\frac{10\%}{30}\right] a - Ca$

-1

$C > \frac{10\%}{30} \Rightarrow a^* = 0$

$C < \frac{10\%}{30} \Rightarrow a^* = 30$

$C = \frac{10\%}{30} \Rightarrow a^* = ?$

George Box
"All models are wrong.
Some models are useful"

Borges Map is not the territory

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2 player game

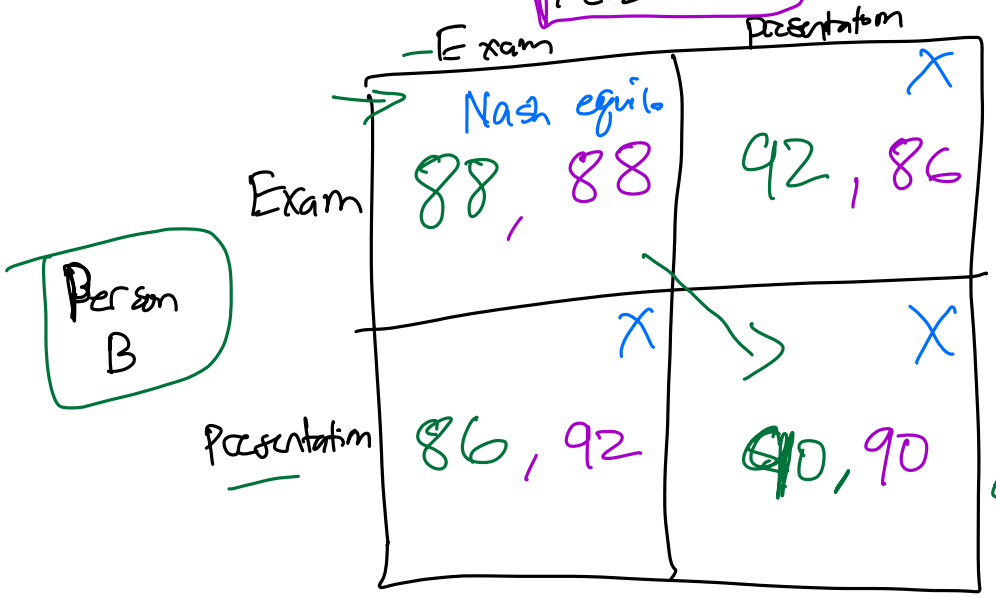
Both prepare presentation — Both get 100 presentation, 80 exam, overall 90 each

Both study exam — Both get 84 presentation, 92 exam, avg 88 each

1 studies exam — 92 exam, 92 presentation, 92 avg

1 prepare presentation — 80 exam, 92 presentation, 86 avg

Person A



$\frac{90-88}{90} = \frac{2}{9}$

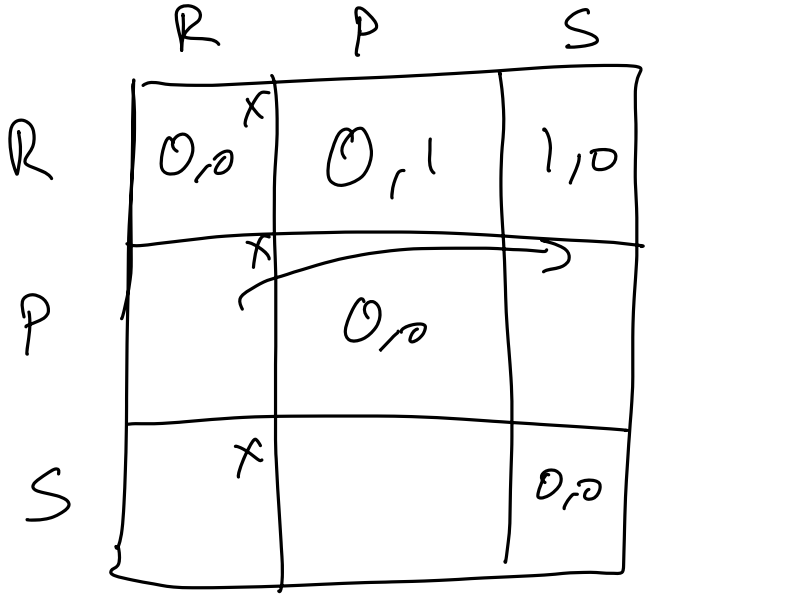
Person A plays "exam". Then, what is the **Best Response** of Person B? Exam

"presentation"? Exam

$\Rightarrow$ "Exam" is a **dominant strategy** for person B.

Nash Equilibrium

(Pure) Each person is playing a action that is the best response to the players' actions.



Mixed Nash Equil