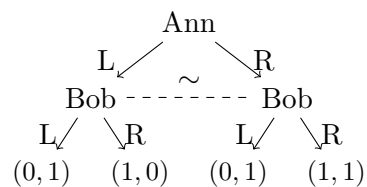# AGENT-BASED SYSTEMS SEMINAR #3

PAOLO TURRINI

1. Imperfect Information
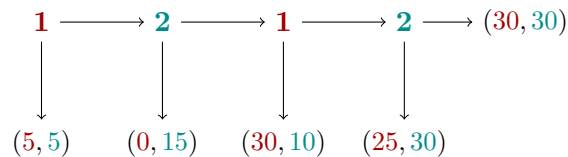
In the game below Ann and Bob receive the payoffs at the terminal nodes, with the left element of each pair being Ann's.

Ann

L / R

Bob - - - - - - - - Bob

L / \R   L / \R

$(0,1)$ $(1,0)$ $(0,1)$ $(1,1)$

1.1) Calculate all pure strategy NE (in uniform strategies)

1.2) Calculate all mixed strategy NE

1.3) Calculate all behavioural strategy NE. Is there any difference with the case above?

2. Perfect information

The game below is a centipede game. We start in the choice node on the left. At each step, the player whose turn it is can choose between going right and going down:

$\mathbf{1} \longrightarrow \mathbf{2} \longrightarrow \mathbf{1} \longrightarrow \mathbf{2} \longrightarrow (30, 30)$

$(5, 5)$ $(0, 15)$ $(30, 10)$ $(25, 30)$

2.1) Intuitively, how would you play?

2.2) Calculate the backwards induction outcome.

2.3) Transform the game into normal form.

2.4) Reflect on the normal form game you obtained. What is the solution concept that corresponds to backwards induction?