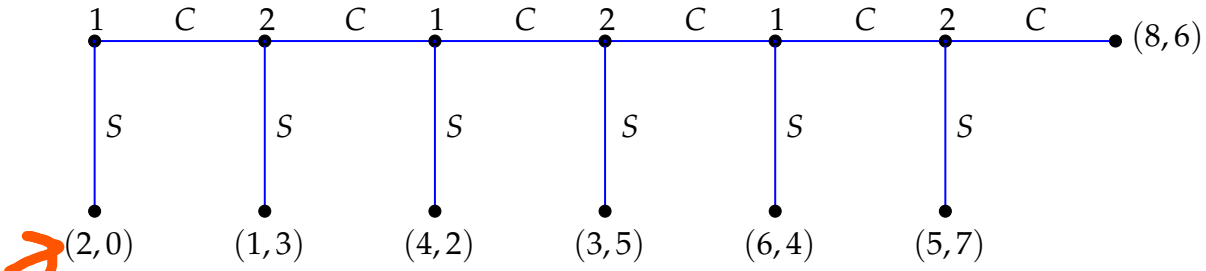
MTH636A (2023-24, Even Semester)

Problem Set 3

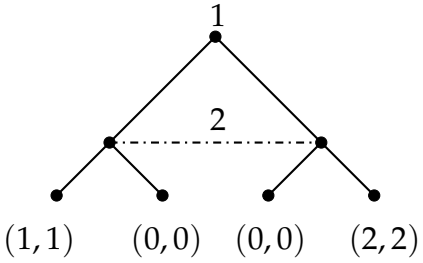
1. In the centipede game, the two players move alternatingly. On each move, a player can stop (S) or continue (C). On any move, a player is better off stopping the game than continuing if the other player stops immediately afterward, but is worse off stopping than continuing if the other player continues, regardless of the subsequent actions. The game ends after a finite number of periods. Consider an example of this game below.

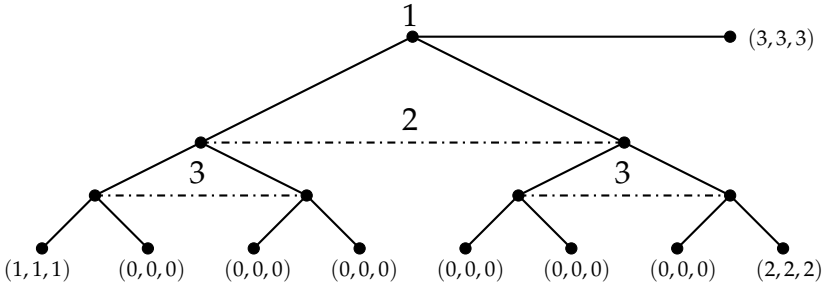


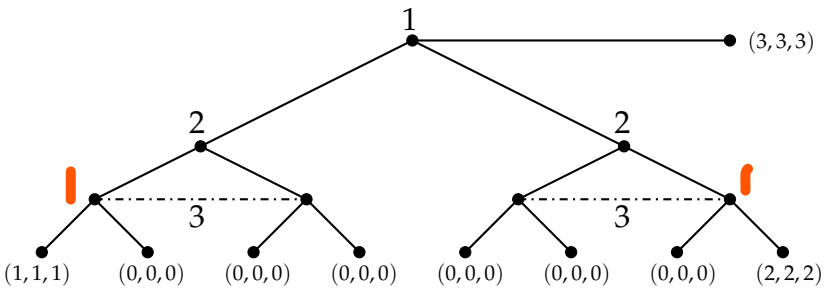
   (a) Determine the backward induction or subgame perfect equilibrium of this game. What is the associated outcome?

   (b) Show that there are other Nash equilibria, but that these always result in the same outcome as the subgame perfect equilibrium.

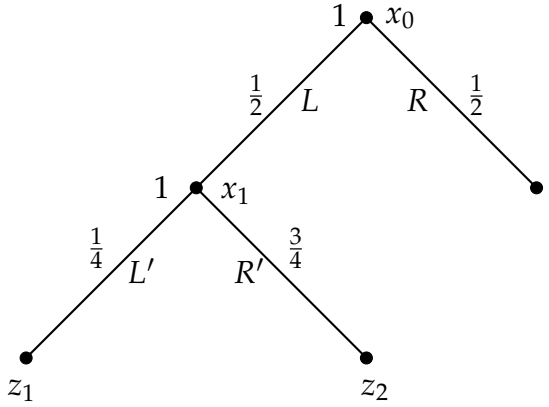
2. Compute all the Perfect Bayesian equilibria for the following games:







3. Determine all mixed strategies that are outcome equivalent with the behavioral strategy represented in the following one-player extensive form structure:



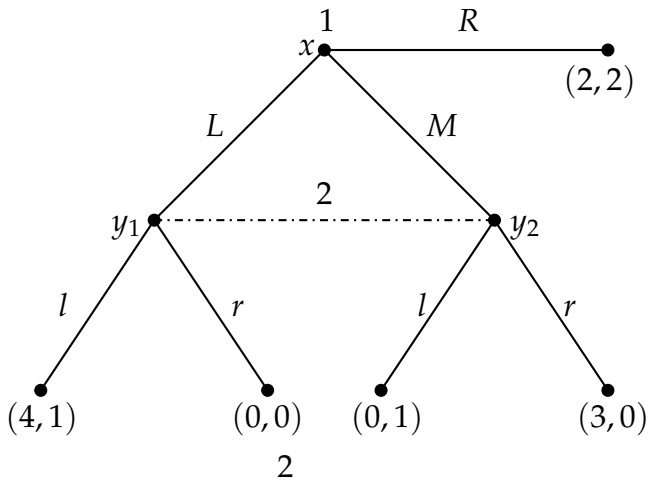
4. Consider the following extensive form game below.

   (a) Determine the strategic form of this game,

   (b) Determine all Nash and subgame perfect Nash equilibria of this game,

   (c) Determine all Perfect Bayesian equilibria,

   (d) Determine all sequential equilibria of this game.



5. Compute all Nash, subgame perfect, Perfect Bayesian, and sequential equilibria in the following game.