Game Theory Week 3: Monday Exercises

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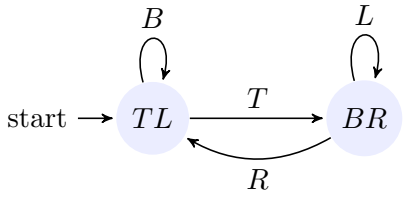
1. Two players are playing an infinitely repeated game described by the following stage game. There is perfect monitoring, both players are long-lived with discount factor $\delta < 1$.

	L	R
T	$0, 2$	$2, 3$
B	$-1, 1$	$3, 0$

Figure 1: The stage game for question 1

   (a) Describe set of feasible, individually rational payoffs.

   (b) Calculate the value functions for the following automaton (i.e. $V_i(TL)$ and $V_i(BR)$). Use the one-shot deviation principle to show that it does not describe a SPE for any δ.



   (c) For large enough δ exists a two state automaton that describes a pure strategy SPE where players play TR in every period along the path of play. Find such an automaton and solve for the lowest value of δ that the strategies it describes a SPE. (*Hint: Which players have incentive to deviate from TR in the stage game? What does this tell you about which deviations from TR your equilibrium in the repeated game must punish?*)