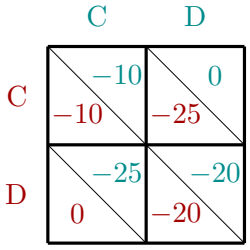
Game Theory 2025
Iterated Prisoner's Dilemma Tournament

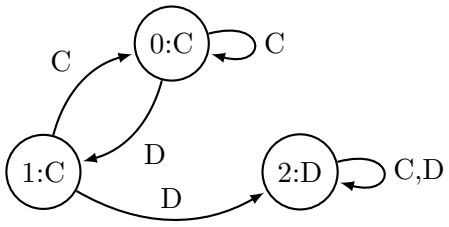
You are invited to take part in the *Iterated Prisoner's Dilemma Tournament*. You can compete as a team of any size (including size 1). The best-peforming team wins a prize (and this prize is shared equally amongst all winning teams in case of a tie).

Deadline: Monday, 7 April 2025, 13:00

You compete by submitting a description of a strategy for playing the iterated variant of the Prisoner's Dilemma discussed in class (with an unknown number of rounds):



You can describe a (deterministic) strategy by specifying your next move (either C or D) for every possible situation. One way of doing this is to use a *finite state machine*. To be a little more precise, we are going to use a *Moore machine* with *states* $\{0, 1, 2, \ldots, K\}$, *initial state* 0, and (output and input) *alphabet* $\{\mathrm{C}, \mathrm{D}\}$. The *output function* specifies for each state the move you make next. The *transition function* specifies for each state and for each move of your opponent what state you go to next. Below, on the left, you see a graphical representation of the strategy under which you cooperate as long as your opponent does not defect twice in a row, and under which you defect eternally once she does defect twice in a row. On the right you see a textual representation of the same strategy. Each line corresponds to a state (here from 0 to 2), listing (*i*) the name of the state, (*ii*) the action played in that state, (*iii*) the state you move to in case your opponent cooperates, and (*iv*) the state you move to in case she defects. The initial state here is taken to be 0.

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0:  C, 0, 1
1:  C, 0, 2
2:  D, 2, 2
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Come up with a strategy that differs significantly from the strategies you can easily find out about on the Internet (such as the famous tit-for-tat strategy) and submit it on the *Game Academy*. Define your strategy using the textual representation explained above. Pay attention to syntax (uppercase C and D, use of colon and commas). You will also be asked for a name for your strategy as well as for a short motivation for using that strategy.