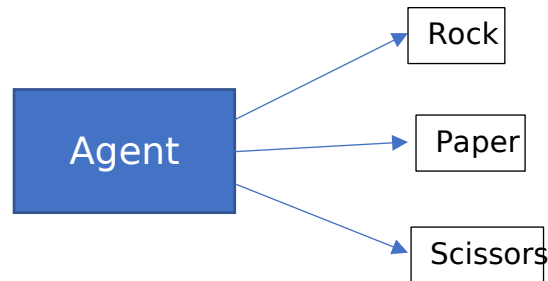


Agents and Multi-Agent Systems

Exercise 1 Rock, paper, scissors

You should program in Python the Rochambeau/Roshambo with 2, and 3 agents. Rock trumps Scissors, Scissors trumps paper and Paper trumps Rock.



- The likelihood of each choice is random for each agent. Each agent makes his choice at random and keeps that choice to himself. Each choice of each agent is equally likely. The game is run by a random generator too. A random number, r , between 0 and 1 is generated. In each game Rock is chosen if $r \in [0.0, 0.33]$. Paper is chosen if $r \in [0.34, 0.67]$. Scissors is chosen if $r \in [0.68, 1.0]$. Keep the frequency of wins for each agent. How does the probability distribution look like after 100 games?

If two or more makes the same choice there can be no winners between them. A draw causes a replay.

- Use only 3 agents for this part. One of them (Player 1) plays a fixed strategy, always choosing Paper. How does the probability distribution look like after 100 games now?
- How many games do you think it will take before the other players can learn and expose Player 1's strategy? Suggest a learning method (no code required, just a description)