Homework #2

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Problem 1.
Write out the MP/MRP/MDP/Policy definitions and MRP/MDP Value Function definitions in your own style/notation (so you really internalize these concepts)

Solution.

- MP: Markov Process; a random process where the current state depend only on the most recent state
- MRP: Markov Reward Process; a sequence of possible Markov states with values in each state and probabilities from one state to another
- MDP: Markov Decision Process; a Markov Reward Process with decisions, in other words, the transition of states does not rely solely on probabilities, rather, they depend on decisions made when being in a state
- Policy: a sequence of decisions made in a Markov Decision Process
- MRP Value Function: The expected (sum of) return, starting from state s in an MDP, and follow the policy π
- MDP Value Function: The expected (sum of) return, starting from state s in an MDP, taking action a at each state, and follow the policy π

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Problem 2.
The programming assignemnts include:

- Implement MP/MRP/MDP/Policy definitions in code
- Separately implement/convert two reward definitions of MRP
- Write code to create a MRP given a MDP and a Policy
- Write code for MRP/MDP Bellman Equations
- MRP value function
- Stationary distribuion of MP

Solution.
Code for all problems above is shown in folder `/Assignmennts/0_Basic_DP_RL` in files `mp.py`, `mrp.py`, `policy.py` and `mdp.py`. ■