Knowledge Checks

Question 1

1.0/1.0 point (graded)

Which of the following is a correct definition of total return?

- (●) Return is the cumulative sum over a large number of time steps of reward starting from the first time step. ✔
- ( ) Return is the average over a large number of time steps of reward starting from the first time step.
- ( ) Return is the reward of a particular time step.
- ( ) Return is the sum of differences over a large number of time steps of reward starting from the first time step.

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Question 2

1.0/1.0 point (graded)

Which of the following are NOT properties of a Markov process?

- (●) Transition probabilities to the next state of a Markov process depend on the history of state of the process. ✔

- Transition probabilities to the next state of a Markov process only depends the current state.
- The state of a Markov process is defined by complete current information on the environment.
- The state of a Markov process can be approximated by partial information on the environment.

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Question 3

1.0/1.0 point (graded)

Which of the following is NOT an example of state for a Markov process?

- The positions of the pieces on a chess board.
- The level of a stream gauge measuring the runoff from distant rain catchment basins, where water will travel to the gauge over different periods of time. ✔
- The dynamical state of a automobile including position on the road, velocity, and, acceleration.
- The hand you hold in a card game.

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Question 4

1.0/1.0 point (graded)

The transition probabilities of a Markov process depend on which of the following?

- The number of time steps in the current epoch.
- The action taken to arrive at the current state.
- The rewards for making each possible transition to subsequent state.
- The current state of the environment. ✔

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Question 5

1.0/1.0 point (graded)

Which of the following are required to compute the value function?

- The states and the actions taken for the MDP.
- The states, the actions taken, and the expected rewards for the MDP.
- The states, transition probabilities, actions taken, and the expected rewards for the MDP. ✔
- The rewards and actions for the system for the MDP.
- The states and the expected rewards for the MDP.

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Question 6

1.0/1.0 point (graded)

Which of the following are required to compute an action-value function?

- The states and the actions taken for the MDP.
- The states, the actions taken, and the expected rewards for the MDP. ✔
- The states, transition probabilities, actions taken, and the expected rewards for the MDP.
- The rewards and actions for the system for the MDP.
- The states and the expected rewards for the MDP.

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Question 7

1.0/1.0 point (graded)

Which of the following describes what a backup diagram represents?

- Shows the current state and all possible subsequent actions and states, and the expected value of a state can be computed by 'backing-up' over the values of subsequent states in the diagram. ✔
- Shows all possible paths to arrive at the current state, and can be used to compute the expected values of the predecessor states by 'backing up' over the values of these predecessor states.
- Shows all possible paths to arrive at the current state, and can be used to compute the expected values of the current state by 'backing up over the state values in the diagram.
- Shows the current state and all possible subsequent actions and states, and the expected value of a predecessor state can be computed by 'backing-up' over the values of the states in the diagram.

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Question 8

1.0/1.0 point (graded)

Which of the following are correct statements about the Bellman Equation?

- [x] Bellman equation represents the value of a state in terms of the value of successor states.
- [ ] Bellman equation represents the expected value of successor states.
- [x] Bellman equation can be written for a state or a state-action pair.
- [ ] Bellman equation is based on an approximation of the value of the current state.

✔

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