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Course > Week 10 > Practic... > Q3: X-V...

Q3: X-Values

Problem 3: X Values

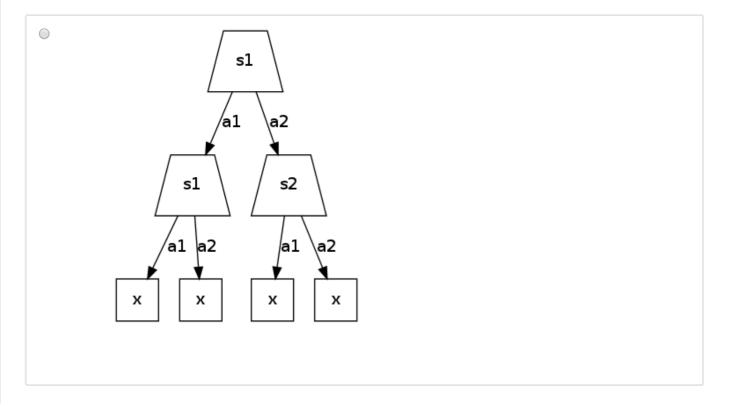
Part 1

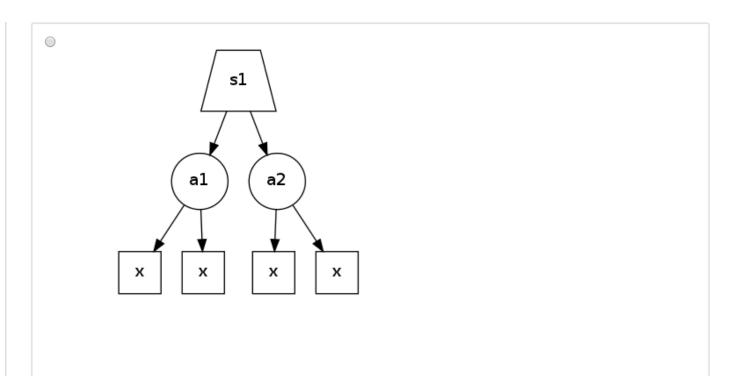
6/6 points (ungraded)

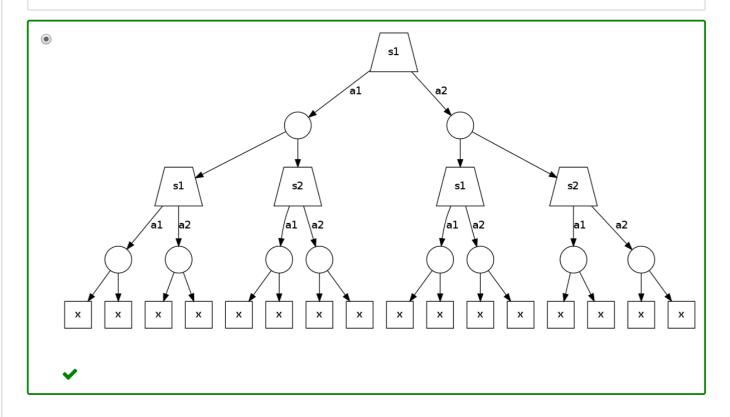
Instead of the Bellman update equation, consider an alternative update equation, which learns the X value function. The update equation, assuming a discount factor $\gamma = 1$, is shown below:

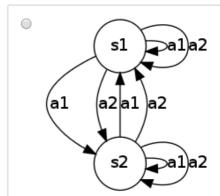
$$X_{k+1}\left(s
ight) \leftarrow \max_{a} \sum_{s'} T\left(s, a, s'
ight) \left[R\left(s, a, s'
ight) + \max_{a'} \sum_{s''} T\left(s', a', s''
ight) \left[R\left(s', a', s''
ight) + X_{k}\left(s''
ight)
ight]
ight]$$

Assuming we have an MDP with two states, S_1, S_2 and two actions, a_1, a_2 , select the expectimax tree rooted at S_1 that corresponds to the alternative update equation









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✓ Correct (6/6 points)

Part 2

6/6 points (ungraded)

Select the mathematical relationship between the X_k -values learned using the alternative update equation and the V_k -values learned using a Bellamn update equation.

$$\quad \quad \bigcirc \ \, X_{k}\left(s\right) =V_{k+1}\left(s\right)$$

$$\bigcirc \ X_{k+1}\left(s\right) =V_{k}\left(s\right)$$

$$\bigcirc \ \, X_{k}\left(s\right) =V_{k+2}\left(s\right)$$

$$\bigcirc X_{k+2}\left(s\right) =V_{k}\left(s\right)$$

$$\circ \ X_{k}\left(s
ight) =V_{k}\left(s
ight)$$

$$ullet X_k\left(s
ight) = V_{2k}\left(s
ight) imes$$

$$\bigcirc \ \ X_{2k}\left(s\right) =V_{k}\left(s\right)$$

$$\bigcirc X_{k}\left(s
ight) =V_{k}\left(s
ight) +V_{k+1}\left(s
ight)$$

$$\circ \ X_{k}\left(s
ight) =V_{k}\left(s
ight) +V_{k}\left(s^{\prime }
ight)$$

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✓ Correct (6/6 points)

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