UnsupervisedLearning - WEEK 3 - ReinforcementLearning - QUIZ 2 - State-action value function

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Your grade: 100%

Your latest: **100%** • Your highest: **100%** • To pass you need at least 80%. We keep your highest score.

Next item →

1 / 1 point

1. Which of the following accurately describes the state-action value function $Q(s, a)$?

- (●) It is the return if you start from state s, take action a (once), then behave optimally after that.
- ( ) It is the return if you start from state s and repeatedly take action a.
- ( ) It is the return if you start from state s and behave optimally.
- ( ) It is the immediate reward if you start from state s and take action a (once).

Correct
Great!

1 / 1 point

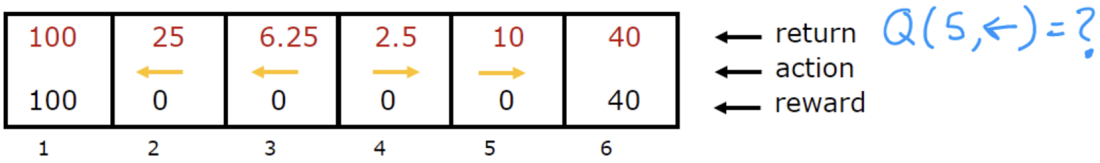
2. You are controlling a robot that has 3 actions: ← (left), → (right) and STOP. From a given state s, you have computed Q(s, ←) = -10, Q(s, →) = -20, Q(s, STOP) = 0.

What is the optimal action to take in state s?

- (●) STOP
- ( ) ← (left)
- ( ) → (right)
- ( ) Impossible to tell

Correct
Yes, because this has the greatest value.

3. For this problem, $\gamma = 0.25$. The diagram below shows the return and the optimal action from each state. Please compute Q(5, ←).



- (●) 0.625
- ( ) 0.391
- ( ) 1.25
- ( ) 2.5

Correct

Yes, we get 0 reward in state 5. Then $0 * 0.25$ discounted reward in state 4, since we moved left for our action. Now we behave optimally starting from state 4 onwards. So, we move right to state 5 from state 4 and receive $0 * 0.25^2$ discounted reward. Finally, we move right in state 5 to state 6 to receive a discounted reward of $40 * 0.25^3$. Adding these together we get 0.625.