

RL Quiz 4

The value of any state under an optimal policy is ____ the value of that state under a non-optimal policy. [Select all that apply] 1 point

- ☐ Strictly greater than
- ☒ Greater than or equal to
- ☐ Strictly less than
- ☐ Less than or equal to



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$$\pi_*(a|s) = q_*(s, a)$$

☐ Option 1

$$\pi_*(a|s) = \max_{a'} q_*(s, a')$$

☐ Option 2

$$\pi_*(a|s) = 1 \text{ if } a = \operatorname{argmax}_{a'} q_*(s, a'), \text{ else } 0$$

☒ Option 3

optimal policy always gives action which maximises the next state action value

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If a policy π is greedy with respect to its own value function v_π , then it is an optimal policy. 1 point

☒ True

☐ False

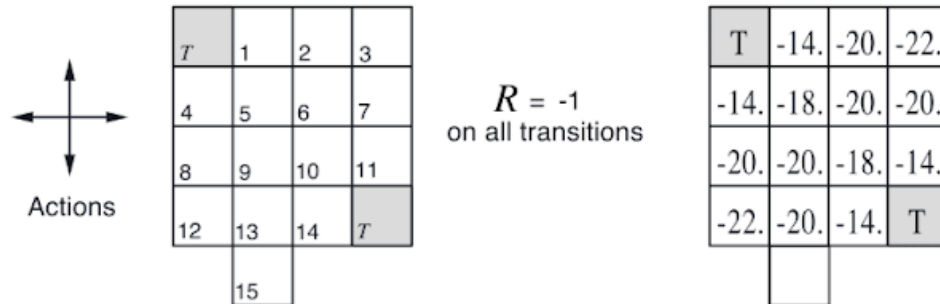
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take the agent off the grid in fact leave the state unchanged. The right hand of the figure shows the value of each state under the equiprobable random policy. If π is the equiprobable random policy, what is $q(7, \text{down})$?



- ☐ $q(7, \text{down}) = -14$
- ☐ $q(7, \text{down}) = -20$
- ☐ $q(7, \text{down}) = -21$
- ☒ $q(7, \text{down}) = -15$

$q(7, \text{down}) = -1 + 1(-14) = -15$

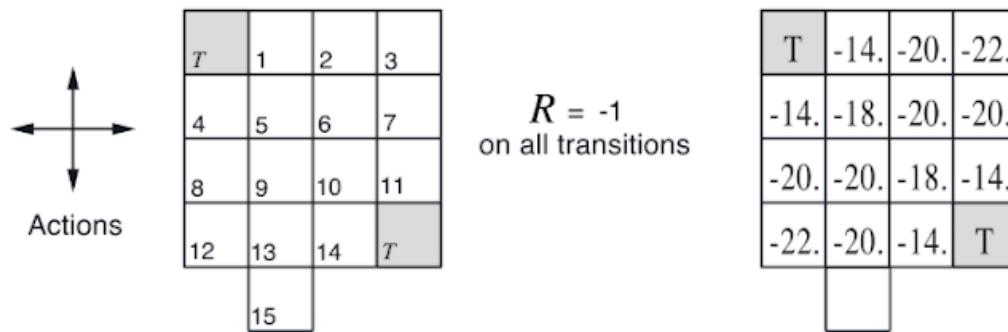
Use Bellman's equation for state action in which right side uses value of state

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take the agent off the grid and leave the state unchanged. The right hand of the figure shows the value of each state under the equiprobable random policy. If π is the equiprobable random policy, what is $v(15)$?



- ☐ $v(15) = -25$
- ☒ $v(15) = -24$
- ☐ $v(15) = -23$
- ☐ $v(15) = -21$
- ☐ $v(15) = -22$

$$v(15) = 0.25(-1+1(-20))+0.75(-1+1(v(15)))$$

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