

INFINITE-HORIZON-VALUE-ITERATION( $\mathcal{S}, \mathcal{A}, T, R, \gamma, \epsilon$ )

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1  for  $s \in \mathcal{S}, a \in \mathcal{A}$  :  
2       $Q_{\text{old}}(s, a) = 0$   
3  while True:  
4      for  $s \in \mathcal{S}, a \in \mathcal{A}$  :  
5           $Q_{\text{new}}(s, a) = R(s, a) + \gamma \sum_{s'} T(s, a, s') \max_{a'} Q_{\text{old}}(s', a')$   
6      if  $\max_{s, a} |Q_{\text{old}}(s, a) - Q_{\text{new}}(s, a)| < \epsilon$  :  
7          return  $Q_{\text{new}}$   
8       $Q_{\text{old}} = Q_{\text{new}}$ 
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