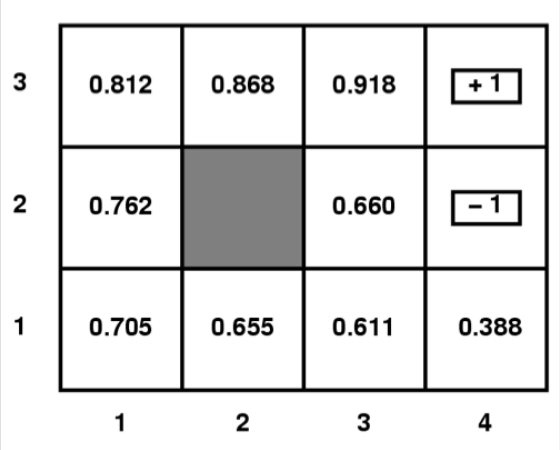
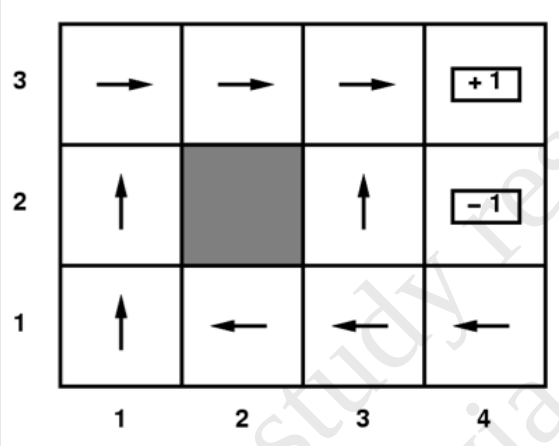
CS561 Artificial Intelligence
Quiz 9c
Thursday, April 24, 2014

Name:
Student USC ID:
Student USC email:

Given the grid below answer the following questions:



1) (5pts) Is this an optimal policy for the grid? Why or why not?



No, at state 3,1 the optimal action is to go N, not W, because state (3,2) has a higher utility value than state (2,1)

2) (5pts) What are the Q-values for the square (3,3) given that the agent is deterministic, i.e. $Pr(s,a,s') = 1$, R(3,3)=0 and $\gamma = .5$

Recall that $Q(a,s) = \Sigma\, Pr(s,a,s')[R(s) + \gamma max\ Q(a',s')]$ *and* $Q(a,s) = 0$ *at Terminal states* $(4,2),\ (4,3)$

Q(E,(3,3) = 1 *[0+ .5(1)] =.5

Q(W, (3,3)) = 1 *[0+.5 (Q(E(2,3))] = .125

Q(S, (3,3)) = 1 *[0+.5 (Q(N,(3,2))] = .125

Q(N,(3,2)) = 1*[0+ .5(Q(E,3,3)) = .25

Q(E,(2,3)) = 1*[0+ .5(Q(E,3,3)) = .25