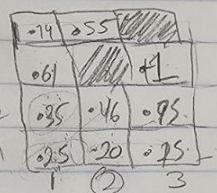
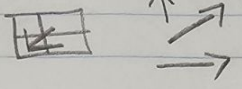
Jugraj Dulat
Angel

① 



0.28 + 0.046 + 0.02

$= R(1,1) + 1[0.8(1,2)) + 0.1[2,2) + (0.1)(2,1) = 0.35$

$= R(2,1) + 1[0.8(2,2) + 0.1(1,2) + (0.1)(3,1) = 0.46$

$= R(3,1) + 1[0.8(3,2) + 0.1(2,2) + (0.1)(2,1) = 0.27$

$= R(1,2) + 1[0.8(1,3) + 0.1(0) + 0.1(2,2) = 0.53$

$= R(2,2) + [0.8(0) + 0.1(3,2) + 0.1(3,1) = 0.70$

$= R(3,2) + [0.8(.75) + 0.1(2,2) + 0.1(3,1) = 0.74$

$= R(1,3) + (0.8(.74) + 0.1(2,4) + 0.1(0) = 0.66$

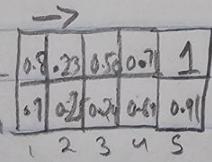
$= R(2,3)$ None since red grey

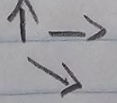
$= R(3,3) = 1$ already one which final

$= R(1,4) + (0.8(0) + 0.1(2,4) + 0. = 0.55$

$= R(2,4) + 0.8(0) + 0.1(0) + 0 = .74$

$= R(3,4)$ None

③ 



$= R(1,1) + 1[0.7(1,2) + 0.3(2,1) = .64$ (.8, .25)

$= R(2,1) + 1[0.7(2,2) + 0.3(3,1) = .85$

$= R(3,1) + 1[0.7(3,2) + 0.3(4,1) = .85$

$= R(4,1) + 1[0.7(4,2) + 0.3(5,1) = .55$

$= R(5,1) + 1[0.7(5,2) + 0.3(2,1) = .53$

$= R(1,2) + 1[0.7(2,2) + 0.3(3,1) = .84$

$= R(2,2) + 1[0.7(3,2) + 0.3(4,1) = .87$

$= R(3,2) + 1[0.7(4,2) + 0.3(5,1) = .91$

2) Financial analyst

3		-1	0	
2	1	-1	0	
1	0	1	0	1 ← final destination
	1	2	3	4

	0	0
0		0
0	1	0

Q-tables — Evens

agents can only move forward to final destn.

γ = 5% inflation rate

$R(1,1) = \gamma[.8(1,2) + .1(2,2) + .1(2,1)]$
$= 0 + .05[.8(1) + .1(-1) + .1(1)] = .04$

$R(2,1) = \gamma[.8(2,2) + .1(3,2) + .1(3,1)]$
$= 1 + .05[.8(-1) + .1(0) + .1(0)] = .96$

$R(3,1) = \gamma[.8(3,2) + .1(2,2) + .1(4,1)]$
$= 0 + .05[.8(0) + .1(-1) + .1(1)] = 1$

$R(4,1) = \gamma[.8(3,2) + .1(3,1) + .1(4,2)] = 1$
$R(1,2) = \gamma[.8(2,1) + .1(2,2) + .1(2,3)] = 1.035$
$R(2,2) = \gamma[.8(3,2) + .1(2,3) + .1(2,1)] = -.995$
$R(3,2) = \gamma[.8(4,1) + .1(3,3) + .1(3,1)] = .035$
$R(4,2) =$ obstacle
$R(1,3) =$ obstacle
$R(2,3) = \gamma[.8(3,3) + .1(2,2) + .1(3,2)] = -.005$
$R(3,3) = \gamma[.8(3,2) + .1(4,3) + .1(2,3)] = -1$
$R(4,3) = \gamma[.8(3,2) + .2(3,3)] = -.01$

Q-tables	
R(1,1)	.04
R(2,1)	.96
R(3,1)	1
R(4,1)	1
R(1,2)	
(2,2)	
(3,2)	
(4,2)	
(1,3)	
(2,3)	
(3,3)	
(4,3)	

4) lawyer $\gamma = 20\% = .2$ (percentage of what prepd remember (test) after studying)

2	.1	.9	.1	.9		.6
1	.8		.0	.1	.1	.9 ← destination
	1	2	3	4	5	6

$R(1,1) + .2[.8(1,2) + (.2(2,2) = .052$
$R(2,1)$ obstalee
$R(3,1) + .2[.8(3,2) + (.1(4,2) + (.1(4,1) = .136$
$R(4,1) + .2[.8(4,2) + (.2(5,1) = .248$
$R(5,1) + .2[.8(6,1) + (.2(6,2) = .244$
$R(6,1) = 1$
$R(1,2) + .2[.8(2,2) + (.2(1,1) = .244$
$R(2,2) + .2[.8(3,2) + (.2(3,1) = .916$
$R(3,2) + .2[.8(4,2) + (.1(3,1) + (.1(4,1) = .248$
$R(4,2) + .2[.8(4,1) + (.2(5,1) = .42$
$R(5,2)$ obstalee
$R(6,2) + .2[.8(6,1) + (.2(5,1) = .148$

(5)

6		-1
5	.91	
4	.94	.86
3	.96	.89
2	.5	.22
1	.3	.4
	1	2

↑
→

$= R(1,1) + 1(1,1) + (.9(1,2) + (.1(2,1) = .3$

$= R(2,2) + 1[0.9(2,2) + (1(1,2) = = .43$

$= R(1,2) + 1[0.9(1,3) + (.1(2,2) = = .56$

$= R(2,2) + 1[0.9(2,3 + .1(2,2) = .86$

$= R(1,3) + 1[0.9(1,4) + .1(2,3) = .87$

$= R(2,3) + 1[0.9(2,4) + .1(1,3) = .84$

$= R(1,4) + 1[0.9(1,5) + .1(2,4) = .76$

$= R(2,4) + 1[0.9(2,5) + .(1,4) = .96$

$= R(1,5) + 1[0.9(1,6) + .(2,5) = .97$

$= R(2,5) = 0$

$= R(1,0) = 0$ } already happens

$= R(2,0) = 1$ One

6)

3	.8	.4	.9	
2	.2		.1	.2 ← $R_{n=1}$
1	.5	.6	.1	.2
	1	2	3	4

$\gamma = .5$

$R(1,1) + .5[(.5(2,1) + .5(1,2) = .7$

$R(2,1) + .5[(.5(3,1) + (.5(3,2) = .65$

$R(3,1) + .5[(.5(3,2) + (.5(4,1) = .175$

$R(4,1) + .5[(.5(4,2) + (.5(3,1)] = .275$

$R(1,2) + .5[(.5(1,3) + (.5(2,3)] = .9$

$R(2,2)$ obstacle

$R(3,2) + .5[(.5(3,3) + (.5(4,2) = .375$

$R(4,2) = 1$

$R(1,3) + .5[(.5(2,3) + (.5(1,2) = 1.05$

$R(2,3) + .5[(.5(3,3) + (.5(3,2) = .65$

$R(3,3) + .5[(.5(3,2) + (.5(4,2) = .975$

$R(4,3)$ obstacle