ASSIGNMENT-2 MARKOV DECISION PROCESS

-TEAM 82
-201501115

PART1

Iteration: 1

y y 82.00 y

-4.10 -4.10 61.50 -4.10

-4.10 -82.00 y -4.10

-4.10 -4.10 -4.10 -4.10

Iteration: 2

y y 82.00 y

-8.20 36.49 60.68 44.28

-8.20 -82.00 y -8.20

-8.20 -8.20 -8.20 -8.20

Iteration: 3

y y 82.00 y

23.45 39.89 69.58 48.05

-12.30 -82.00 y 29.68

-12.30 -12.30 -12.30 -12.30

Iteration: 4

y y 82.00 y

28.93 47.35 70.29 59.34

5.23 -82.00 y 40.28

-16.40 -16.40 -16.40 17.19

Iteration: 5

y y 82.00 y

37.20 48.67 72.17 62.10

11.37 -82.00 y 51.42

-3.19 -20.50 6.37 28.20

Iteration: 6

y y 82.00 y

39.69 50.30 72.58 64.99

18.59 -82.00 y 55.86

2.62 -9.25 19.74 40.50

Iteration: 7

y y 82.00 y

41.97 50.79 73.03 66.05

21.31 -82.00 y 59.06

10.11 2.56 32.24 46.61

Iteration: 8

y y 82.00 y

42.86 51.20 73.18 66.83

23.41 -82.00 y 60.55

14.22 13.75 39.64 51.04

Iteration: 9

y y 82.00 y

43.49 51.37 73.30 67.19

24.33 -82.00 y 61.48

17.42 20.79 44.66 53.41

Iteration: 10

y y 82.00 y

43.78 51.48 73.36 67.41

24.92 -82.00 y 61.94

19.19 25.50 47.56 54.89

Iteration: 11

y y 82.00 y

43.95 51.53 73.39 67.52

25.21 -82.00 y 62.22

20.71 28.30 49.32 55.70

Number of Iterations: 11

When delta = 0:

Number of Iterations: 69

y y 82.00 y

44.15 51.60 73.43 67.66

25.58 -82.00 y 62.54

26.94 32.24 51.64 56.77

Utility value of Start state: 26.94

PART2:

Final Expected Utility:

y y 82.00 y

43.95 51.53 73.39 67.52

25.21 -82.00 y 62.22

20.71 28.30 49.32 55.70

Optimal Policy for each state:

y	y	T	y
E	E	S	W
S	T	y	S
E	E	E	S

Optimal Path:

Current State : (3,0)
Action to take: Right

Current State : (3,1)
Action to take: Right

Current State : (3,2)
Action to take: Right

Current State : (3,3)
Action to take: Above

Current State : (2,3)
Action to take: Above

Current State : (1,3)
Action to take: Left

Current State : (1,2)
Action to take: Above

Final Terminal State : (0,2)

PART 3:

Linear Programming

State, Action pair	Value of X
3,5	0.864702571
5,1	0
5,2	0
5,3	0
5,4	0.121765601
6,1	0
6,2	0
6,3	0
6,4	0 0.228333669
7,1	1.080878214
7,2	0
7,3	0
7,4	0
8,1	0
8,2	0
8,3	1.122764098
8,4	0
9,1	0.136986301
9,2	0
9,3	0
9,4	0
10,5	0.135297429
12,1	1.127999833
12,2	0
12,3	0
12,4	0
13,1	0
13,2	0
13,3	0
13,4	0 1.111111111
14,1	0
14,2	0
14,3	0
14,4	0.987654321
15,1	0
15,2	0
15,3	0
15,4	1.111111111

16,1	0.987654321
16,2	0
16,3	0
16,4	0