

## Team-3

Team members -

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## Part-B

Our program ran for 15 iterations and policy changed over -

1. Iteration 1
2. Iteration 2
3. Iteration 3
4. Iteration 4
5. Iteration 7

## OUTPUT

### Iteration : 1

State : (0,1)

North: -0.900

South: -0.900

West: -3.000

East: -0.600

Policy: -0.600

Utility: -1.200

State : (0,2)

North: -0.600

South: -0.600

West: -0.600

East: -0.600

Policy: -0.600

Utility: -1.200

State : (0,3)

North: -0.600

South: -0.600

West: -0.600

East: -0.600

Policy: -0.600  
Utility: -1.200

State : (1,0)  
North: -3.000  
South: -0.120  
West: -0.840  
East: -0.840

Policy: -0.120  
Utility: -0.720

State : (1,1)  
North: -0.600  
South: -0.600  
West: -0.600  
East: -0.600

Policy: -0.600  
Utility: -1.200

State : (1,3)  
North: -0.600  
South: -0.600  
West: -0.600  
East: -0.600

Policy: -0.600  
Utility: -1.200

State : (2,0)  
North: -0.540  
South: -0.540  
West: -0.120  
East: -0.600

Policy: -0.120  
Utility: -0.720

State : (2,1)  
North: -0.540  
South: -1.020  
West: -0.180  
East: -0.660

Policy: -0.180

Utility: -0.780

State : (2,2)

North: -0.600

South: -0.600

West: -0.600

East: -0.600

Policy: -0.600

Utility: -1.200

State : (2,3)

North: -0.600

South: 1.800

West: -0.300

East: -0.300

Policy: 1.800

Utility: 1.200

State : (3,0)

North: -0.180

South: -0.660

West: -0.540

East: -1.020

Policy: -0.180

Utility: -0.780

State : (3,1)

North: -0.600

South: -1.080

West: -0.660

East: -0.660

Policy: -0.600

Utility: -1.200

State : (3,2)

North: -0.360

South: -0.360

West: -1.080

East: 1.800

Policy: 1.800

Utility: 1.200

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-3.000 -0.600 -0.600 -0.600  
-0.120 -0.600 0.000 -0.600  
-0.120 -0.180 -0.600 1.800  
-0.180 -0.600 1.800 3.000

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## Iteration : 2

State : (0,1)  
North: -1.440  
South: -1.440  
West: -3.120  
East: -1.200

Policy: -1.200  
Utility: -1.800

State : (0,2)  
North: -1.200  
South: -1.200  
West: -1.200  
East: -1.200

Policy: -1.200  
Utility: -1.800

State : (0,3)  
North: -1.200  
South: -1.200  
West: -1.200  
East: -1.200

Policy: -1.200  
Utility: -1.800

State : (1,0)  
North: -3.072  
South: -0.528

West: -0.978

East: -1.362

Policy: -0.528

Utility: -1.128

State : (1,1)

North: -1.152

South: -0.816

West: -0.774

East: -1.158

Policy: -0.774

Utility: -1.374

State : (1,3)

North: -1.200

South: 0.720

West: -0.960

East: -0.960

Policy: 0.720

Utility: 0.120

State : (2,0)

North: -0.696

South: -0.744

West: -0.486

East: -0.774

Policy: -0.486

Utility: -1.086

State : (2,1)

North: -1.122

South: -1.362

West: -0.606

East: -1.230

Policy: -0.606

Utility: -1.206

State : (2,2)

North: -0.918

South: 1.002

West: -0.624

East: 0.960

Policy: 1.002

Utility: 0.402

State : (2,3)

North: -0.960

South: 1.920

West: -0.840

East: 1.080

Policy: 1.920

Utility: 1.320

State : (3,0)

North: -0.564

South: -0.852

West: -0.744

East: -1.320

Policy: -0.564

Utility: -1.164

State : (3,1)

North: -0.582

South: -1.158

West: -0.852

East: 0.732

Policy: 0.732

Utility: 0.132

State : (3,2)

North: -0.870

South: 1.050

West: -1.200

East: 1.920

Policy: 1.920

Utility: 1.320

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-3.000 -1.200 -1.200 -1.200  
-0.528 -0.774 0.000 0.720  
-0.486 -0.606 1.002 1.920  
-0.564 0.732 1.920 3.000

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### Iteration : 3

State : (0,1)  
North: -1.980  
South: -1.639  
West: -3.197  
East: -1.757

Policy: -1.639  
Utility: -2.239

State : (0,2)  
North: -1.800  
South: -1.800  
West: -1.800  
East: -1.800

Policy: -1.800  
Utility: -2.400

State : (0,3)  
North: -1.800  
South: -0.264  
West: -1.608  
East: -1.608

Policy: -0.264  
Utility: -0.864

State : (1,0)  
North: -3.130  
South: -0.879  
West: -1.341  
East: -1.538

Policy: -0.879  
Utility: -1.479

State : (1,1)  
North: -1.690  
South: -1.215  
West: -1.203  
East: -1.400

Policy: -1.203  
Utility: -1.803

State : (1,3)  
North: -1.416  
South: 1.080  
West: 0.048  
East: 0.048

Policy: 1.080  
Utility: 0.480

State : (2,0)  
North: -1.102  
South: -1.130  
West: -0.858  
East: -1.194

Policy: -0.858  
Utility: -1.458

State : (2,1)  
North: -1.138  
South: -0.173  
West: -0.783  
East: 0.167

Policy: 0.167  
Utility: -0.433

State : (2,2)  
North: 0.333  
South: 1.067  
West: -0.793  
East: 1.228

Policy: 1.228  
Utility: 0.628

State : (2,3)



North: 0.268  
South: 2.092  
West: 0.574  
East: 1.308

Policy: 2.092  
Utility: 1.492

State : (3,0)  
North: -0.762  
South: -1.064  
West: -1.126  
East: -0.329

Policy: -0.329  
Utility: -0.929

State : (3,1)  
North: -0.949  
South: -0.119  
West: -1.069  
East: 0.919

Policy: 0.919  
Utility: 0.319

State : (3,2)  
North: 0.545  
South: 1.279  
West: 0.038  
East: 2.092

Policy: 2.092  
Utility: 1.492

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-3.000 -1.639 -1.800 -0.264  
-0.879 -1.203 0.000 1.080  
-0.858 0.167 1.228 2.092  
-0.329 0.919 2.092 3.000

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**Iteration : 4**

State : (0,1)

North: -2.391

South: -2.042

West: -3.284

East: -2.324

Policy: -2.042

Utility: -2.642

State : (0,2)

North: -2.230

South: -2.230

West: -2.271

East: -1.171

Policy: -1.171

Utility: -1.771

State : (0,3)

North: -1.018

South: 0.058

West: -1.958

East: -0.730

Policy: 0.058

Utility: -0.542

State : (1,0)

North: -3.208

South: -1.255

West: -1.659

East: -1.918

Policy: -1.255

Utility: -1.855

State : (1,1)

North: -2.120

South: -0.674

West: -1.450

East: -1.710

Policy: -0.674  
Utility: -1.274

State : (1,3)  
North: -0.595  
South: 1.290  
West: 0.447  
East: 0.447

Policy: 1.290  
Utility: 0.690

State : (2,0)  
North: -1.342  
South: -0.903  
West: -1.167  
East: -0.587

Policy: -0.587  
Utility: -1.187

State : (2,1)  
North: -1.495  
South: -0.038  
West: -1.105  
East: 0.324

Policy: 0.324  
Utility: -0.276

State : (2,2)  
North: 0.609  
South: 1.300  
West: -0.134  
East: 1.406

Policy: 1.406  
Utility: 0.806

State : (2,3)  
North: 0.596  
South: 2.132  
West: 0.791  
East: 1.482

Policy: 2.132

Utility: 1.532

State : (3,0)

North: -1.017

South: -0.835

West: -0.952

East: -0.194

Policy: -0.194

Utility: -0.794

State : (3,1)

North: -0.290

South: 0.071

West: -0.785

East: 1.152

Policy: 1.152

Utility: 0.552

State : (3,2)

North: 0.744

South: 1.436

West: 0.227

East: 2.132

Policy: 2.132

Utility: 1.532

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-3.000 -2.042 -1.171 0.058

-1.255 -0.674 0.000 1.290

-0.587 0.324 1.406 2.132

-0.194 1.152 2.132 3.000

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**Iteration : 5**

State : (0,1)

North: -2.651

South: -1.557  
West: -3.272  
East: -1.809

Policy: -1.557  
Utility: -2.157

State : (0,2)  
North: -1.735  
South: -1.735  
West: -2.468  
East: -0.788

Policy: -0.788  
Utility: -1.388

State : (0,3)  
North: -0.665  
South: 0.320  
West: -1.402  
East: -0.419

Policy: 0.320  
Utility: -0.280

State : (1,0)  
North: -3.193  
South: -1.022  
West: -1.932  
East: -1.468

Policy: -1.022  
Utility: -1.622

State : (1,1)  
North: -2.427  
South: -0.534  
West: -1.776  
East: -1.311

Policy: -0.534  
Utility: -1.134

State : (1,3)  
North: -0.296  
South: 1.364

West: 0.651

East: 0.651

Policy: 1.364

Utility: 0.764

State : (2,0)

North: -1.600

South: -0.751

West: -0.974

East: -0.486

Policy: -0.486

Utility: -1.086

State : (2,1)

North: -1.028

South: 0.194

West: -0.812

East: 0.542

Policy: 0.542

Utility: -0.058

State : (2,2)

North: 0.770

South: 1.351

West: 0.013

East: 1.459

Policy: 1.459

Utility: 0.859

State : (2,3)

North: 0.786

South: 2.154

West: 0.954

East: 1.535

Policy: 2.154

Utility: 1.554

State : (3,0)

North: -0.764

South: -0.689

West: -0.803

East: 0.034

Policy: 0.034

Utility: -0.566

State : (3,1)

North: -0.147

South: 0.276

West: -0.637

East: 1.223

Policy: 1.223

Utility: 0.623

State : (3,2)

North: 0.910

South: 1.491

West: 0.436

East: 2.154

Policy: 2.154

Utility: 1.554

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-3.000 -1.557 -0.788 0.320

-1.022 -0.534 0.000 1.364

-0.486 0.542 1.459 2.154

0.034 1.223 2.154 3.000

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### Iteration : 6

State : (0,1)

North: -2.224

South: -1.406

West: -3.209

East: -1.440

Policy: -1.406

Utility: -2.006

State : (0,2)  
North: -1.354  
South: -1.354  
West: -2.003  
East: -0.501

Policy: -0.501  
Utility: -1.101

State : (0,3)  
North: -0.390  
South: 0.444  
West: -1.062  
East: -0.175

Policy: 0.444  
Utility: -0.156

State : (1,0)  
North: -3.156  
South: -0.904  
West: -1.736  
East: -1.345

Policy: -0.904  
Utility: -1.504

State : (1,1)  
North: -2.001  
South: -0.322  
West: -1.519  
East: -1.128

Policy: -0.322  
Utility: -0.922

State : (1,3)  
North: -0.071  
South: 1.396  
West: 0.738  
East: 0.738

Policy: 1.396  
Utility: 0.796



State : (2,0)  
North: -1.382  
South: -0.537  
West: -0.847  
East: -0.265

Policy: -0.265  
Utility: -0.865

State : (2,1)  
North: -0.899  
South: 0.266  
West: -0.709  
East: 0.607

Policy: 0.607  
Utility: 0.007

State : (2,2)  
North: 0.837  
South: 1.393  
West: 0.195  
East: 1.484

Policy: 1.484  
Utility: 0.884

State : (2,3)  
North: 0.852  
South: 2.161  
West: 1.004  
East: 1.559

Policy: 2.161  
Utility: 1.561

State : (3,0)  
North: -0.653  
South: -0.477  
West: -0.588  
East: 0.123

Policy: 0.123  
Utility: -0.477

State : (3,1)

North: 0.053  
South: 0.357  
West: -0.426  
East: 1.270

Policy: 1.270  
Utility: 0.670

State : (3,2)  
North: 0.960  
South: 1.515  
West: 0.500  
East: 2.161

Policy: 2.161  
Utility: 1.561

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-3.000 -1.406 -0.501 0.444  
-0.904 -0.322 0.000 1.396  
-0.265 0.607 1.484 2.161  
0.123 1.270 2.161 3.000

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## Iteration : 7

State : (0,1)  
North: -2.075  
South: -1.207  
West: -3.173  
East: -1.174

Policy: -1.174  
Utility: -1.774

State : (0,2)  
North: -1.097  
South: -1.097  
West: -1.825  
East: -0.345

Policy: -0.345  
Utility: -0.945

State : (0,3)  
North: -0.250  
South: 0.511  
West: -0.817  
East: -0.061

Policy: 0.511  
Utility: -0.089

State : (1,0)  
North: -3.123  
South: -0.694  
West: -1.620  
East: -1.154

Policy: -0.694  
Utility: -1.294

State : (1,1)  
North: -1.847  
South: -0.237  
West: -1.403  
East: -0.937

Policy: -0.237  
Utility: -0.837

State : (1,3)  
North: 0.034  
South: 1.408  
West: 0.777  
East: 0.777

Policy: 1.408  
Utility: 0.808

State : (2,0)  
North: -1.259  
South: -0.437  
West: -0.650  
East: -0.193

Policy: -0.193  
Utility: -0.793

State : (2,1)  
North: -0.705  
South: 0.328  
West: -0.507  
East: 0.652

Policy: 0.652  
Utility: 0.052

State : (2,2)  
North: 0.864  
South: 1.406  
West: 0.250  
East: 1.494

Policy: 1.494  
Utility: 0.894

State : (2,3)  
North: 0.881  
South: 2.165  
West: 1.027  
East: 1.569

Policy: 2.165  
Utility: 1.565

State : (3,0)  
North: -0.463  
South: -0.392  
West: -0.485  
East: 0.192

Policy: 0.192  
Utility: -0.408

State : (3,1)  
North: 0.114  
South: 0.404  
West: -0.344  
East: 1.287

Policy: 1.287

Utility: 0.687

State : (3,2)  
North: 0.984  
South: 1.526  
West: 0.540  
East: 2.165

Policy: 2.165  
Utility: 1.565

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-3.000 -1.174 -0.345 0.511  
-0.694 -0.237 0.000 1.408  
-0.193 0.652 1.494 2.165  
0.192 1.287 2.165 3.000

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### Iteration : 8

State : (0,1)  
North: -1.873  
South: -1.124  
West: -3.141  
East: -1.017

Policy: -1.017  
Utility: -1.617

State : (0,2)  
North: -0.942  
South: -0.942  
West: -1.608  
East: -0.260

Policy: -0.260  
Utility: -0.860

State : (0,3)  
North: -0.175

South: 0.543  
West: -0.684  
East: 0.001

Policy: 0.543  
Utility: -0.057

State : (1,0)  
North: -3.093  
South: -0.607  
West: -1.445  
East: -1.079

Policy: -0.607  
Utility: -1.207

State : (1,1)  
North: -1.632  
South: -0.171  
West: -1.208  
East: -0.842

Policy: -0.171  
Utility: -0.771

State : (1,3)  
North: 0.090  
South: 1.413  
West: 0.794  
East: 0.794

Policy: 1.413  
Utility: 0.813

State : (2,0)  
North: -1.080  
South: -0.371  
West: -0.565  
East: -0.128

Policy: -0.128  
Utility: -0.728

State : (2,1)  
North: -0.630  
South: 0.349

West: -0.439  
East: 0.670

Policy: 0.670  
Utility: 0.070

State : (2,2)  
North: 0.877  
South: 1.413  
West: 0.288  
East: 1.497

Policy: 1.497  
Utility: 0.897

State : (2,3)  
North: 0.892  
South: 2.166  
West: 1.036  
East: 1.572

Policy: 2.166  
Utility: 1.566

State : (3,0)  
North: -0.396  
South: -0.329  
West: -0.417  
East: 0.219

Policy: 0.219  
Utility: -0.381

State : (3,1)  
North: 0.157  
South: 0.425  
West: -0.283  
East: 1.296

Policy: 1.296  
Utility: 0.696

State : (3,2)  
North: 0.994  
South: 1.530  
West: 0.555

East: 2.166

Policy: 2.166

Utility: 1.566

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-3.000 -1.017 -0.260 0.543

-0.607 -0.171 0.000 1.413

-0.128 0.670 1.497 2.166

0.219 1.296 2.166 3.000

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### Iteration : 9

State : (0,1)

North: -1.740

South: -1.063

West: -3.119

East: -0.927

Policy: -0.927

Utility: -1.527

State : (0,2)

North: -0.856

South: -0.856

West: -1.466

East: -0.218

Policy: -0.218

Utility: -0.818

State : (0,3)

North: -0.137

South: 0.559

West: -0.613

East: 0.030

Policy: 0.559

Utility: -0.041



State : (1,0)  
North: -3.078  
South: -0.541  
West: -1.369  
East: -1.020

Policy: -0.541  
Utility: -1.141

State : (1,1)  
North: -1.492  
South: -0.142  
West: -1.121  
East: -0.772

Policy: -0.142  
Utility: -0.742

State : (1,3)  
North: 0.117  
South: 1.415  
West: 0.802  
East: 0.802

Policy: 1.415  
Utility: 0.815

State : (2,0)  
North: -1.002  
South: -0.341  
West: -0.502  
East: -0.103

Policy: -0.103  
Utility: -0.703

State : (2,1)  
North: -0.570  
South: 0.363  
West: -0.380  
East: 0.680

Policy: 0.680  
Utility: 0.080

State : (2,2)  
North: 0.882  
South: 1.416  
West: 0.302  
East: 1.499

Policy: 1.499  
Utility: 0.899

State : (2,3)  
North: 0.897  
South: 2.166  
West: 1.039  
East: 1.574

Policy: 2.166  
Utility: 1.566

State : (3,0)  
North: -0.341  
South: -0.303  
West: -0.386  
East: 0.236

Policy: 0.236  
Utility: -0.364

State : (3,1)  
North: 0.174  
South: 0.435  
West: -0.258  
East: 1.299

Policy: 1.299  
Utility: 0.699

State : (3,2)  
North: 0.998  
South: 1.532  
West: 0.563  
East: 2.166

Policy: 2.166  
Utility: 1.566

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-3.000 -0.927 -0.218 0.559  
-0.541 -0.142 0.000 1.415  
-0.103 0.680 1.499 2.166  
0.236 1.299 2.166 3.000

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### Iteration : 10

State : (0,1)  
North: -1.663  
South: -1.035  
West: -3.107  
East: -0.881

Policy: -0.881  
Utility: -1.481

State : (0,2)  
North: -0.811  
South: -0.811  
West: -1.385  
East: -0.196

Policy: -0.196  
Utility: -0.796

State : (0,3)  
North: -0.119  
South: 0.566  
West: -0.577  
East: 0.045

Policy: 0.566  
Utility: -0.034

State : (1,0)  
North: -3.068  
South: -0.511  
West: -1.313  
East: -0.994

Policy: -0.511  
Utility: -1.111

State : (1,1)  
North: -1.410  
South: -0.124  
West: -1.057  
East: -0.738

Policy: -0.124  
Utility: -0.724

State : (1,3)  
North: 0.130  
South: 1.416  
West: 0.805  
East: 0.805

Policy: 1.416  
Utility: 0.816

State : (2,0)  
North: -0.945  
South: -0.324  
West: -0.473  
East: -0.086

Policy: -0.086  
Utility: -0.686

State : (2,1)  
North: -0.544  
South: 0.369  
West: -0.357  
East: 0.685

Policy: 0.685  
Utility: 0.085

State : (2,2)  
North: 0.884  
South: 1.418  
West: 0.311  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.899  
South: 2.167  
West: 1.041  
East: 1.575

Policy: 2.167  
Utility: 1.567

State : (3,0)  
North: -0.319  
South: -0.288  
West: -0.368  
East: 0.243

Policy: 0.243  
Utility: -0.357

State : (3,1)  
North: 0.185  
South: 0.440  
West: -0.244  
East: 1.301

Policy: 1.301  
Utility: 0.701

State : (3,2)  
North: 0.999  
South: 1.533  
West: 0.566  
East: 2.167

Policy: 2.167  
Utility: 1.567

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-3.000 -0.881 -0.196 0.566  
-0.511 -0.124 0.000 1.416

-0.086 0.685 1.500 2.167  
0.243 1.301 2.167 3.000

---

### **Iteration : 11**

State : (0,1)  
North: -1.624  
South: -1.019  
West: -3.100  
East: -0.858

Policy: -0.858  
Utility: -1.458

State : (0,2)  
North: -0.789  
South: -0.789  
West: -1.344  
East: -0.186

Policy: -0.186  
Utility: -0.786

State : (0,3)  
North: -0.110  
South: 0.570  
West: -0.559  
East: 0.051

Policy: 0.570  
Utility: -0.030

State : (1,0)  
North: -3.063  
South: -0.492  
West: -1.287  
East: -0.978

Policy: -0.492  
Utility: -1.092

State : (1,1)  
North: -1.368

South: -0.116  
West: -1.028  
East: -0.719

Policy: -0.116  
Utility: -0.716

State : (1,3)  
North: 0.136  
South: 1.416  
West: 0.806  
East: 0.806

Policy: 1.416  
Utility: 0.816

State : (2,0)  
North: -0.919  
South: -0.316  
West: -0.456  
East: -0.079

Policy: -0.079  
Utility: -0.679

State : (2,1)  
North: -0.528  
South: 0.372  
West: -0.341  
East: 0.687

Policy: 0.687  
Utility: 0.087

State : (2,2)  
North: 0.885  
South: 1.418  
West: 0.315  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.900  
South: 2.167

West: 1.041

East: 1.575

Policy: 2.167

Utility: 1.567

State : (3,0)

North: -0.305

South: -0.282

West: -0.360

East: 0.246

Policy: 0.246

Utility: -0.354

State : (3,1)

North: 0.189

South: 0.442

West: -0.237

East: 1.302

Policy: 1.302

Utility: 0.702

State : (3,2)

North: 1.000

South: 1.533

West: 0.567

East: 2.167

Policy: 2.167

Utility: 1.567

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-3.000 -0.858 -0.186 0.570

-0.492 -0.116 0.000 1.416

-0.079 0.687 1.500 2.167

0.246 1.302 2.167 3.000

-----



## Iteration : 12

State : (0,1)  
North: -1.605  
South: -1.011  
West: -3.097  
East: -0.846

Policy: -0.846  
Utility: -1.446

State : (0,2)  
North: -0.778  
South: -0.778  
West: -1.323  
East: -0.181

Policy: -0.181  
Utility: -0.781

State : (0,3)  
North: -0.106  
South: 0.572  
West: -0.550  
East: 0.055

Policy: 0.572  
Utility: -0.028

State : (1,0)  
North: -3.061  
South: -0.484  
West: -1.272  
East: -0.970

Policy: -0.484  
Utility: -1.084

State : (1,1)  
North: -1.347  
South: -0.111  
West: -1.011  
East: -0.709

Policy: -0.111  
Utility: -0.711

State : (1,3)  
North: 0.139  
South: 1.417  
West: 0.807  
East: 0.807

Policy: 1.417  
Utility: 0.817

State : (2,0)  
North: -0.903  
South: -0.312  
West: -0.448  
East: -0.075

Policy: -0.075  
Utility: -0.675

State : (2,1)  
North: -0.520  
South: 0.374  
West: -0.334  
East: 0.688

Policy: 0.688  
Utility: 0.088

State : (2,2)  
North: 0.885  
South: 1.419  
West: 0.317  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.900  
South: 2.167  
West: 1.042  
East: 1.575

Policy: 2.167  
Utility: 1.567

State : (3,0)  
North: -0.298  
South: -0.278  
West: -0.356  
East: 0.248

Policy: 0.248  
Utility: -0.352

State : (3,1)  
North: 0.191  
South: 0.443  
West: -0.234  
East: 1.302

Policy: 1.302  
Utility: 0.702

State : (3,2)  
North: 1.000  
South: 1.533  
West: 0.568  
East: 2.167

Policy: 2.167  
Utility: 1.567

- E E S  
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-3.000 -0.846 -0.181 0.572  
-0.484 -0.111 0.000 1.417  
-0.075 0.688 1.500 2.167  
0.248 1.302 2.167 3.000

---

### Iteration : 13

State : (0,1)  
North: -1.595  
South: -1.007  
West: -3.096

East: -0.841

Policy: -0.841

Utility: -1.441

State : (0,2)

North: -0.773

South: -0.773

West: -1.313

East: -0.179

Policy: -0.179

Utility: -0.779

State : (0,3)

North: -0.104

South: 0.572

West: -0.546

East: 0.056

Policy: 0.572

Utility: -0.028

State : (1,0)

North: -3.059

South: -0.479

West: -1.265

East: -0.966

Policy: -0.479

Utility: -1.079

State : (1,1)

North: -1.336

South: -0.109

West: -1.003

East: -0.704

Policy: -0.109

Utility: -0.709

State : (1,3)

North: 0.141

South: 1.417

West: 0.807

East: 0.807

Policy: 1.417  
Utility: 0.817

State : (2,0)  
North: -0.896  
South: -0.310  
West: -0.443  
East: -0.073

Policy: -0.073  
Utility: -0.673

State : (2,1)  
North: -0.516  
South: 0.374  
West: -0.331  
East: 0.689

Policy: 0.689  
Utility: 0.089

State : (2,2)  
North: 0.885  
South: 1.419  
West: 0.317  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.900  
South: 2.167  
West: 1.042  
East: 1.575

Policy: 2.167  
Utility: 1.567

State : (3,0)  
North: -0.295  
South: -0.276  
West: -0.354  
East: 0.249

Policy: 0.249  
Utility: -0.351

State : (3,1)  
North: 0.192  
South: 0.443  
West: -0.232  
East: 1.302

Policy: 1.302  
Utility: 0.702

State : (3,2)  
North: 1.000  
South: 1.534  
West: 0.568  
East: 2.167

Policy: 2.167  
Utility: 1.567

- E E S  
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E E E S  
E E E -

-3.000 -0.841 -0.179 0.572  
-0.479 -0.109 0.000 1.417  
-0.073 0.689 1.500 2.167  
0.249 1.302 2.167 3.000

---

### Iteration : 14

State : (0,1)  
North: -1.591  
South: -1.005  
West: -3.095  
East: -0.838

Policy: -0.838  
Utility: -1.438

State : (0,2)

North: -0.770  
South: -0.770  
West: -1.308  
East: -0.178

Policy: -0.178  
Utility: -0.778

State : (0,3)  
North: -0.103  
South: 0.573  
West: -0.544  
East: 0.057

Policy: 0.573  
Utility: -0.027

State : (1,0)  
North: -3.059  
South: -0.477  
West: -1.261  
East: -0.964

Policy: -0.477  
Utility: -1.077

State : (1,1)  
North: -1.331  
South: -0.108  
West: -0.999  
East: -0.702

Policy: -0.108  
Utility: -0.708

State : (1,3)  
North: 0.141  
South: 1.417  
West: 0.807  
East: 0.807

Policy: 1.417  
Utility: 0.817

State : (2,0)  
North: -0.892

South: -0.309  
West: -0.441  
East: -0.072

Policy: -0.072  
Utility: -0.672

State : (2,1)  
North: -0.514  
South: 0.375  
West: -0.329  
East: 0.689

Policy: 0.689  
Utility: 0.089

State : (2,2)  
North: 0.886  
South: 1.419  
West: 0.318  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.900  
South: 2.167  
West: 1.042  
East: 1.575

Policy: 2.167  
Utility: 1.567

State : (3,0)  
North: -0.293  
South: -0.276  
West: -0.353  
East: 0.250

Policy: 0.250  
Utility: -0.350

State : (3,1)  
North: 0.193  
South: 0.443



West: -0.232

East: 1.302

Policy: 1.302

Utility: 0.702

State : (3,2)

North: 1.000

South: 1.534

West: 0.569

East: 2.167

Policy: 2.167

Utility: 1.567

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E E E S

E E E -

-3.000 -0.838 -0.178 0.573

-0.477 -0.108 0.000 1.417

-0.072 0.689 1.500 2.167

0.250 1.302 2.167 3.000

---

### Iteration : 15

State : (0,1)

North: -1.588

South: -1.004

West: -3.095

East: -0.837

Policy: -0.837

Utility: -1.437

State : (0,2)

North: -0.769

South: -0.769

West: -1.306

East: -0.177

Policy: -0.177

Utility: -0.777

State : (0,3)  
North: -0.102  
South: 0.573  
West: -0.543  
East: 0.057

Policy: 0.573  
Utility: -0.027

State : (1,0)  
North: -3.058  
South: -0.476  
West: -1.259  
East: -0.963

Policy: -0.476  
Utility: -1.076

State : (1,1)  
North: -1.329  
South: -0.107  
West: -0.996  
East: -0.701

Policy: -0.107  
Utility: -0.707

State : (1,3)  
North: 0.141  
South: 1.417  
West: 0.807  
East: 0.807

Policy: 1.417  
Utility: 0.817

State : (2,0)  
North: -0.890  
South: -0.309  
West: -0.440  
East: -0.071

Policy: -0.071  
Utility: -0.671

State : (2,1)  
North: -0.513  
South: 0.375  
West: -0.328  
East: 0.689

Policy: 0.689  
Utility: 0.089

State : (2,2)  
North: 0.886  
South: 1.419  
West: 0.318  
East: 1.500

Policy: 1.500  
Utility: 0.900

State : (2,3)  
North: 0.900  
South: 2.167  
West: 1.042  
East: 1.575

Policy: 2.167  
Utility: 1.567

State : (3,0)  
North: -0.292  
South: -0.275  
West: -0.353  
East: 0.250

Policy: 0.250  
Utility: -0.350

State : (3,1)  
North: 0.193  
South: 0.444  
West: -0.231  
East: 1.303

Policy: 1.303  
Utility: 0.703

State : (3,2)  
North: 1.000  
South: 1.534  
West: 0.569  
East: 2.167

Policy: 2.167  
Utility: 1.567

- E E S  
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E E E S  
E E E -

-3.000 -0.837 -0.177 0.573  
-0.476 -0.107 0.000 1.417  
-0.071 0.689 1.500 2.167  
0.250 1.303 2.167 3.000

---

Initially a policy is formed after the 1st iteration. After that initially the policy keeps changing as the utility values change. After some iterations the values start to converge and stabilise and thus the policy also stabilises.