

# Autonomous Agents 1

## Assignment 1

By Group 4: Gieske, Gornishka, Loor, Radscum

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### Implementation

The current implementation consists of the following classes:

**Predator**

**Prey**

**Environment**

**Game**

### Analysis

#### Simulator for the environment

Avarage run time	Standard deviation

#### Iterative policy evaluation

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00335	0.8	33
(2, 3)	(5, 4)	0.19892	0.8	33
(2, 10)	(10, 0)	0.19892	0.8	33
(10, 10)	(0, 0)	1.65066	0.8	33

  

Discount Factor	Iterations to converge
0.1	5
0.5	13
0.7	22
0.9	64

#### Policy iteration

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00335	0.8	2
(2, 3)	(5, 4)	0.19892	0.8	2
(2, 10)	(10, 0)	0.19892	0.8	2
(10, 10)	(0, 0)	1.65066	0.8	2

Discount Factor	Iterations to converge
0.1	2
0.5	2
0.7	2
0.9	2

## Value iteration

Predator	Prey	Value	Discount Factor	Iterations to converge
(0, 0)	(5, 5)	0.00000	0.8	8
(2, 3)	(5, 4)	0.04096	0.8	8
(2, 10)	(10, 0)	0.00819	0.8	8
(10, 10)	(0, 0)	0.32000	0.8	8

Discount Factor	Iterations to converge
0.1	1
0.5	7
0.7	7
0.9	8

## Smarter state-space encoding

## Conclusion

## Files attached

## Sources