

Foundations of Agents: Practical Assignment 1

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1 Description of states and actions

1.1 States

Notation:

- a = small disk,
- b = big disk,
- 1 = pin1,
- 2 = pin2,
- 3 = pin3,
- ab = a is on b

We have 12 different possible states:

- s_0 : ab1 2 3
- s_1 : 1 ab2 3
- s_2 : 1 2 ab3
- s_3 : ba1 2 3
- s_4 : 1 ba2 3
- s_5 : 1 2 ba3
- s_6 : b1 a2 3
- s_7 : a1 b2 3
- s_8 : b1 2 a3
- s_9 : a1 2 b3
- s_{10} : 1 a2 b3
- s_{11} : 1 b2 a3

1.2 States

We have 7 different actions:

- a_1 : move a to pin1
- a_2 : move a to pin2
- a_3 : move a to pin3
- b_1 : move b to pin1
- b_2 : move b to pin2
- b_3 : move b to pin3
- c : do nothing

2 Optimal policy

The optimal policy describes for every state the best action the agent should take.

- $\pi(s_0) = a_2$
- $\pi(s_1) = a_1$
- $\pi(s_2) = c$
- $\pi(s_3) = b_3$
- $\pi(s_4) = b_3$
- $\pi(s_5) = b_2$ OR b_1 ?
- $\pi(s_6) = b_3$
- $\pi(s_7) = b_3$
- $\pi(s_8) = a_2$
- $\pi(s_9) = a_3$
- $\pi(s_{10}) = a_3$
- $\pi(s_{11}) = a_1$

3 Utility

The utility