

# Principles of AI Planning

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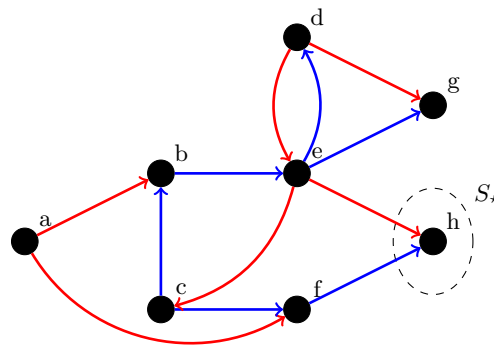
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## Exercise Sheet 12

Due: February 7th, 2012

### Exercise 12.1 (Strong cyclic planning – 5 points)

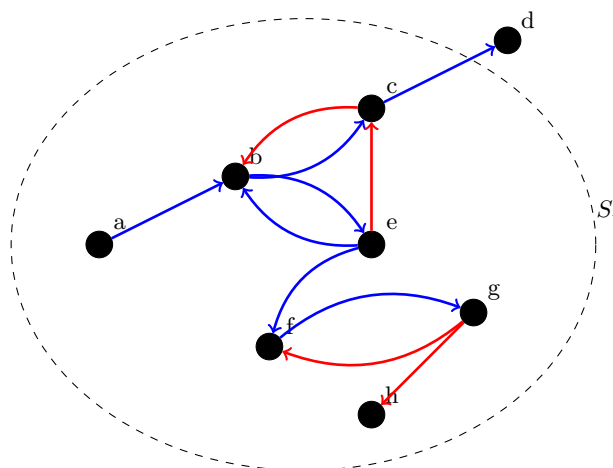
Consider the planning task that induces the following nondeterministic transition system with two operators  $o_{\text{red}}$  and  $o_{\text{blue}}$ .



Apply the strong cyclic planning algorithm presented in the lecture, and specify the candidate good state sets  $C_i$  as well as, for each iteration of the outer loop, the sets of states  $W_j$  from which a goal state can be reached in at most  $j$  steps without the danger of leaving the current set of candidate good states  $C_i$ . Extract a strong cyclic plan  $\pi$  for all good states.

### Exercise 12.2 (Maintenance Goals – 5 points)

Simulate the computation of the algorithm for maintenance goals for the following nondeterministic transition system with two operators  $o_{\text{red}}$  and  $o_{\text{blue}}$ .



Specify the sets  $\text{Safe}_i$  and a resulting plan for maintenance  $\pi$ .

*Note:* The exercise sheets may and should be worked on in groups of two students. Please state both names on your solution (this also holds for submissions by e-mail).