
Exercise 1.

(2 points)

Give all successors reachable within two steps, annotated with their heuristic value, to this 8-Puzzle state and domain abstraction:

1	2	3
6	7	9
4	8	

1	2	3
6	x	x
x	x	

Use the same graphical notation. Connect states to their successor states with edges (lines). Annotate the graphics with numbers showing the heuristic values.

Exercise 2.

(4 points)

Prove the proposition stating admissibility of Edelkamp's abstraction in STRIPS ("the pattern database relaxation", slide 38). Tip: assume some action sequence $\langle a_1, \dots, a_n \rangle$ reaching the goal from s ; executing that sequence in the abstraction, one gets a homomorphism property similar to the one used on "the pattern database relaxation", slides 16, 17.

Exercise 3.(4 points)

Prove the proposition on disjointness of two Edelkamp abstractions in STRIPS (“the pattern database relaxation”, slide 40). Tip: Use a “void actions” argument similar to the proposition on “the pattern database relaxation”, slide 29.