Week 4 - Relaxations

Due No due date **Points** 5 **Questions** 5 **Time Limit** None
Allowed Attempts Unlimited

Take the Quiz Again

Attempt History

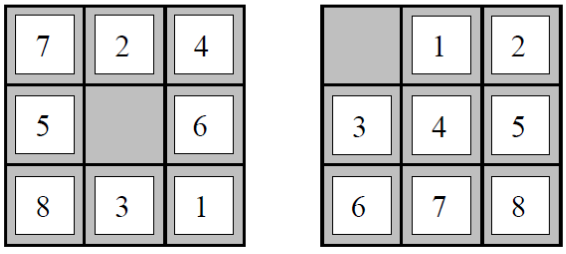
	Attempt	Time	Score
LATEST	Attempt 1	2 minutes	3 out of 5

Submitted Apr 20 at 10:31

Question 1 — 0 / 1 pts

For the 8-Puzzle problem, which of the following relaxations gives you the misplaced tiles heuristic?

Relaxation in the 8-Puzzle



Start State Goal State

Perfect heuristic h^* for $\mathcal{P}$: Actions = "A tile can move from square A to square B if A is adjacent to B and B is blank."

- How to derive the Manhattan distance heuristic? $\mathcal{P}'$: Actions = "A tile can move from square A to square B if A is adjacent to B."
- How to derive the misplaced tiles heuristic?

ou Answered

- (●) Tiles can move from A to B if B is blank
- ( ) Tiles can move from A to B if A is adjacent to B
- ( ) Tils can move from A to B if A is adjacent to B and B is blank

orrect Answer

- ( ) Tiles can move from A to B with no restrictions

Question 2

1 / 1 pts

8-Puzzle relaxations are efficiently computable

Correct!

- (●) True
- ( ) False

Question 3

1 / 1 pts

Removing preconditions and delete effects from PDDL planning problems yields a relaxation that is efficiently constructable

Correct!

- (●) True
- ( ) False

Question 4

0 / 1 pts

Removing preconditions and delete effects from PDDL planning problems yields a relaxation that is efficiently computable

ou Answered

- (●) True

orrect Answer

- ( ) False

In general no, even in the absence of preconditions and deletes this is still an NP-Hard problem. It's efficiently computable for the special case where the number of add effects is less than 3. Goal counting is an approximation of this relaxation which is efficiently computable.

Question 5

1 / 1 pts

Given the PDDL below, which precondition should be removed to relax 8-puzzle into Manhattan Distance

```
(define (domain PUZZLE)
   (:requirements :strips)
   (:predicates     (tile ?t)
          (position ?p)
          (adjacent ?from ?emp)
          (empty ?emp)
   )

   (:action move
      :parameters (?t ?from ?emp)
      :precondition (and (adjacent ?from ?emp) (at ?t ?from) (empty ?
emp))
      :effects (and (not (at ?t ?from)) (not (empty ?emp)) (at ?t ?emp)
(empty ?from))
```

- remove **adjacent** from preconditions
- remove **empty** from preconditions
- remove **at** from preconditions
- None of the above

Correct!