; Modelling the Wumpus World in PDDL: using ADL...
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; Source web page:
;
(define (domain wumpus-adl)
  (:requirements :adl :typing)

;; object types
 (:types agent wumpus gold arrow square)

(:predicates
 (adj ?square-1 ?square-2 - square)
 (pit ?square - square)
 (at ?what ?square)
 (have ?who ?what)
 (alive ?who))

(:action move
  :parameters (?who - agent ?from - square ?to - square)
  :precondition (and (alive ?who)
    (at ?who ?from)
    (adj ?from ?to)
  )
  :effect (and (not (at ?who ?from))
    (at ?who ?to)
    (when (pit ?to)
      (and (not (alive ?who)))
    )
    (when (exists (?w - wumpus) (and (at ?w ?to) (alive ?w)))
      (and (not (alive ?who)))
    )
  )
)

(:action take
  :parameters (?who - agent ?where - square ?what)
  :precondition (and (alive ?who)
    (at ?who ?where)
    (at ?what ?where)
  )
  :effect (and (have ?who ?what)
    (not (at ?what ?where)))
)

(:action shoot
  :parameters (?who - agent ?where - square ?with-arrow - arrow
    ?victim - wumpus ?where-victim - square)
  :precondition (and (alive ?who)
    (have ?who ?with-arrow)
    (at ?who ?where)
    (alive ?victim)
    (at ?victim ?where-victim)
    (adj ?where ?where-victim))
  :effect (and (not (alive ?victim))
    (not (have ?who ?with-arrow)))
)
)
(define (problem wumpus-adl-1)
  (:domain wumpus-adl)

  (:objects
   sq-1-1 sq-1-2 sq-1-3 sq-2-1 sq-2-2 sq-2-3 - square
   the-gold - gold
   the-arrow - arrow
   agent-1 - agent
   wumpus-1 - wumpus)

  (:init (adj sq-1-1 sq-1-2) (adj sq-1-2 sq-1-1)
          (adj sq-1-2 sq-1-3) (adj sq-1-3 sq-1-2)
          (adj sq-2-1 sq-2-2) (adj sq-2-2 sq-2-1)
          (adj sq-2-2 sq-2-3) (adj sq-2-3 sq-2-2)
          (adj sq-1-1 sq-2-1) (adj sq-2-1 sq-1-1)
          (adj sq-1-2 sq-2-2) (adj sq-2-2 sq-1-2)
          (adj sq-1-3 sq-2-3) (adj sq-2-3 sq-1-3)
          (pit sq-1-2)
          (at the-gold sq-1-3)
          (at agent-1 sq-1-1)
          (alive agent-1)
          (have agent-1 the-arrow)
          (at wumpus-1 sq-2-3)
          (alive wumpus-1))

  (:goal (and (have agent-1 the-gold) (at agent-1 sq-1-1) (alive agent-1)))
  )