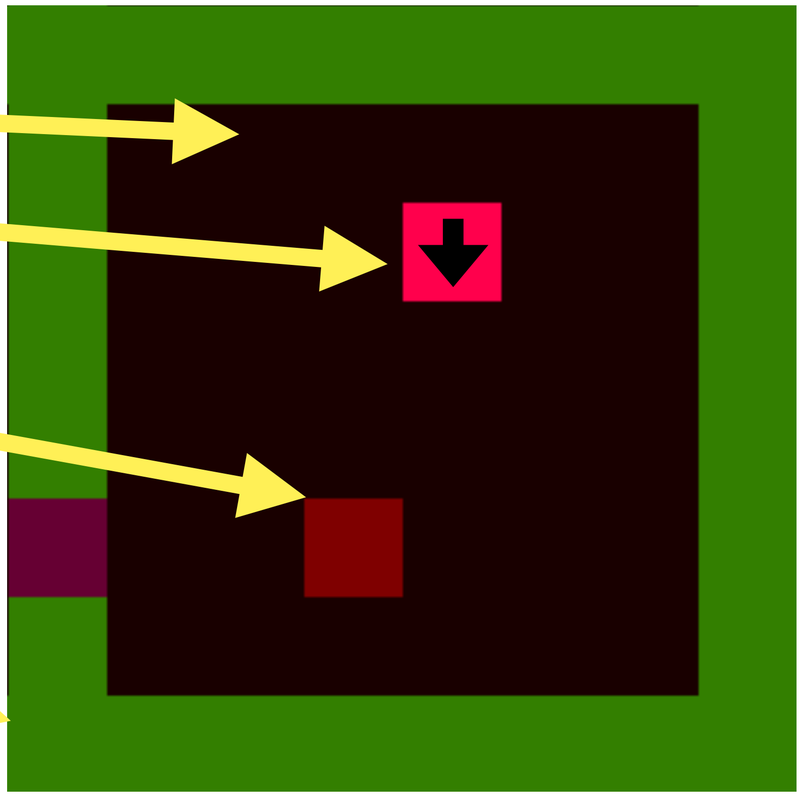
Basic representation of gridworld

type Object =
{ empty,
  agent,
  key,
  door,
  wall }

type Action =
{ start, forward, left, right, pickup, toggle }

feature Action : State -> Action
  e.g. Action(s) = start

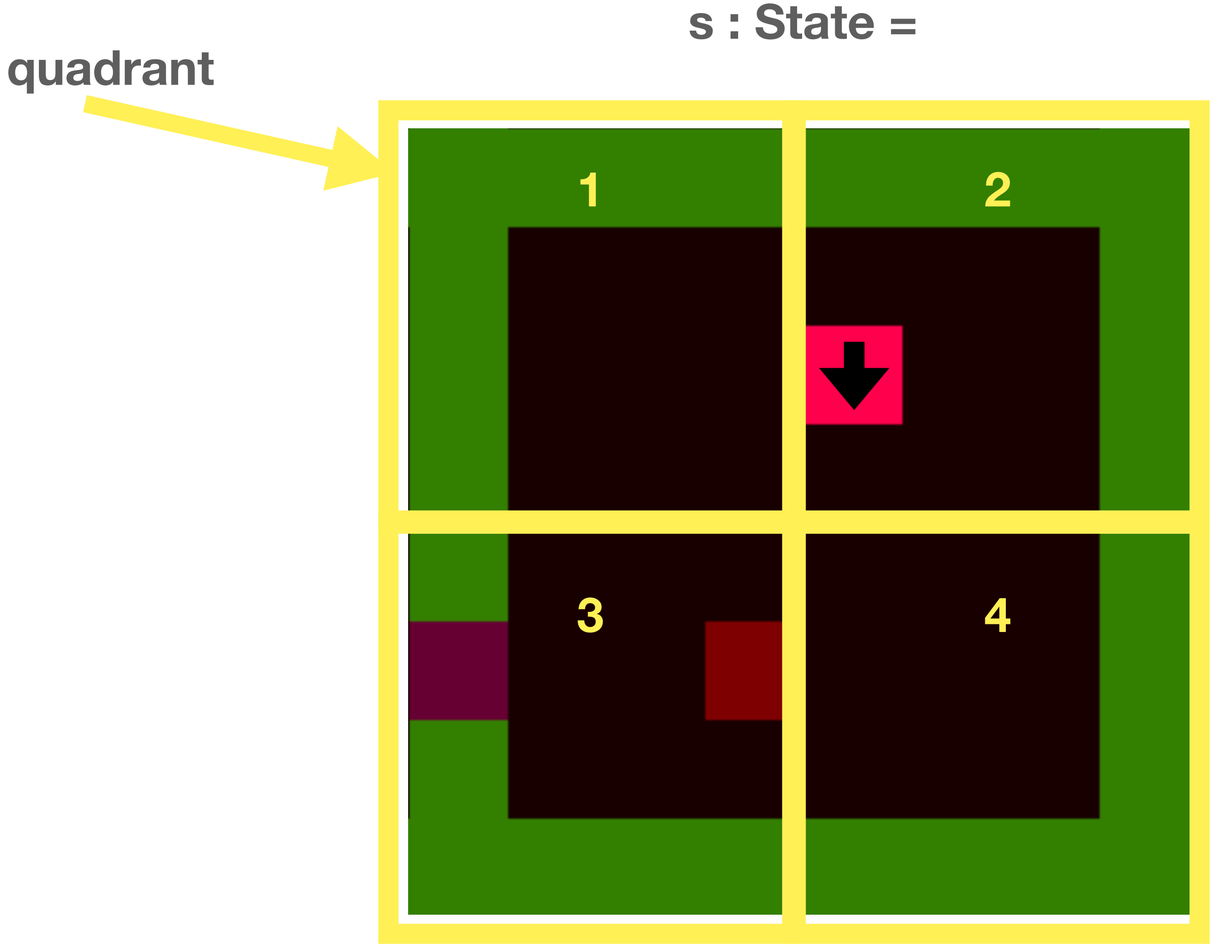
s : State =



Bird’s-eye features

type Quadrant = {1,2,3,4}
type Orientation = {N,E,S,W}

feature AgentQuad : State -> Quadrant
  e.g. AgentQuad(s) = 2
feature KeyQuad : State -> Quadrant
  e.g. KeyQuad(s) = 3
feature DoorQuad : State -> Quadrant
  e.g. DoorQuad(s) = 3
feature Orientation : State -> Orientation
  e.g. Orientation(s) = S



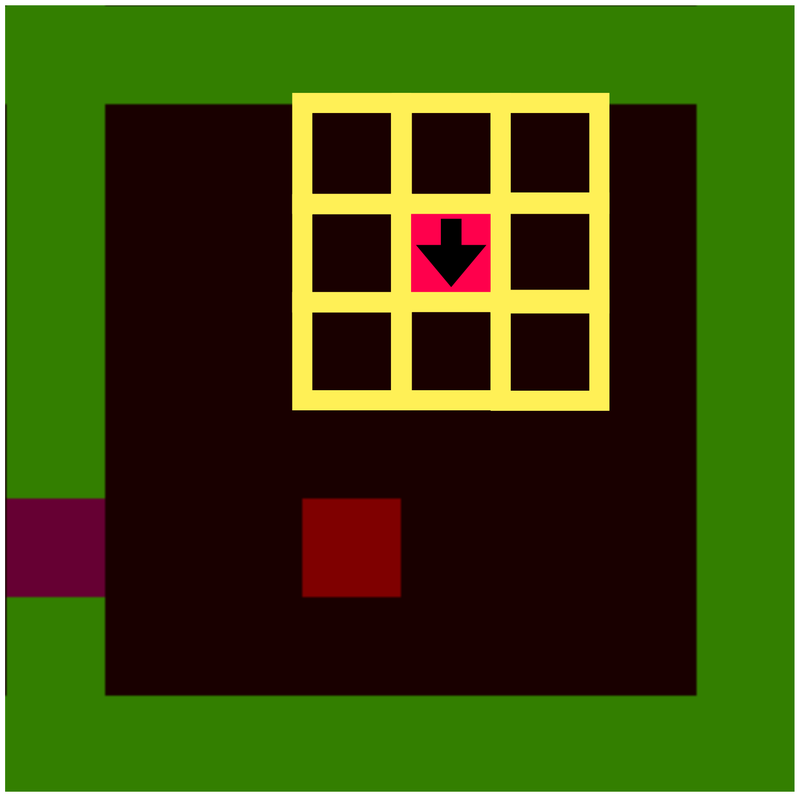
First-person features

Features capturing the contents of the squares surrounding the agent:

feature AgentInFront : State -> Object
feature AgentLeft : State -> Object
feature AgentRight : State -> Object
feature AgentBehind : State -> Object
feature AgentInFrontLeft : State -> Object
feature AgentInFrontRight : State -> Object
feature AgentBehindLeft : State -> Object
feature AgentBehindRight : State -> Object

e.g. AgentInFront(s) = empty

s : State =



Other viewpoints

Features capturing the basic relationship between agent, door, key and the far wall.

viewpoint CanSeeKey : State -> Bool

CanSeeKey(s) = true

viewpoint CanSeeDoor : State -> Bool

CanSeeDoor(s) = true

viewpoint Distance : State -> Integer

Distance(s) = 4

s : State =