Lab 3

Wumpus World

The Wumpus world is a simple world example to illustrate the worth of a knowledge-based agent and to represent knowledge representation. It was inspired by a video game Hunt the Wumpus by Gregory Yob in 1973.

Game Description

The Wumpus world is a cave with (*m* x *n)* rooms connected with passageways. The rooms are connected with each other. We have a knowledge-based agent who will go forward in this world. The cave has a room with a beast which is called Wumpus, who eats anyone who enters the room. The Wumpus can be shot by the agent, but the agent has a single arrow. In the Wumpus world, there are some Pits rooms which are bottomless, and if agent falls in Pits, then he will be stuck there forever. The exciting thing with this cave is that in one room there is a possibility of finding a heap of gold. So the agent goal is to find the gold and climb out the cave without fallen into Pits or eaten by Wumpus.

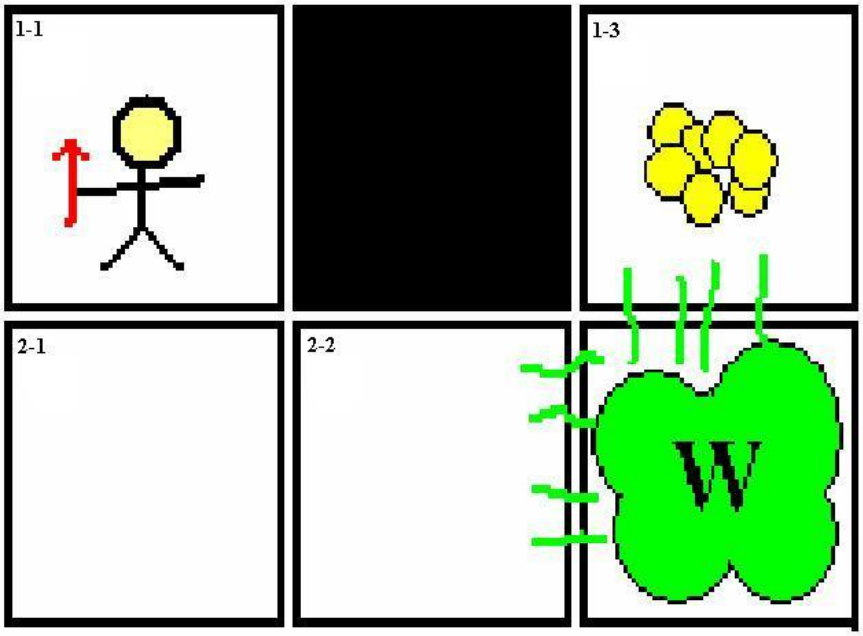

Figure 1: A Wumpus World game consists of 2x3 rooms, an agent, and a Wumpus.

a)

Define two very different ways to represent the Wumpus world (objects, states, actions) shown in Figure 1 consisting of 2x3 rooms (one of them is a pit), an agent and a Wumpus. Ensure there is a difference in the set of possible states between both representations. Write the PDDL files (problem and domain files) for the two representations required in (a) for a planner of your choice to solve this problem. The <domain .pddl> should define the Wumpus world actions and predicates. If you wish, you can hardcode the domain representation into your suggested planner but be sure to state this in your README. The <problem .pddl> contains the objects, init state, and goal state. The output of your planner should be a sequence of actions that solves the given problem.

b)

Explain why one representation would be preferable to the other.