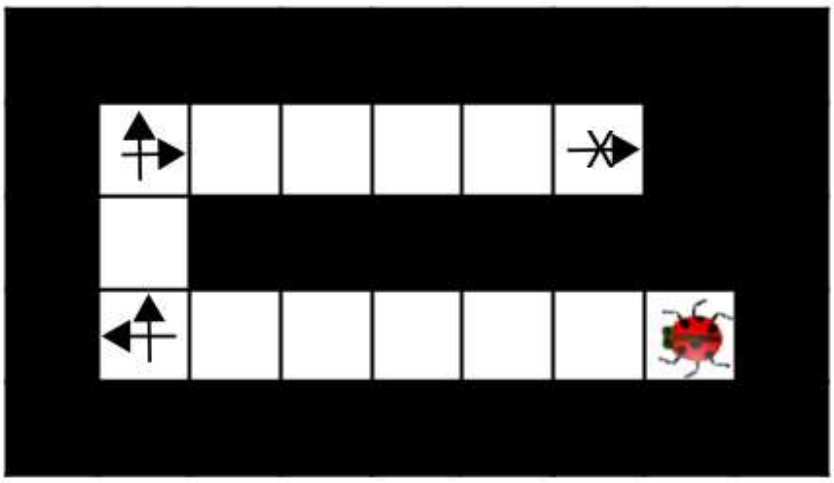
hw1_search_q8_hive_minds_jumping_bug

Question 8: Hive Minds: Jumping Bug

6/6 points (ungraded)

Your single insect is alone in the maze again. This time, it has super legs that can take it as far as you want in a straight line in each time step. The disadvantage of these legs is that they make turning slower, so now it takes the insect a time step to change the direction it is facing. Moving v squares requires that all intermediate squares passed through, as well as the vth square, currently be empty. The cost of a multi-square move is still 1 time unit, as is a turning move. As an example, the arrows in the maze below indicate where the insect will be and which direction it is facing after each time step in the optimal (fewest time steps) plan (cost 5):



Which of the following is a minimal state representation?

- A tuple (x, y) giving the position of the insect.
- A tuple (x, y) giving the position of the insect, plus the direction the insect is facing. ✔

- A tuple (x, y) giving the position of the insect, plus an integer representing the number of direction changes necessary on the optimal path from the insect to the goal.
- A tuple (x, y) giving the position of the insect, plus an integer t representing the number of time steps that have passed.

What is the size of the state space?

- MN
- $\max(M, N)$
- $\min(M, N)$
- $4MN$ ✔
- $(MN)^2$
- $(MN)^4$
- 4^{MN}

Submit

✔ Correct (6/6 points)