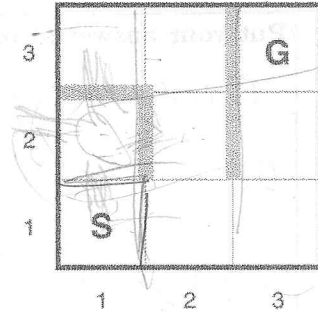


#### 4. (44 points) Search Agents and Partial Observability

Pacman is trapped in a  $3 \times 3$  maze like the one shown to the right. Pacman starts at (1,1), the goal is at (3,3), and the actions Up, Down, Left, Right have their usual effects unless blocked by a wall. Pacman does *not* know where the internal walls are. In any given state, Pacman can see the set of legal actions.

This problem can be viewed as an offline search problem in belief-state space, where the initial belief state includes all possible environment configurations.



(a) How large is the initial belief state?

Put your answer(s) to 4a here:

1

(b) How large is the space of belief states?

Put your answer(s) to 4b here:

3061  
9.  $2^{12}$

(c) How many distinct percepts are possible in the initial state?

Put your answer(s) to 4c here:

42