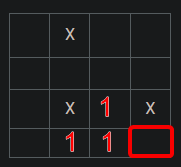
Assignment 6

Hill Climbing and Simulated Annealing

1. What is a local search algorithm?
   1. A search from an initial state to neighboring states that only tracks its current location and does not remember previous paths or reached states.
2. What is an optimization problem? Give an example for such a problem.
   1. A problem that tries to find the best state that satisfies an objective function in order to maximize the objective value. An example is finding the optimal cruising speed for a car to travel at while maximizing speed and fuel efficiency.
3. Can you think of a situation in which hill-climbing will get stuck in this exploration task and never find a solution?



* 1. If the robot were to travel into the red-outlined cell in the image above, it would be unable to backtrack and explore any other unexplored cells. It would then be stuck in the bottom-right corner.

1. Can you then explain how simulated-annealing tries to overcome this problem?
   1. Simulated-annealing would allow the robot to accept moves into previously-explored cells, but do so with some probability p that decreases as the robot continues to explore into other previously explored cells. That would indicate that the path is not optimal.