Algorithm Plan

Aim:

Guess the position of the ship with the minimum number of guesses

Environment:

* A 10x10 grid labelled by 2 integer (0-9,0-9) as the field and each location has a status variable:
* i.e. 0 🡺 not hit yet, 1 🡺 missed, 2 🡺 hit correctly
* A randomly located 2x1 ship represented by 4 integer (x1,y1,x2,y2)

States of the environment:

* Each state is unique and contain the information about the grid (location of the ship is not known by the agent)
* Total number of states = status of each location = 10\*10\*3
* Each state is labelled uniquely:

Actions:

Guess a location (a,b)

So the total number of actions would be 10x10 = 100

Reward system:

If the agent:

* Guess the guessed position 🡺 -20 (useless move)
* Miss 🡺 -10
* Hit 🡺 +10
* Sink the ship (both location is guessed) 🡺 +20
* Each guess 🡺 -1 (to encourage it to take the minimum guess)

Results:

Number of guesses made on average (to sink all ships)

Sources of possible errors:

* The reward system maybe incomplete
* I don’t think a variable for storing the status of the ship is necessary
* Hopefully the state labelling method is correctly including all possibilities

Improvements:

* Research how to properly construct the reward system
* If there are more ships, maybe I should encourage the agent to hit the same ship again once it landed a hit: hitting a ship 🡺 +10, hitting same ship and sink it 🡺 +20, but might not be necessary