

Worksheet 1
Tasks

Grid World

1. (4 points) Implement a two dimensional (2D) Grid World with 25 states, 5 in each dimension. Additionally, your world needs to be able to store where the agent is currently located. It is your choice to use an Array(List) or a DoubleLinkedList. You may also chose how to represent the agent, make your choice clear. The Agent starts in the middle of our Grid World.

Movement in this Grid World

2. (3 points) Write a function *moveAgentWest* that moves the agent one step to the left. Do not create a new world. Take your existing world, preferably as a parameter, and change the agent from being in the middle to one step to the west on the first execution(call) and further west on consecutive calls.
Tip: You might want to either work with an Agent class or have a helper that finds where the agent is currently located.
3. (2 points) Modify your movement function in such a way that the agent would not move if it is already at the western boundary. Or put differently we are in a world with bouncing borders. They simply reflect the agent back to its position if it tries to go out of bounds.
Give your function a different name (keep both functions). I suggest *moveAgentWestBouncy*
4. (2 points) Imaging our world is now round instead. Meaning if we move over the edge we arrive at the other end.
Write a function *moveNorthAroundTheWorld* that operates under this premise.

Example World:

		x		

Here x signifies the agent in the middle of our 5x5 Grid World.

Example Movement: Moving the agent twice via *moveAgentWest* would put the agent at the western/leftmost border, what happens when we move west here is currently undefined.

Calling *moveAgentWestBouncy* twice would still leave the agent in the western most position (and on the middle height wise).

Now, calling *moveNorthAroundTheWorld* three times would first move the agent up until it reaches the northern border and then over the northern border to the southern border as the world is round and borders are just our imagination in this world.

Have a wonderful day :)