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Project Checkpoint 1

At this point in the project, much of the work has been researching the problem and learning the best way to create a battleship AI agent. Molly and I both spent a lot of time researching different algorithms that can be used to successfully play Battleship. We also tried taking what we learned in class and checking how it can be used within our project. Next, we found battleship game code online that we can have our agent use to play battleship. We will then have to integrate our agent, once completed, with this game code. I also pulled in the util.py file from our Pacman assignments, as it contains many useful data structures and functions that can be used in our agent.

Regarding code, I began creating the agent.py file, which is where our agent will be created. I then started to create global variables and constants that we will likely need. Next, I began to implement basic functions for our algorithms. The three main functions are randomShot, huntTarget, and probReasoning. RandomShot will have the agent simply choose random targets on the opponent’s board. This is the simplest of the three algorithms. HuntTarget will begin by shooting randomly until it hits a target. Then it will target nearby locations, as these are likely to be hits, as well. The final algorithm, probReasoning, will be the most difficult. This will figure out the probability of hitting a target at a location given previous shots and possible ship placement. By ruling out where ship can and cannot fit, it will learn where the remaining enemy ships will be most likely to be.

Other smaller functions also need to be implemented, such as isHit or checkWin. Along with these, other functions from previous Pacman assignments will be helpful and need to be brought in, specifically the Q-Learning functions, as they will be very helpful, as well.

Molly is currently working on a user interface along with helping me implement these important functions, as they are not completed yet. They also cannot be tested until we completely integrate the battleship code we have. A lot of work still needs to be done, but I feel as though we are off to a solid start.