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CS 1571 Assignment #1 Write-up

For the monitor problem, the heuristic that I used was the number of targets being tracked by sensors. For example, if there were two targets not being tracked, the state would received a priority of two. If all targets were being covered, the states would receive a priority of zero, and thereby being expanded upon first. This worked very efficiently and massively cut down on the time needed to explore the states that didn't have all targets being covered.

For the aggregation problem, the heuristic function I used was the sum of the straight-line distance between the nodes.

After analysis of the output, I conclude that the space and time-complexities of the results that I got seem to make a lot of sense with what we discussed in class. The use of heuristics greatly sped up the amount of nodes needed to be searched. Especially in the monitoring problem, only searching states with all the targets covered MASSIVELY improved the run-time.

However with the greedy algorithm, the heuristic would sometimes end up with different results based on the path that it took down.

I think I was confused on the problem prompt, but the way I designed the search space was that for both the monitor and aggregation problems, each algorithms would iterate through the search space and find potential goal states. If the state up being evaluated was the best solution, it would be recorded. Additionally, for all algorithms other than bfs, I had a conditional statement that stated once I started viewing errenous states, it would break and end the function. I didn't perfect statement, but for the most part it worked relatively well.