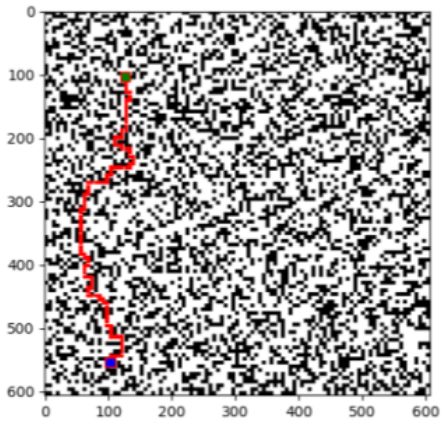
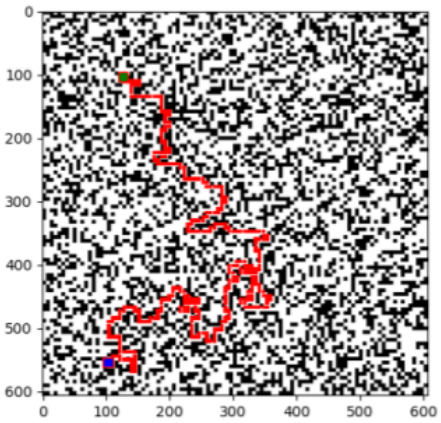
Results (path images and graphs):
Each algorithm's path in Maze 30

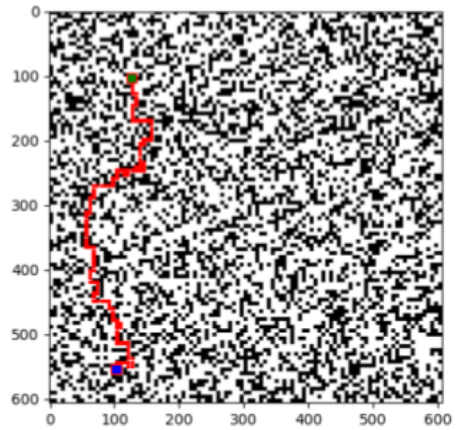
Breadth First Search



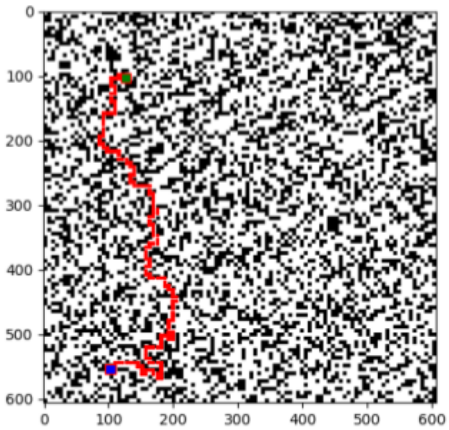
Depth-Limited Search



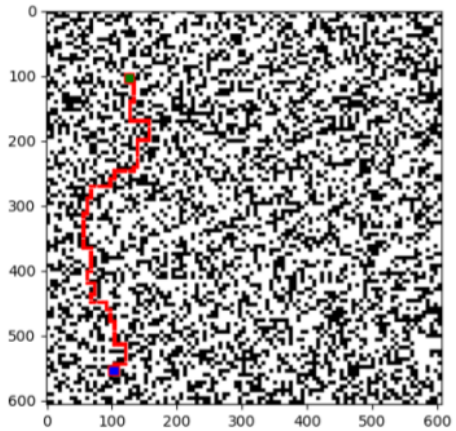
A* using Manhattan Distance



A* using h_3

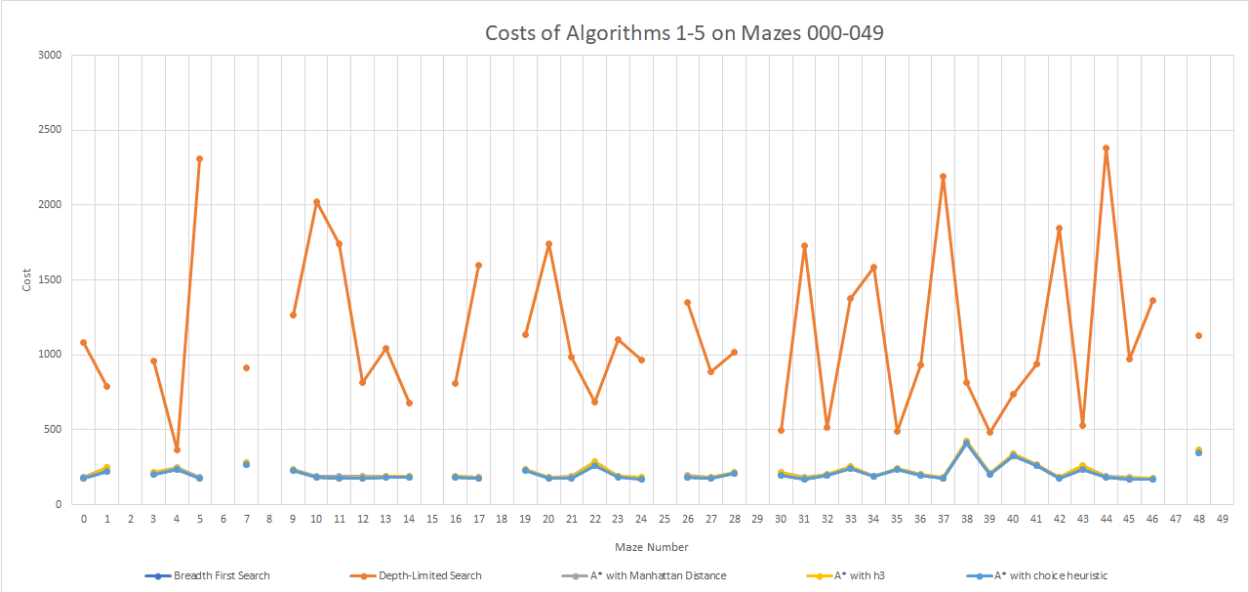


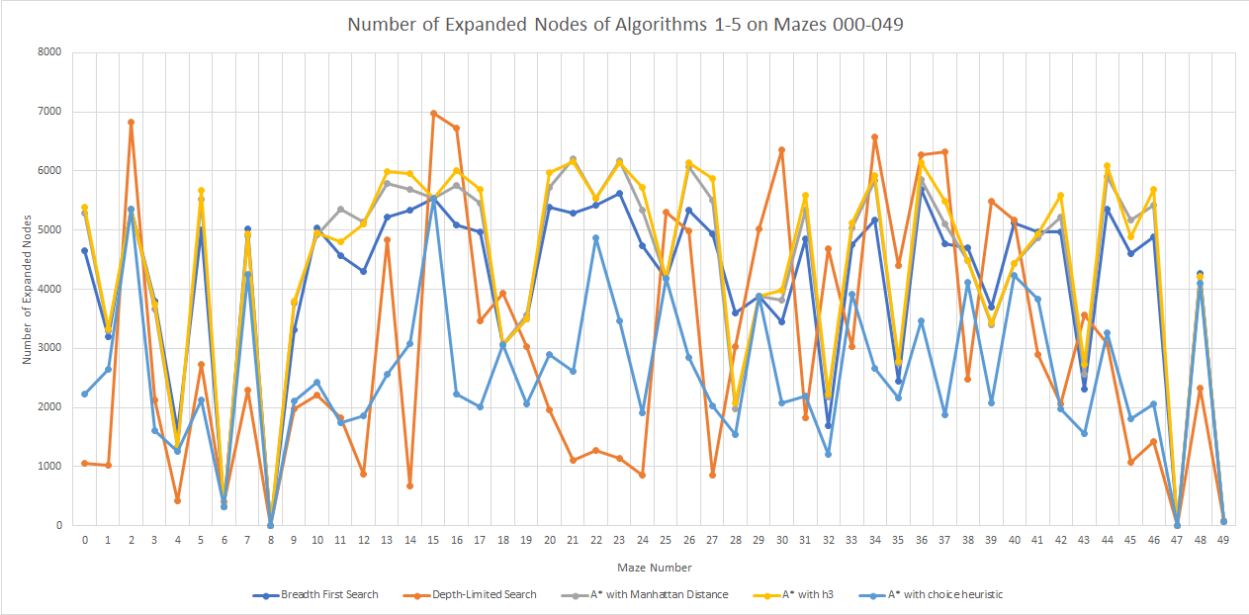
A* using choice heuristic



* In each of these images, the start state is marked by a green square and the goal state is marked by a blue square (difficult to see in these smaller images), with the path marked in red. Discussion below.

Graphs for cost and number of expanded nodes over mazes 000 - 049:





In the cost graph (top graph), the omitted data represent mazes in which the goal state was not reachable from the start state. In the expanded nodes graph (bottom graph), the extreme dips are mazes where the start state was surrounded by obstacles in a limited space (also could not reach the goal state). Based on the cost graph, we can see that the depth-limited search was far less optimal than the breadth-first search and heuristic searches. All algorithms besides the depth-limited search have similar costs for their final paths--this tells us that depth-limited search did not yield optimal paths in looking for the goal state. In the expanded nodes graph, we see that

the heuristic searches tended to expand similar amounts of nodes, breadth-first search tended to expand less nodes, and depth-limited search was wildly unpredictable.

The images of the paths for each algorithm on Maze 30 show similar results. The breadth-first search and heuristic searches share similar results--h_3 appears to not have the optimal result here while the rest of paths are nearly identical but this could be an outlier--while the depth-limited search has not found the optimal path at all.