

Cameron Pickle

1. Who is your programming partner? Which of you submitted the source code of your program?

Gage Glenn. He is going to submit the assignment.

2. Evaluate your programming partner.

He is a hard worker and knows how to program really well. I have learned a lot working with him and it will be kinda sad to switch partners now.

3. Does the straight-line distance (the absolute distance, ignoring any walls) from the start point to the goal point affect the running time of your algorithm?

The straight-line distance is irrelevant to the run time of the program. You may have a start and end that are two spaces away but have to go around the whole maze to reach the goal.

4. Explain the difference between the straight-line distance and the actual solution path length. Give an example of a situation in which they differ greatly. How do each of them affect the running time of your algorithm? Which one is a more accurate indicator of run-time?

The straight-line distance is the distance between the start and end point while the actual solution path is the required distance to travel before reaching the goal. The straight-line distance is the minimum distance that the actual solution path can be.

5. Assuming that the input maze is square (height and width are the same), consider the problem size, N to be the length of one side of the maze. What is the worst-case performance of your algorithm in Big-Oh notation? Your analysis should take in to account the density of the maze (how many wall segments there are in the field). For example, a completely open field with no walls other than the perimeter is not dense at all, as opposed to the example maze given "bigMaze.txt", which is very dense. There is no one correct answer to this since solutions may vary, but you must provide an analysis that shows you are thinking about the problem in a meaningful way related to your solution.

It would be $O(N^2)$. The worst-case performance for the program would be to be a non dense maze that is completely open with the start and goal in opposite corners. This would be the case because the program would be visiting every single node branching out since it is a breadth first traversal. This would mean the most nodes visited and the most work done while a very dense map would have the least nodes to visit and the least work done.

6. How many hours did you spend on this assignment?

We spent five hours on this assignment.