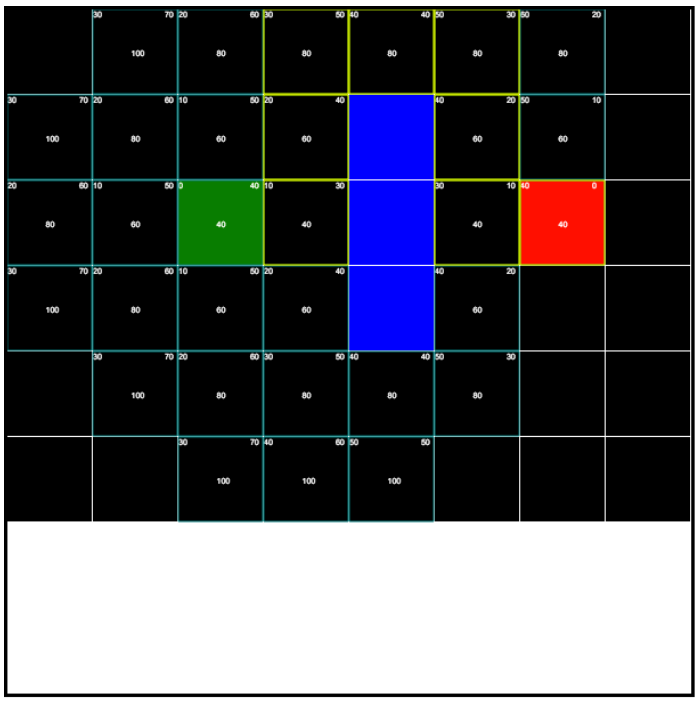
Brandon McFarlin
CSCI 4070
Project 3
Report

For this project, I created a program that shows different path planning algorithms with different heuristics in javascript/html. The 4 algorithms that I implemented are A star, dijkstra, best first, and a custom algorithm that I made. The custom algorithm that I made chooses the closest first node to the goal. It might not always be the absolute best path, but it it is a very fast algorithm as opposed to the other more common algorithms.

There are many options in the instructions area of the project, and I tried to make them as intuitive and unobtrusive as possible. Firstly, the text area allows you to either input custom grids or you can choose one of the default grids or choose to generate a random one. Below that there are two indicators telling the user to select the start and end points by clicking them. Below that the user can select the algorithm and heuristic they want to use. The slider below that allows to change the speed of the process. The gameify button allows the user to change the program to look more game-like. Finally, the user can press go and watch the process work. The two buttons at the bottom of the instructions allows the user to pause and step through the process.

For results, I found that the fastest and most accurate algorithm was a star with the Euclidean heuristic. The most accurate algorithm was dijkstra with manhattan heuristic but it took much longer. The fastest algorithm was my custom algorithm with Euclidean heuristic, but it was not always the best path.



Instructions

Environment

```
eeeeeeee
eeeeoeee
eeeeoeee
eeeeoeee
eeeeeeee
eeeeeeee
```

Default 1 | Default 2 | Default 3 | Random

Submit

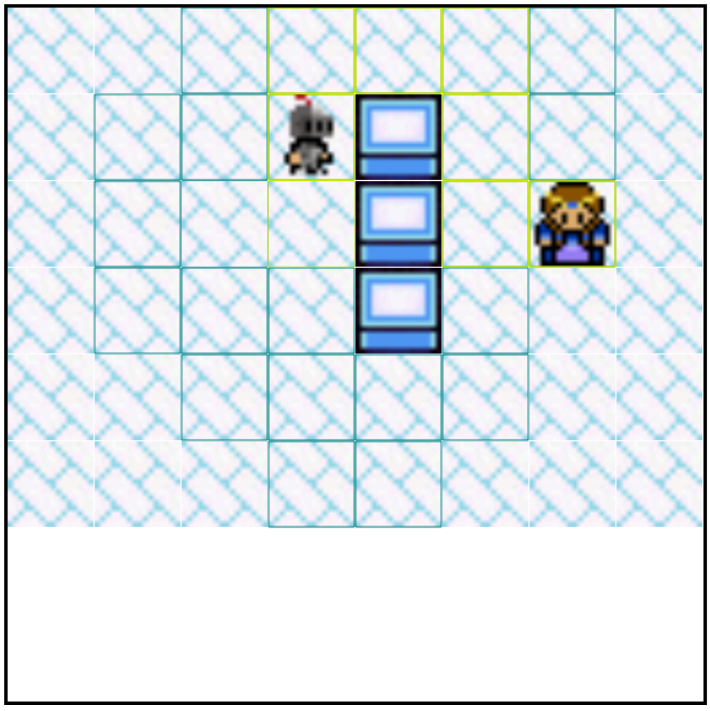
Final # of Steps

8

Final Length

80

Pause | Step >>



Instructions

Environment

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```

Default 1 | Default 2 | Default 3 | Random

Submit

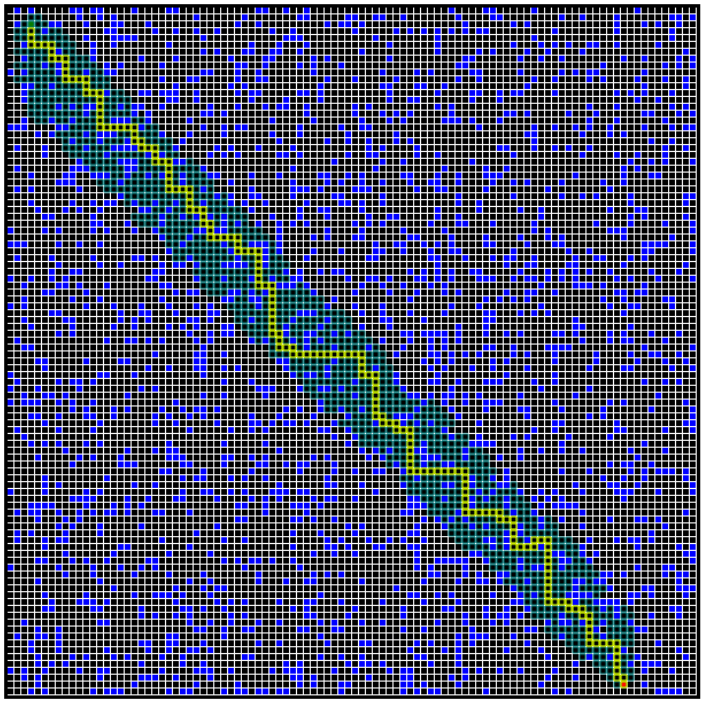
Final # of Steps

8

Final Length

80

Pause | Step >>



Instructions

Environment

Default 1 | Default 2 | Default 3 | Random

Submit

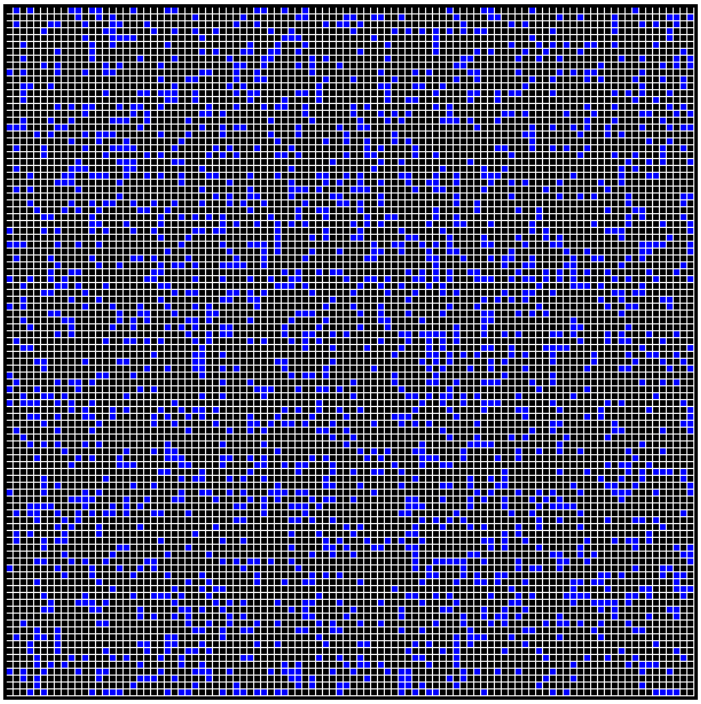
Final # of Steps

182

Final Length

1820

Pause | Step >>



Instructions

Environment

Default 1 | Default 2 | Default 3 | Random

Submit

Please select a start position.

Please select an end position.

Please select algorithm.

A Star

Please select heuristic.

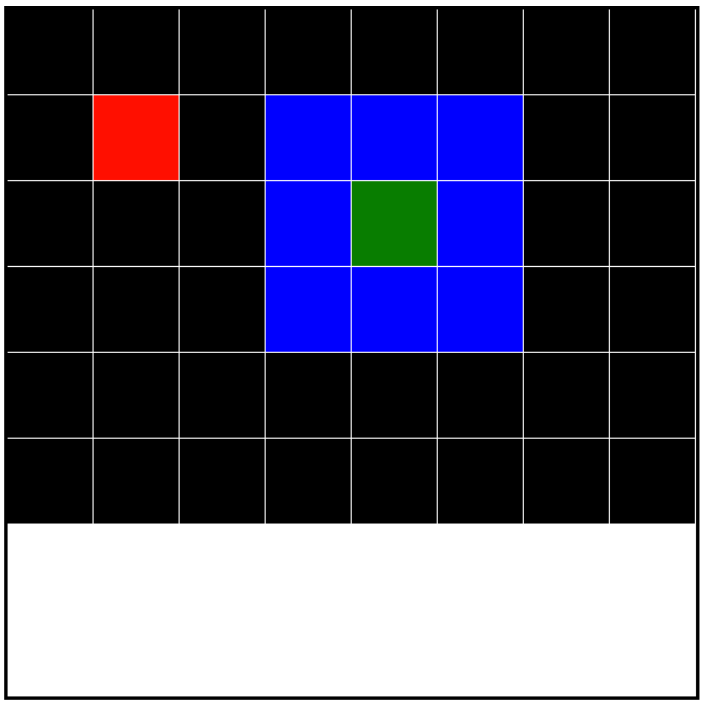
Diagonal

Speed

GAMEIFY!

GO!

Pause | Step >>



Instructions

Environment

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Default 1 | Default 2 | Default 3 | Random

Submit

Final # of Steps

None

Final Length

None

Pause | Step >>