



PATHFINDING VISUALIZER

subtitle

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Abstract:

One of the most popular path finding algorithm is known as the Dijkstra's Shortest Path First algorithm. As a beginner's step to algorithm and starting to understand how they work I decided to make this visualizer that show in action how the path finding algorithm works in action. The understanding of this algorithm gives you the base idea of how navigation tools are implemented. In this visualizer I have a grid page that has nodes that helped to pinpoint where to start and the end point. Also we can draw a line between the start node and the end node to make a barrier and see how our path will avoid it to reach the end node. To make this visualizer you need to be at least an intermediate level in front end programming (HTML, Nodes, CSS) and a good understanding of the some path finding algorithm.

Body text

Introduction

Hello, This presentation explains the pathfinding visualization using react web page. Using a page that show two node the begging as black and the end node. when you start the program the shortest path from the start node represented in black to the end node represented in red. Another thing this web program does is that we can draw a wall between the beginning node and the end node the path is escape that wall and find the shortest way to reach the end node.

Tools:

React js: React is a open source JavaScript library that is mostly used to build single pages user interfaces application. it is used to handle the view for the we and mobile apps. It was important as it gives us the reusability of the UI component. This tool helped me have that base interface for my app.

CSS: CSS stands for cascading Style Sheets which describes how HTML elements are to be displayed on the screen, pages or other media. It is very important as its helps with the layout control. Css helped me make the middle grid where our starting and end node are displayed and also with display of the wall between them.

Visual Studio Code: Visual studio code is a source code editor developed by Microsoft for windows, linus, and macOS.

Design:

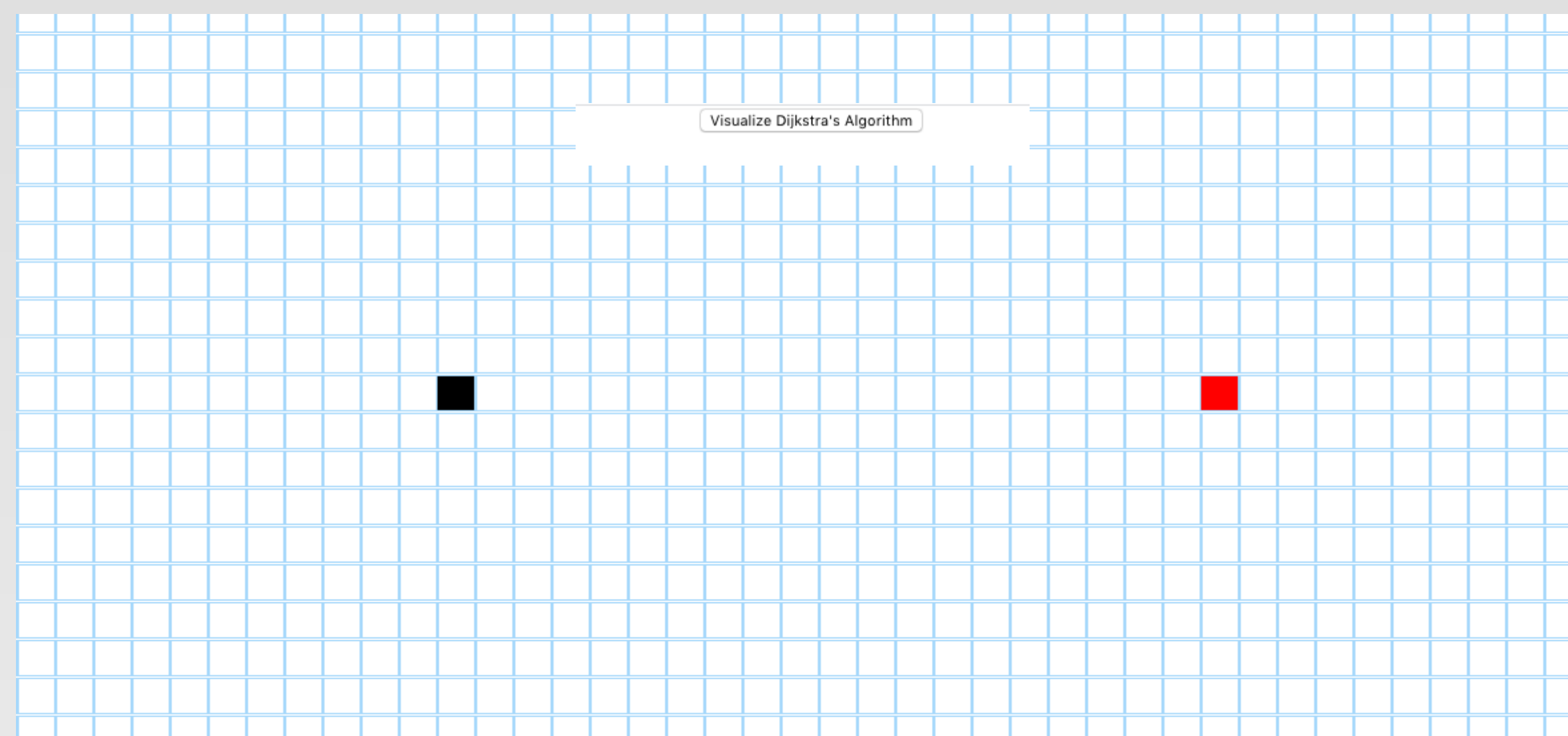


Image1: The image shows the starting page of the app the black dot represent the starting node and the red dot is the end node each grid represent a node. In the center up is the button that start the application.

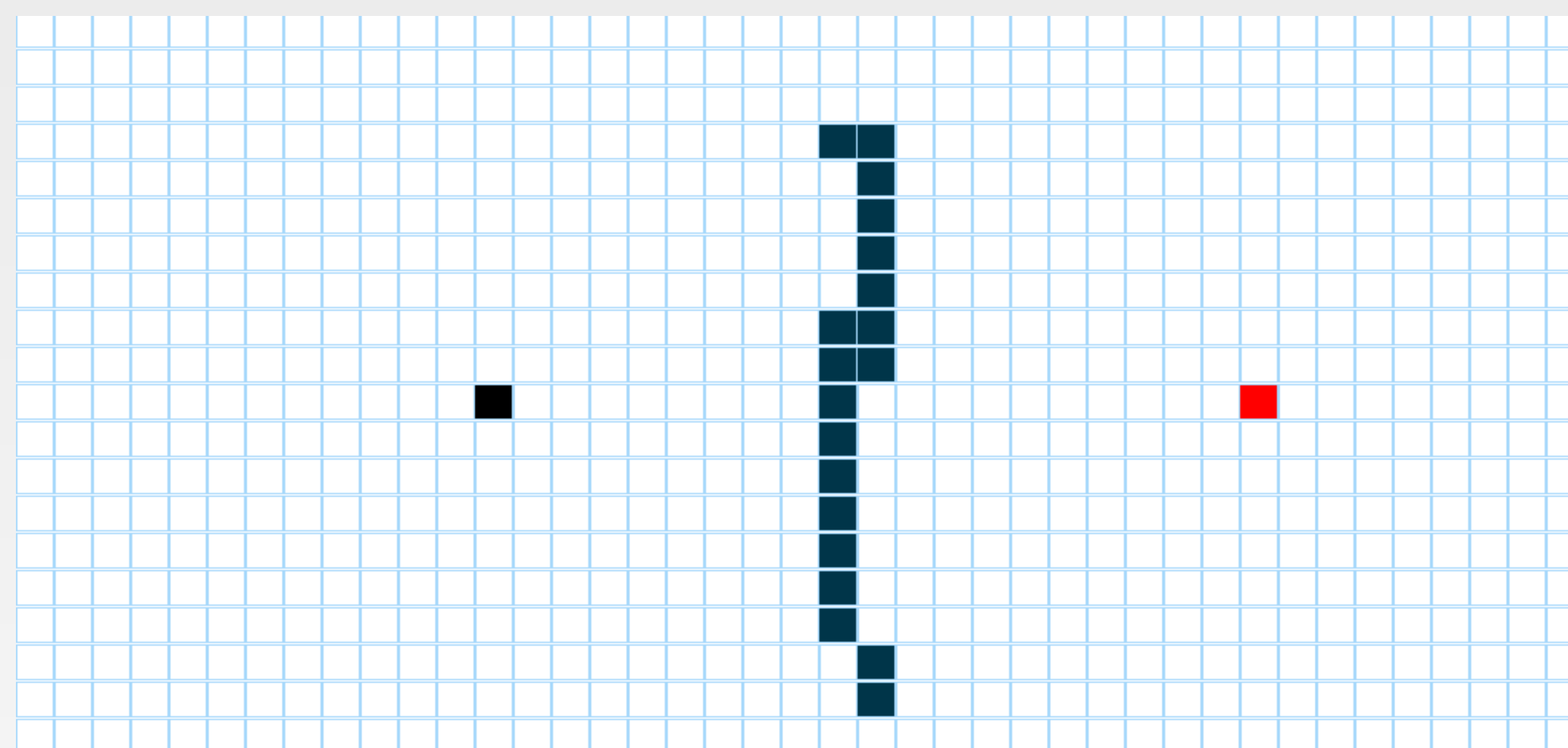


Image2: The second image shows the in addition to the starting node and the end node the wall that the user can add in between. The application has to find the shortest path avoiding the wall.

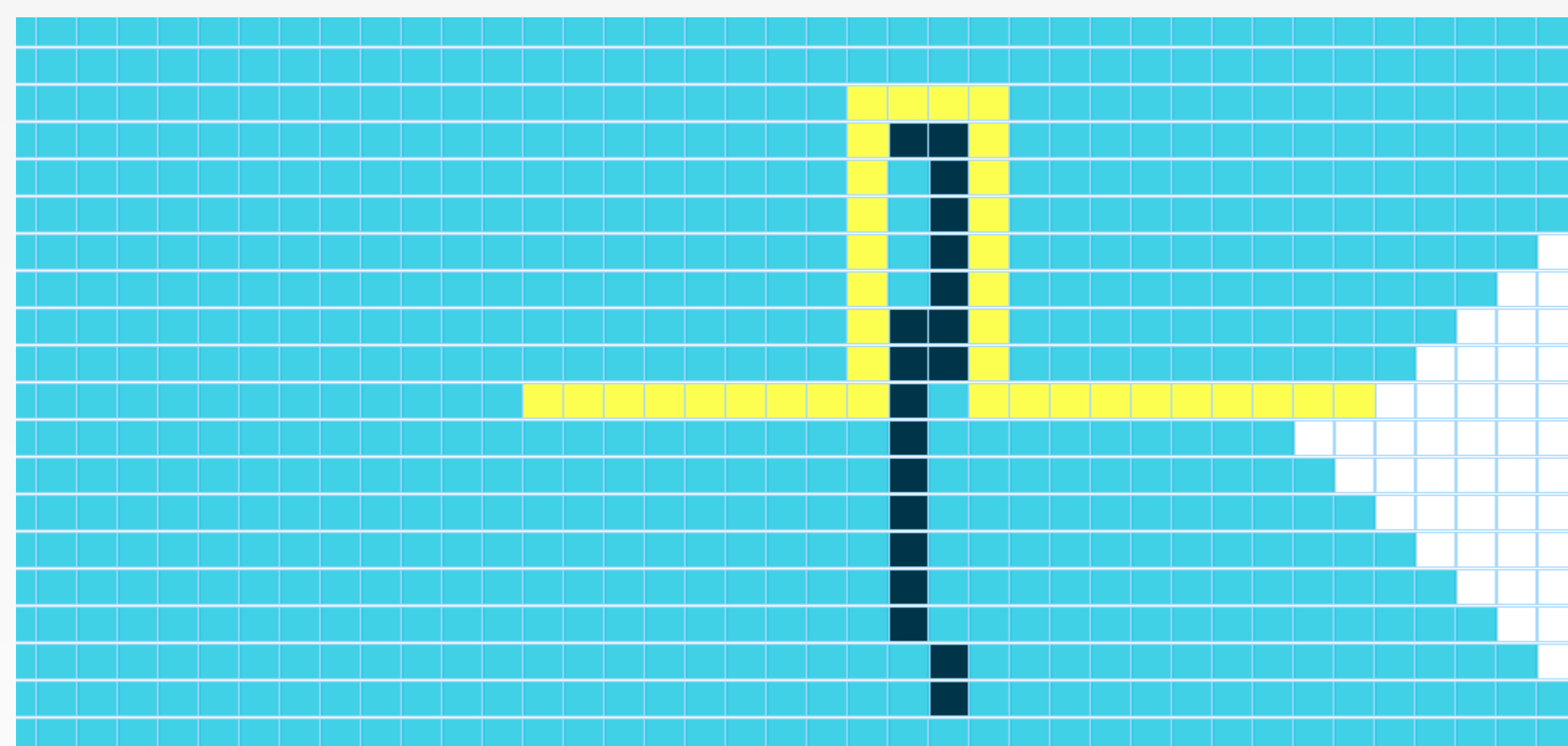


Image3: The following image shows the yellow ligne that represent that path taken by the path from the starting to end node avoiding the wall in between.

Future Improvement:

The motivation behind this project was to understand how map applications work to finding the destination from one point to another; With that wonder in mind i decided to visualize the path finding algorithm which i thought was close to the way maps works. Starting this project i was expecting to have it be more user friendly for example making the starting and the end node to be able to move around or the user to choose wherever he want it to start and end or even move the end node as the application is executing and make the algorithm figure out where the new position of the end node is located. From now forward that's what i will be working on to make this application more user friendly.

References

- AlgoExpert: <https://www.algoexpert.io>
- Geeks of Geeks shortest path algorithm: <https://www.geeksforgeeks.org/dijkstras-shortest-path-algorithm-greedy-algo-7/>
- A Search algorithm: <https://www.geeksforgeeks.org/a-search-algorithm/>: This ressource explain how the algorithm works and how it is implemented.
- Finding The Shortest Path, With A Little Help From Dijkstra <https://medium.com/basesc/finding-the-shortest-path-with-a-little-help-from-dijkstra-613149fbdc8e>