Maze Runner

Final Project

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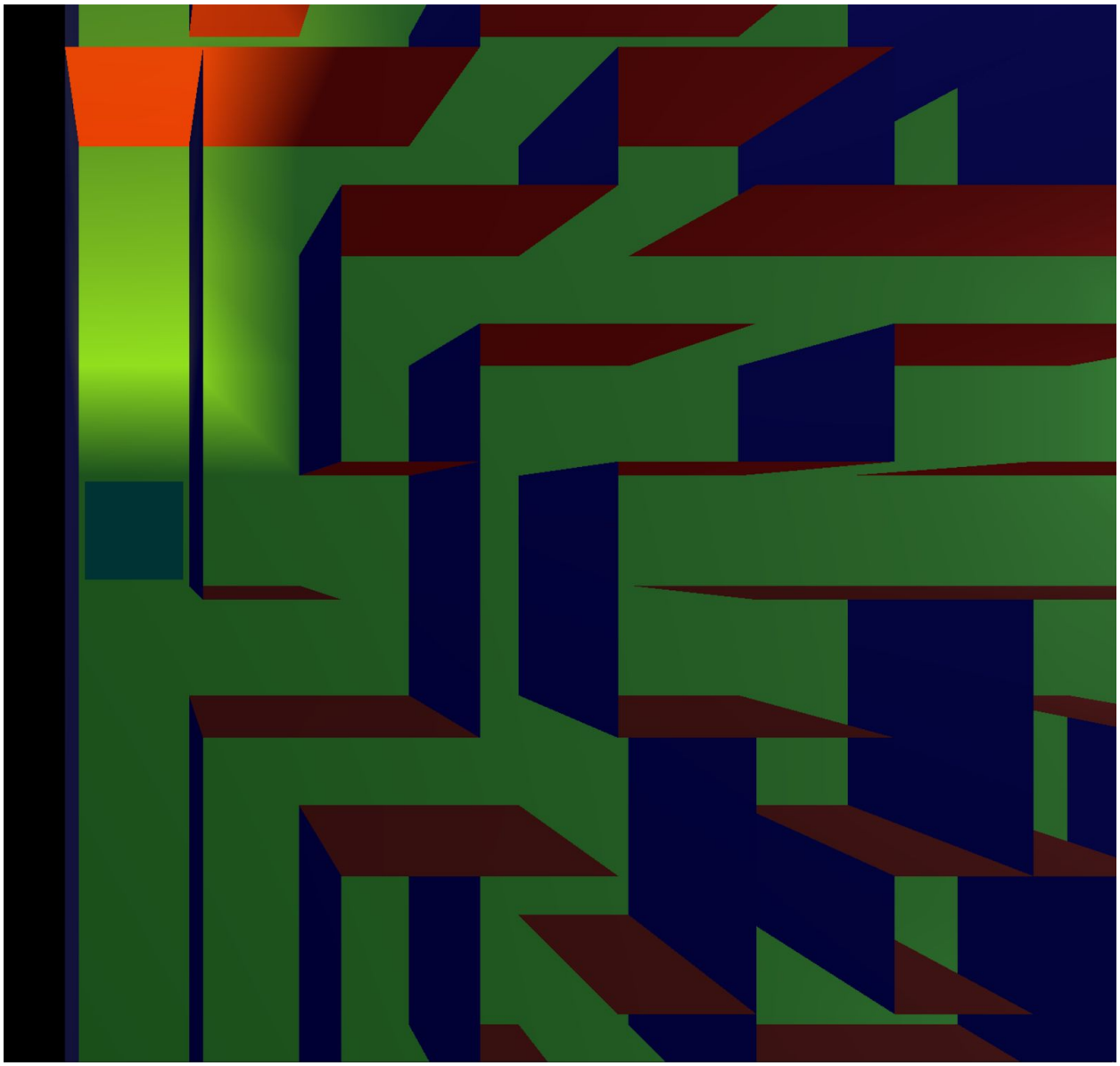
https://media.oregonstate.edu/media/t/0_fdqntc9a

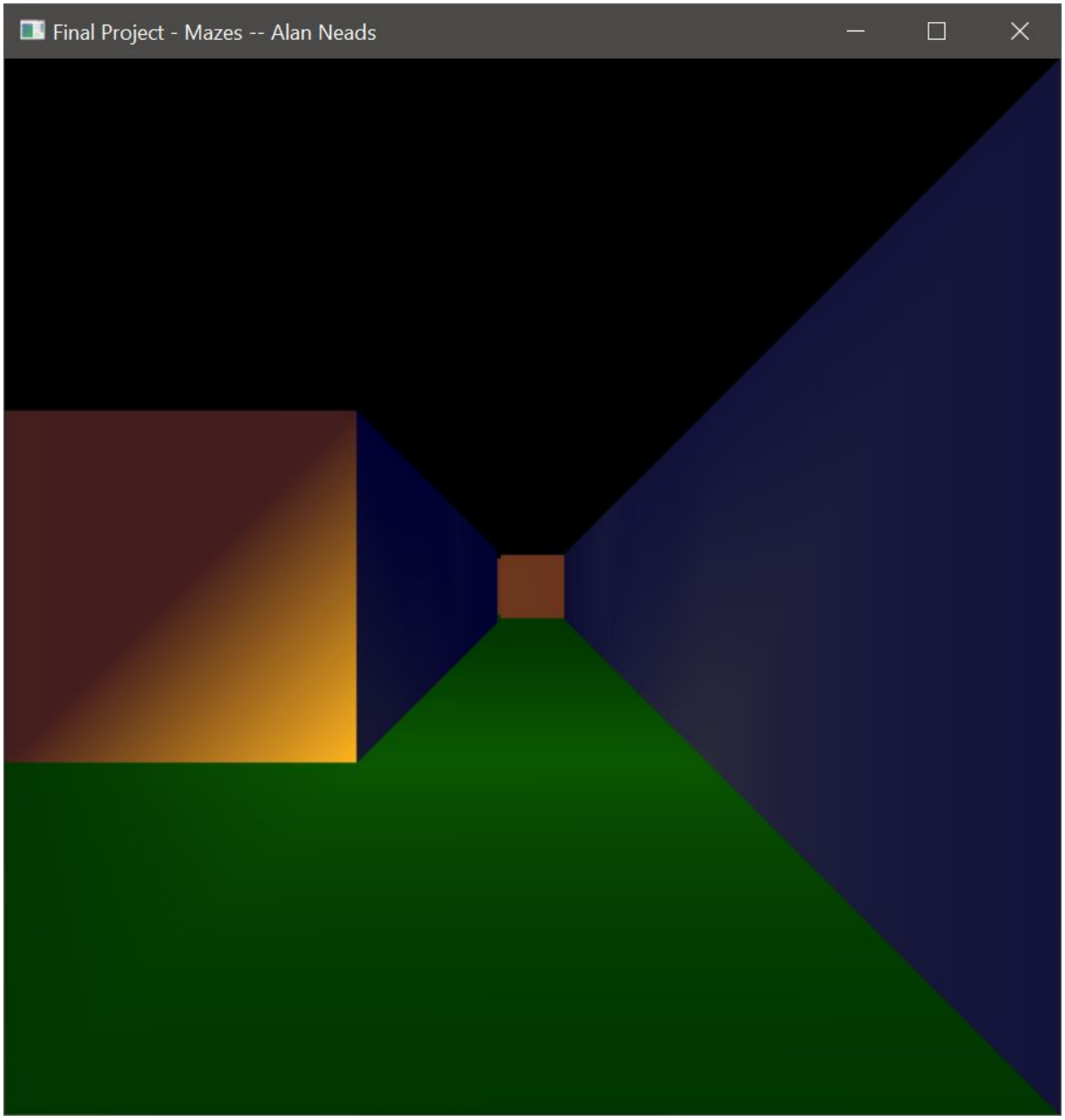
Proposal

For the final project I will be creating a 3D maze in which the player can explore using the WASD/arrow keys. The user will have a light bound to their position illuminating the surroundings, and lights will be placed randomly throughout the maze. The mazes' walls will be shaded with basic colors and lighting, with each panel in the maze having a randomly chosen color. The user can navigate the maze by using forward and reverse keys mapped to up and down, as well as W and S. This will only allow the user to move to their intended direction if there is no wall blocking their movement. They can use left and right, as well as A and D to turn their camera the respective direction. The maze will have the starting and finish locations marked by golden floor tiles, and the other floor tiles will be a generic common color.

Writeup

For this project I created a randomly generated maze. The maze has hard coded dimensions to reduce the solve time, but can easily be adjusted by changing the NumCells option within the source file. While the dimensions are static, it uses breadth first search to traverse the maze and all of the possible pathways through it. Using this search method we ensure that the maze is sufficiently generated and leaves no empty tiles. We then place 6 point lights randomly throughout the maze, one spot light centered on the user and facing their movement direction, and lastly one point light illuminating the end position of the maze. To move through the maze the user can rotate their current position using the A and D keys, and move forwards and backwards assuming there is not an obstructing wall using W and S. I have managed to implement all of the features I sought out with my proposal, however the maze generation and respective collision was the most difficult aspect of the project. I had to learn to convert a coordinate system from an image into a player position that use rotated coordinates and inverted axes. With these difficulties it is by far the best project I've made for this course, as it is actually providing an extremely basic game for the user to play.

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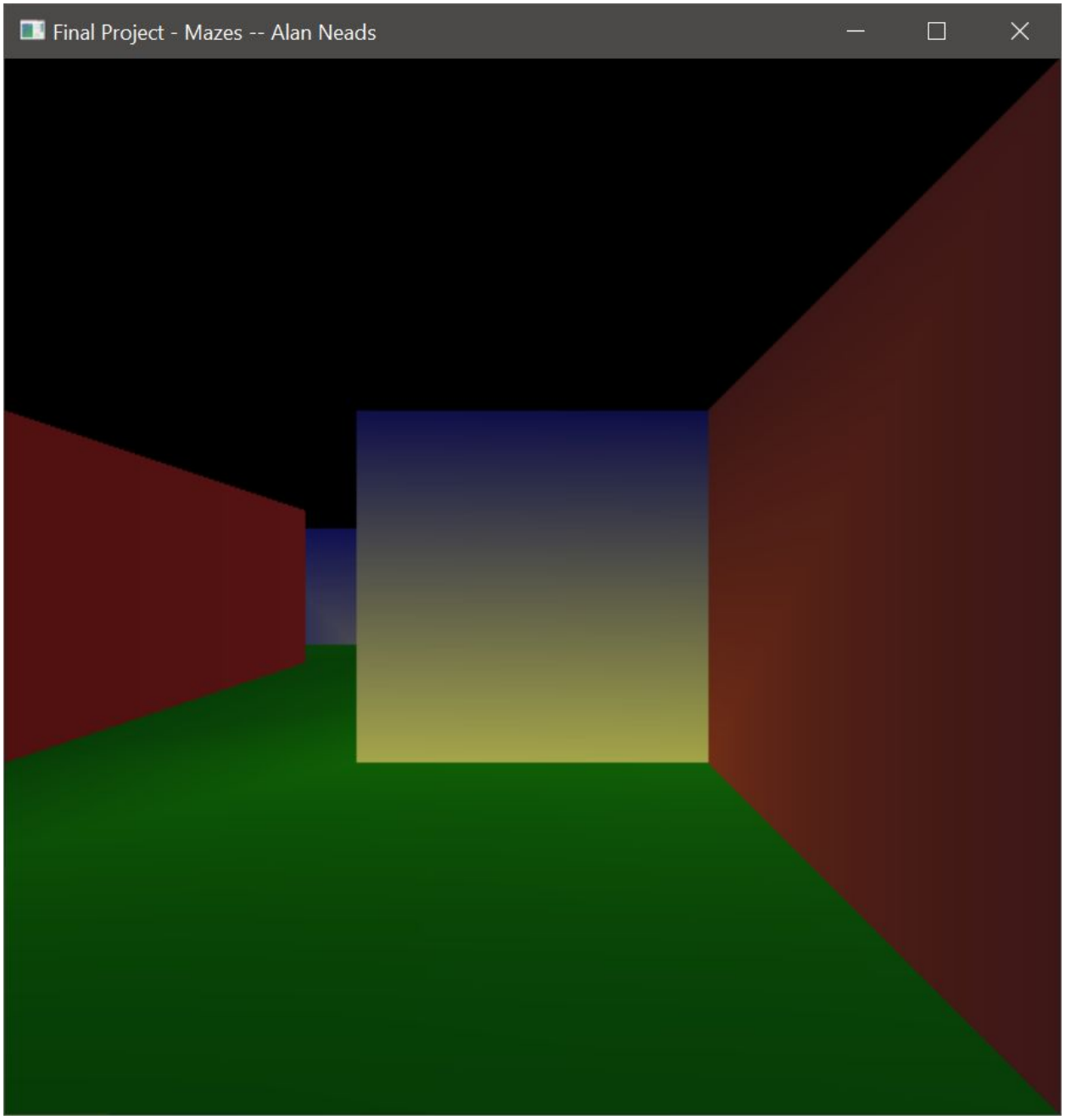
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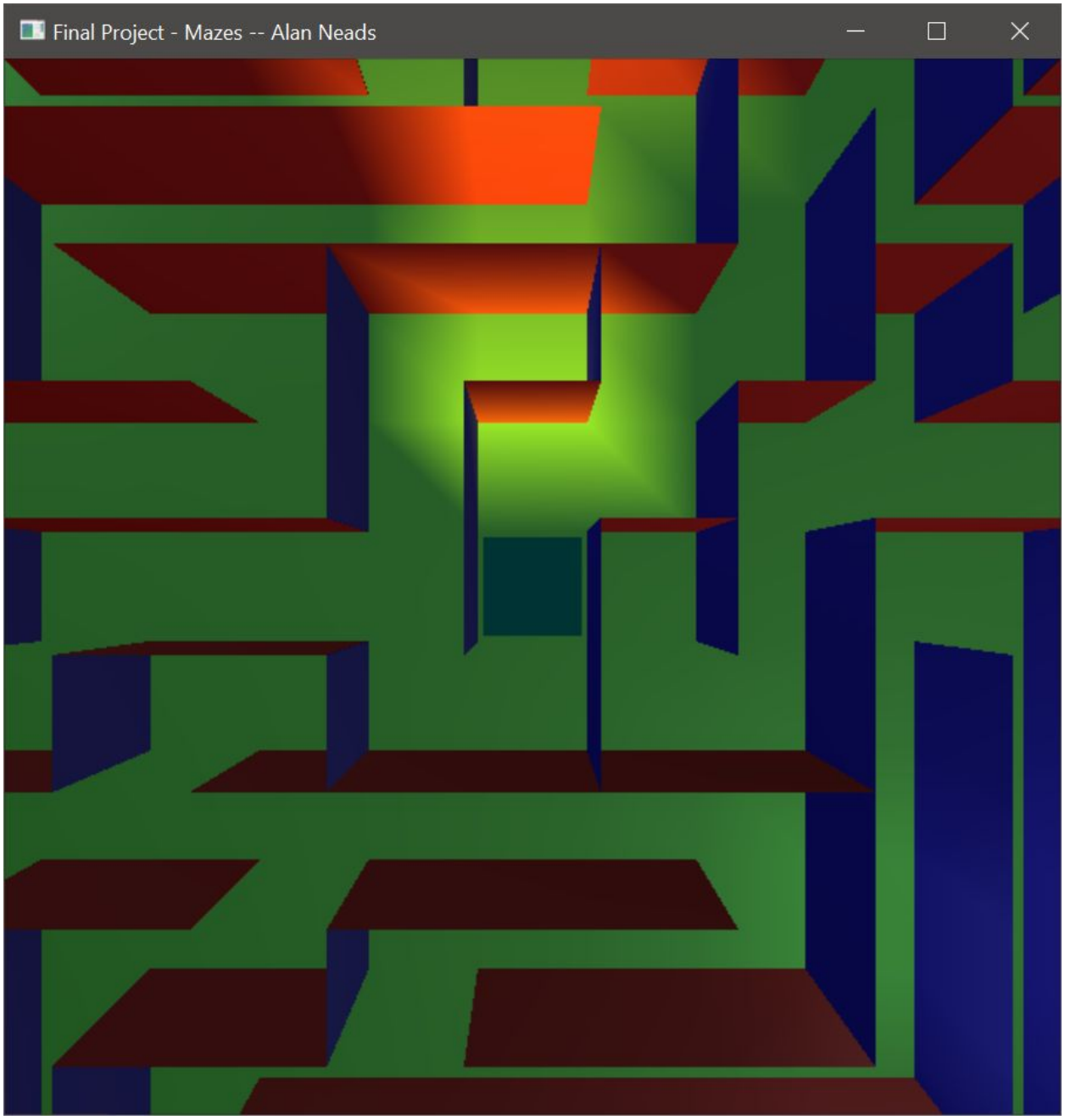
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