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AStar Pathfinder

In this practical I implemented a simple a star finder, similar to the executable provided. The pathfinder is in the form of Steve and the end point of the point is represented by the creeper.

The nodes which aren’t in the path are represented by green squares, while the ones that are by red squares. There are also purple squares across the map which are squares with a much higher cost than the other squares. The map is also populated by obstacles, in the form of zombies. I have used collision detection and collision resolution in order for Steve to be able to push them out of the way. I have also used collision detection between Steve and creeper to indicate when the path has been found. The player can move the creeper around, which calculates the new path between Steve and it.

Since the users can add as many zombies in the map as they want, and can create as large of a map as they want by just swapping out the current 2D array in the header file (which represents the maze) with a new one, I am also optimizing the space by using an octree. Since the objects in the scene are constantly moving, I recalculate this tree every two seconds so as to make sure it accounts for the changes in the scene. The use can change the visibility on the octree by pressing the C key, they can also increase or decrease the number of subdivisions using the add or subtract keys respectively.