6.5 Project – The Shortest Path in a Maze (BFS)

6.5.1 Breadth First Search (BFS)

The problem of finding the shortest path occurs frequently in applications such as computer games, satellite navigation, and network routing. For GPS maps with routing such as Waze and Google Maps, this is their primary function. These systems work on a structure called a graph, which you'll learn more about later in COMS2.

In this project, you will need to calculate a path through a maze using a Breadth-First Search. This will be useful on the snake game for example, where you may need to find the shortest path from the head of a snake to the apple so that you can get there first. Another example is if you were implementing Artificial Intelligence for the ghosts in Pacman. In this case, the source may be the ghost's current position, and the goal would be Pacman's current position.[21] You will implement the BFS algorithm in a new program that will be submitted to Moodle for automatic marking.