CS2134 Maze Spring 2016

4/17/2016

Written Part: Extra Credit



1) The difference between my recursive method and my queue method is that one checks one branch at a time, and one checks them simultaneously.

Recursive

**xxxxxxxxxxxxxxxxxx**

**sOxOOOxOOOOxOOOexx**

**xOxOxOxOxxOxOOxxxx**

**xOOOxOOOxxOxOOx.xx**

**xxx.xOOxxxOOOxx.xx**

**xxx.xx..xxOO....xx**

**xxx...x.xxxxxxxxxx**

**xxxxx.x........xxx  
xxxxxxxxxxxxxxxxxx**

**Queue**

**xxxxxxxxxxxxxxxxxx**

**sOxOOOxOOOOxOOOexx**

**xOxOxOxOxxOxOOxxxx**

**xOOOxOOOxxOxOOx.xx**

**xxxOxOOxxxOOOxxOxx**

**xxxOxxOOxxOOOOOOxx**

**xxxOOOxOxxxxxxxxxx**

**xxxxxOxOOOOOOOOxxx**

**xxxxxxxxxxxxxxxxxx**

Recursive

**xxxxxxxxxxxxxxxxxx**

**sOxOOOxOOOOxOOOOxx**

**xOxOxOxOxxOxOOxxxx**

**xOOOxOOOxxOxOOxOxx**

**xxxexOOxxxOOOxxOxx**

**xxx.xxOOxxOOOOOOxx**

**xxx...xOxxxxxxxxxx**

**xxxxx.xOOOOOOOOxxx**

**xxxxxxxxxxxxxxxxxx**

**Queue**

**xxxxxxxxxxxxxxxxxx**

**sOx...x....x....xx**

**xOxOx.x.xx.x..xxxx**

**xOOOx...xx.x..x.xx**

**xxxex..xxx...xx.xx**

**xxx.xx..xx......xx**

**xxx...x.xxxxxxxxxx**

**xxxxx.x........xxx**

**xxxxxxxxxxxxxxxxxx**

The recursive method is more effective for farther exits towards the top right corner, as it checks those branches first. So in the first maze example, the recursive function checks fewer places than the queue. In the second example, as the exit is closer to the start place, no matter which path it lies down, the queue will find it quickly. Whereas in the second example, the recursive function has to check the whole top right of the maze first.

2) The recursive method and the stack method take the same approach to the problem, in that they check branches and back track to the last split point. Hence they will visit the same spaces.