Preethika Kiruveedula

204912895

Computer Science 32

February 6, 2018

Homework #2 Document

2. Given the algorithm, main function, and maze shown at the end of problem 1, what are the first 12 (r,c) coordinates popped off the stack by the algorithm?

|  |  |
| --- | --- |
| Number | Popped Coordinates |
| 1 | (4, 3) |
| 2 | (3, 3) |
| 3 | (5, 3) |
| 4 | (5, 2) |
| 5 | (5, 1) |
| 6 | (6, 1) |
| 7 | (7, 1) |
| 8 | (8, 1) |
| 9 | (8, 2) |
| 10 | (6, 3) |
| 11 | (4, 4) |
| 12 | (4, 5) |

4. Given the same main function and maze as are shown at the end of problem 1, what are the first 12 (r,c) coordinates popped from the queue in your queue-based algorithm?

|  |  |
| --- | --- |
| Number | Popped Coordinate |
| 1 | (4, 3) |
| 2 | (4, 4) |
| 3 | (5, 3) |
| 4 | (3, 3) |
| 5 | (4, 5) |
| 6 | (6, 3) |
| 7 | (5, 2) |
| 8 | (4, 6) |
| 9 | (5, 1) |
| 10 | (4, 7) |
| 11 | (6, 1) |
| 12 | (4, 8) |

A stack is a data structure with the first in last out system, meaning the last item pushed onto the top of the stack is the first one that is removed. While a queue is a data structure is a date structure with a first in first out system, meaning the first item pushed into the queue is the first item to be removed from the queue. The two algorithms are different because while the stack first looks at the newest coordinate added to the stack, the queue looks at the oldest coordinate pushed onto the queue. When being pushed into the stack or queue the coordinates follow the same pattern: east, south, west, and north. However, when popping the coordinates off the stack pops them out in the opposite direction: north, west, south, and east while the queue continues to follow the same order.