Question 2

The first 12 (r,c) coordinates popped off the stack by the algorithm given the algorithm, main function, and maze shown at the end of problem 1 is as follows:

1. (3,4)
2. (3,3)
3. (3,5)
4. (2,5)
5. (1,5)
6. (1,6)
7. (1,7)
8. (1,8)
9. (2,8)
10. (3,6)
11. (4,4)
12. (5,4)

Question 4

The first 12 (r,c) coordinates popped off the stack by the algorithm given the algorithm, main function, and maze shown at the end of problem 1 is as follows

1. (3,4)
2. (4,4)
3. (3,5)
4. (3,3)
5. (5,4)
6. (3,6)
7. (2,5)
8. (6,4)
9. (5,5)
10. (1,5)
11. (7,4)
12. (5,6)

The two algorithms differ from each other based on the assignment of the current coordinate. The algorithm assigns the current coordinate in opposite ways. As seen in the figure below, the queue looks at the coordinate that was enqueued first and pops the first that was enqueued because a queue is a FIFO data structure. On the other hand, the stack examines the coordinate that was pushed last and pops the last element that was pushed on to the stack because a stack is a LIFO data structure. This explains why the two algorithms visit cells in the maze in a different order.

