Homework 2

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2.

1: ( 5, 3)

2: ( 6, 3)

3: ( 4, 3)

4: ( 4, 2)

5: ( 4, 1)

6: ( 3, 1)

7: ( 2, 1)

8: ( 1, 1)

9: ( 1, 2)

10: ( 3, 3)

11: ( 5, 4)

12: ( 5, 5)

4.

1: ( 5, 3)

2: ( 5, 4)

3: ( 4, 3)

4: ( 6, 3)

5: ( 5, 5)

6: ( 3, 3)

7: ( 4, 2)

8: ( 5, 6)

9: ( 4, 5)

10: ( 4, 1)

11: ( 5, 7)

12: ( 3, 5)

The two algorithms search the maze in a different order because the stack algorithm uses depth-first search and the queue algorithm uses breadth-first search.

The stack algorithm searches from the last added coordinate, meaning it will continue down a path until it has reached a wall. This is because the stack causes the algorithm to search the last entered coordinate first (last in first out). When the algorithm reaches a wall, it will continue searching paths from points at the top of the stack. This is called depth first search.

The queue algorithm searches from the first added coordinate, meaning it will search for a path around each coordinate. This is because the queue causes the algorithm to search the first entered coordinates first (first in first out). After visiting all 4 directions around a coordinate, the algorithm will search the surroundings of each of the neighbors. This is called breadth-first search.