Homework\_2

2).

The first 12th (r,c) element popped off the stack are:

(6,3), (6,2), (7,2), (8,2), (8,3), (8,4), (7,4), (8,4), (7,4), (6,4), (7,4), (5,4)

4).

The first 12th (r,c) element popped off the queue are:

(6,3), (5,3), (6,4), (6,2), (4,3), (5,4), (7,4), (7,2), (4,2), (5,5), (8,4), (8,2)

For problem 2 using the stack, the algorithm visits the grid following the path that expands on the newest found path; last path in last path out. That is, unless the path reaches an ‘X’ character in the maze grid or reaches a previously found path, it will continue to expand. Under this condition, it will pop the next top item on the stack. This is called the depth first search.

For problem 4, using the queue, the algorithm visits the grid expanding in all direction. That is, it find a new path in the order that each new path is put on the queue; first path in first path out. This algorithm pops the front item off the queue, instead of the top item in a stack. This algorithm fills the distance array faster than the stack algorithm.