**CS32 Homework 2 Report**

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**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?**

(5, 3), (6, 3), (4, 3), (4, 2), (4, 1), (3, 1), (2, 1), (1, 1), (1, 2), (3, 3), (5, 4), (5, 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?**

(5, 3), (5, 4), (4, 3), (6, 3), (5, 5), (3, 3), (4, 2), (5, 6), (4, 5), (4, 1), (5, 7), (3, 5)

**How do the two algorithms differ from each other? (Hint: how and why do they visit cells in the maze in a different order?)**

Stack:

The stack version uses depth-first search algorithm which access each branch as far as possible.

Because a stack is First In, Last Out, the algorithms will access one route until the end. Then it will back to previous branch to visit next path until we reach the end or run out of the stack.

Queue:

The queue version uses breadth-first search algorithm which explores all directions at the current level first. Because a queue is First In, First Out, the algorithms will access each cell of current level. Then it will visit next level’s cells until we reach the end or run out of the queue.