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CS32

Smallberg

Homework 2

2.

The first 12 (r, c) coordinates to be popped off the stack by the algorithm are as follows:

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.

The first 12 (r, c) coordinates to be popped off the queue by the algorithm are as follows:

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, 5)
10. (5, 1)
11. (4, 7)
12. (6, 5)

The methods for finding a solution for a maze using a stack or a queue are different in that the stack implementation utilizes a depth-first search while the queue implementation utilizes a breadth-first search. This means that stacks investigate each possible pathway to its fullest extent before moving on to examine another pathway. The stack’s unique “last-in, first-out” style ensures that the algorithm investigates the most possible pathways the most thoroughly to begin with.

Queues, on the other hand, investigate the pathways layer by layer. The queue implementation explores all the possible beginnings of pathways, then examines the next layer of each pathway, then the next layer, etc. Once a pathway reaches a dead end, the algorithm will stop investigating that one and pursue a different pathway instead.