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COSC 2203: Data Structures

9/5/2020

Amazing Life Part 2 Component A

Input/Output Analysis:

Description:

This program is a continuation of the Amazing Life assignment. The final generation in the simulation is used to define a maze where the cells containing 0's are considered movable spaces and the cells containing 1's are walls. The entry point is always the top left corner and the exit is always the bottom right corner. This additional part of the Amazing Life program will determine a route to take from start to finish to successfully complete the maze. The path can proceed North, South, East, and West. If a path exists, it will be outputted on a grid.

Input:

The input is the same as the original Amazing Life project. There is no new input from the user.

<u>Type:</u>	<u>Name:</u>	<u>Description:</u>
String	vORs	determines the output type
Int	numOfGen	number of generations to simulate
Int	rows	number of rows in our grid
Int	columns	number of columns in our grid
String	line	a row of the first grid (loop thru "rows" times)

Output:

*USING PREVIOUS OUTPUT:

Sample Run (output in **bold**):

Do you want verbose(V) or silent(S)?

V

How many generations are there?

3

How many rows in the grid?

3

How many columns in the grid?

3

Please create the initial grid using 0's and 1's:

101

110

100

******Beginning of New Generation(s)******

Gen 2 :

100

100

110

Gen 3 :

000

100

110

*NEW FEATURES:

*****Traversal of the Maze*****

```
|||||
|*  |
|#  |
|## |
|||||
```

```
|||||
|. * |
|#  |
|## |
|||||
```

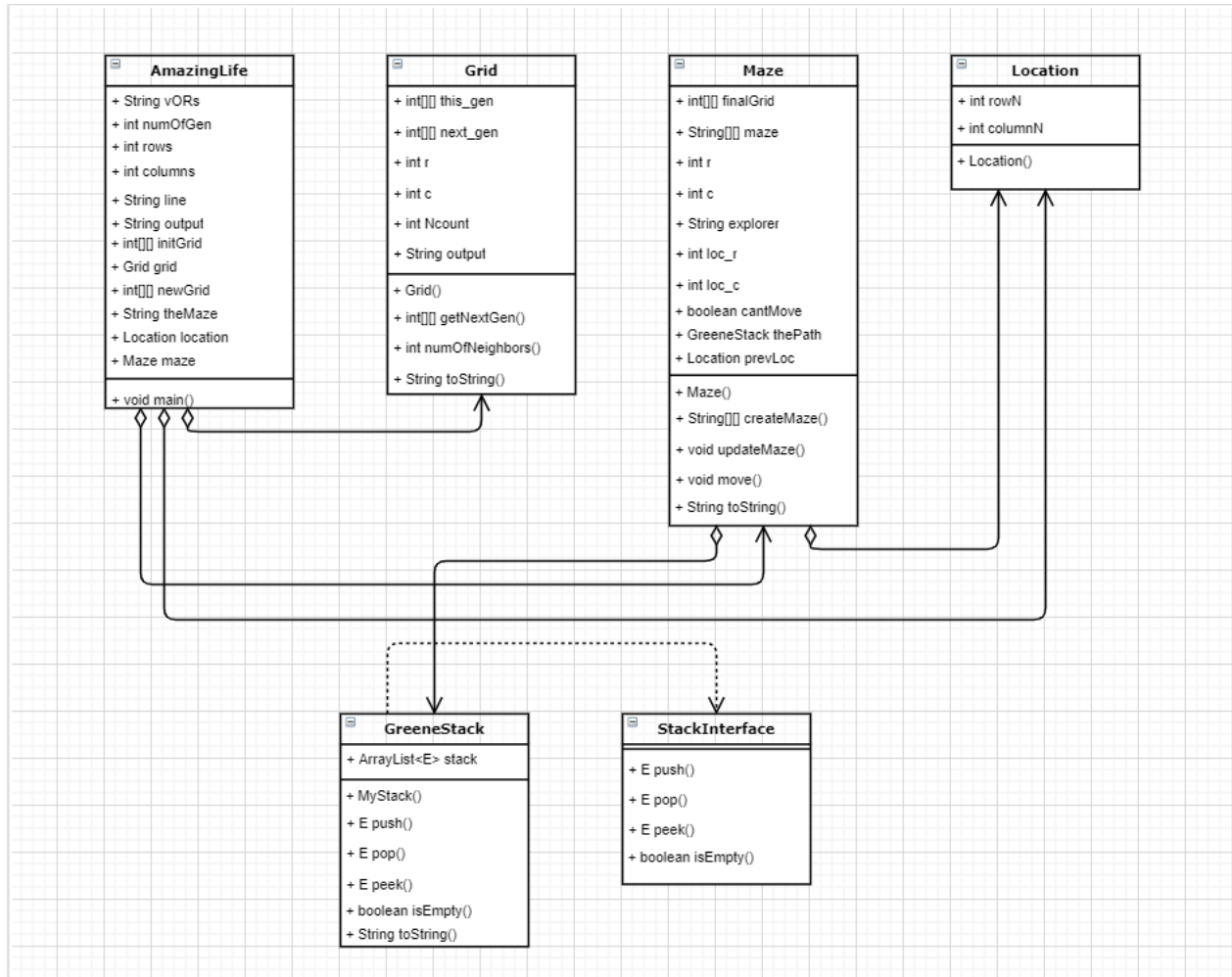
```
|||||
|. . * |
|#  |
|## |
|||||
```

```
|||||
|. . . |
|# * |
|## |
|||||
```

```
|||||
|. . . |
|# . |
|##* |
|||||
```

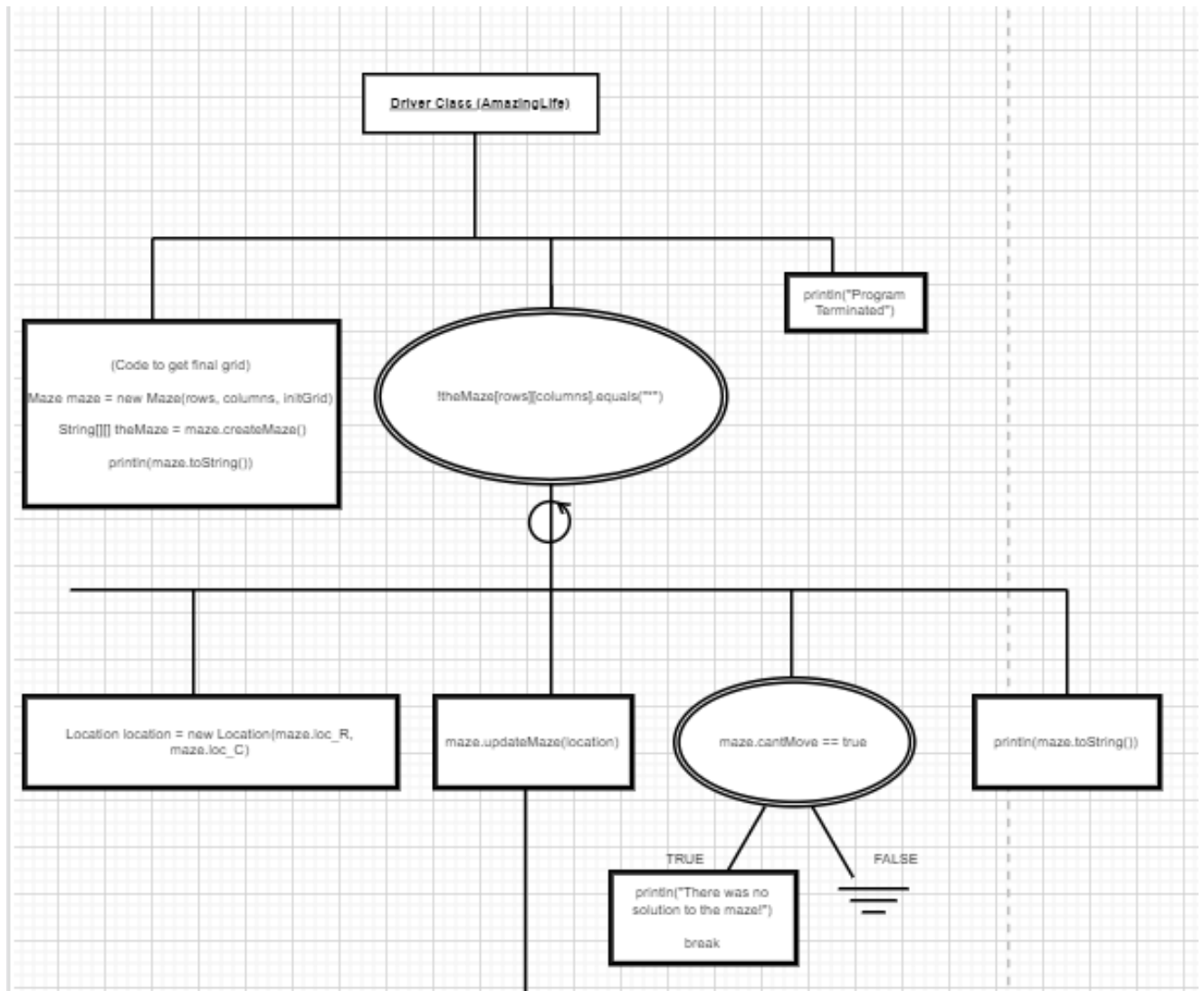
*****PROGRAM TERMINATED*****

UML Design:



Design Chart:

Flow Chart for added components to Driver Class:



Flow Chart for “updateMaze()” method in Maze class:

*Note: this is the method that checks if a direction is possible.

