Data Structures
Term Project 1
Due: November 9th Sunday by 23:59 in LMS

This is the first application of a series of applications that you will implement as your term projects. You are more than welcome to discuss the project with your friends and actually encouraged to do that. But, this is an individual project so that code sharing is not allowed.
No late projects will be accepted.
You can **only** use constructs and data structures we discussed in class.
You might be interviewed briefly about your implementation. Failure to answer any question will result in no credit for the project.

You are provided with a maze in the maze.txt file with **two openings**: one **entrance** and one **exit**. It is a **15×15 maze** with that setup (entrance on the top row, exit on the bottom row). The walls of the maze are encoded as “1” and openings/halls are with a “0”. Your task is read this file and find “one” path if exists (from the entrance to the exit) using a stack data structure of your own implementation. If there is a path from the entrance to the exit, your application should print the locations/coordinates of the openings (“0”) all the way from the entrance to the exit. You can assume that the (0,0) coordinate is the top left corner of the maze, that is, the top left corner “1” has the coordinate (0,0), and the (14,14) is the bottom right corner of the maze.

Steps to take:

1. Be able to read the file and store the maze in an appropriate data structure. (35 points)

2. Implement your stack data structure to store your moves. (15 points)

3. Remember which openings you have been to. (15 points)

4. If at a dead end, backtrack to anther possibility (20 points).

5. Print all the coordinates of “0” s once you hit the exit. (15 points)

Deliverables:

Your source code (not the whole project folder!) only. The output of your program showing the coordinates of the openings (“0”) of the path all the way from the entrance to the exit appended to your source code as comments. **Name your source file as: YourName_project1.java.**