Object-oriented Programming
Sections G and J, Fall 2021
Assignment 1

Due Date: Monday October 11, 2021

Consider a robot that intends to finds its way through a maze. The maze can be represented by a 2-D array. A free cell is represented by a value 0 and a cell with obstacle is represented by a value 1. If the start and end points are known, develop a function that can evaluate, given a set of moves that define the path from start to end, whether a successful path is found or not.

A move can be described with the help of number of steps to be taken in a specific direction. For instance: r10 means move ten steps right, while u2 means move two steps up. A robot can cover 1 free cell in 1 step, but cannot cross a cell with obstacle. Movement is possible in four directions: left, right, up, down, each represented by l,r,u,d respectively.

A successful path is a set of moves from start to end such that no obstacle is encountered in between.

A maze can be of size MxN and its structure shall be read from a file along with start and end point.

A sample file format along with description is illustrated in the table below:

Size of maze	6x9
Structure of maze	111111111 001010001 101010101 100000100 110111011 100000001
Start point	1,0
End point	3,8

Path can be input on console using standard input (cin), comprising of each move separated by ->

For instance, sample inputs and outputs are illustrated in the following table:

Sample Input	Sample Output
r1->d2->r4->u2->r2->d2->r1	true
r1->d2->r7	false
r1->d2	false