Computer Programming
Section G, Spring 2018
Assignment 1

Due Date: Tuesday February 13, 2018

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`