The first big assignment: Labyrinth

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1 The problem

A labyrinth of dimension $n \times m$ consists of n rows of m fields. Each field is either:

- a road, denoted by space ' '

- a wall, denoted by hash '#'

- an exit, denoted by dollar '$'

- a monkey, denoted by apud '@'

For example, here is a labyrinth of dimension 6×7:

```
####$#
@#    #
 # ###
 #    #
 ### #
     #
######
```

There is always exactly one monkey in any labyrinth and at least one exit. In one step a monkey can move in the labyrinth one field up/down/right/left, provided the field is a road. We say that the monkey escaped the labyrinth if it is neighbour to an exit field.

2 The task

Your task it to help the monkey to escape from a labyrinth. Write a program that takes two parameters:

- *problem* — the name of a file that describes a labyrinth

- *solution* — the name of a file to store a solution

reads the labyrinth from file *problem*, finds the shortest path for the monkey to exit the labyrinth and writes the solution to file *solution*. The input consists of a single line containing two positive natural numbers (the dimensions of a labyrinth) followed by the description of the labyrinth. The output should consist of a single line with sequence of capital letters U (up), D (down), L (left), R (right) that describes the actions of the monkey. If the monkey cannot escape from the labyrinth, the output should consist of a single letter E.

Please, send your programs to:

```
mrp@pjwstk.edu.pl
```

before 15.05.2016!

3 Examples

Input: sample_problem1.txt, sample_solution1.txt.

sample_problem1.txt:

```
6 7
####$#
@#   #
 # ###
 #   #
 ### #
     #
######
```

sample_solution1.txt:

```
DDDDRRRRUULLUURR
```

Input: sample_problem2.txt, sample_solution2.txt.

sample_problem2.txt:

```
6 7
####$#
@      #
  # ###
  #    #
  ### #
       #
######
```

sample_solution2.txt:

RRRR

Input: sample_problem3.txt, sample_solution3.txt.

sample_problem3.txt:

```
6 7
####$#
@#     #
  #####
  #    #
  ### #
       #
######
```

sample_solution3.txt:

E