



G: Rabbit



You were mindfully studying competitive programming problems when suddenly a White Rabbit with pink eyes ran close to you. You then heard the Rabbit say to itself, “Oh dear! Oh dear! I shall be late!”; and then the Rabbit took a watch out of its waistcoat-pocket, and looked at it, and then hurried on.

From your viewpoint, you noticed that the Rabbit would not be on time as it was running in circle, lost in the queen’s garden. This garden can be seen as a rectangular grid $C \times R$ where from each cell the Rabbit can go to any of the 4 neighboring (top, down, left, right) cells except if that cell is planted with impenetrable bushes. It is also not possible to get out of the garden as the garden is surrounded by trees.

The White Rabbit then took its watch out again, looked at it, and said “Oh my ears and whiskers, how late it’s getting!”; and then you decided to help. You have the map of the garden, the position of the Rabbit, and its destination. Can you help the Rabbit find its way?

Limits

$$2 \leq C, R \leq 500$$

Input

The first line of the input consists of 2 space-separated integers: C and R which are the number of columns and the number of rows of the labyrinth. Follows R lines, each containing C characters (not including the newline character terminating all lines). The $i + 1$ -th line of the input describes the row i of the garden. The character at position j in this line describe the cell at row i and column j :

- ‘#’ indicates impenetrable bushes,
- ‘.’ describes grass,
- ‘R’ designates the cell on which the Rabbit is, and
- ‘D’ denotes its destination.

The Rabbit can move freely on both ‘R’ and ‘D’ (both are grass) and you are guaranteed that there is a unique ‘R’ and a unique ‘D’. You are also guaranteed that there is a path from ‘R’ to ‘D’.

Output

Your output should contain a unique line describing the path of the Rabbit within the garden to get to its destination. You path description can use the four letters 'U', 'D', 'L', 'R':

- 'U' tells the Rabbit to go from row $i + 1$ to row i without changing column,
- 'D' tells the Rabbit to go from row i to row $i + 1$ without changing column,
- 'L' tells the Rabbit to go from column $i + 1$ to column i without changing row,
- 'R' tells the Rabbit to go from column i to column $i + 1$ without changing row.

The path should go from the cell noted 'R' to the cell noted 'D', the path should not go twice on the same cell, and it should never go outside of the garden. Any such path can be outputted.

Sample Input 1

```
10 3
R.....
#####.###.
D.....
```

Sample Output 1

```
RRRRRDDL
```

Sample Input 2

```
4 5
R...
###.
....
.###
...D
```

Sample Output 2

```
RRDDLDDRR
```