Problem H. Belt Conveyor

Time limit 2000 ms
Mem limit 1048576 kB

Problem Statement

We have a grid with H horizontal rows and W vertical columns. (i, j) denotes the square at the i-th row from the top and j-th column from the left.
(i, j) has a character $G_{i,j}$ written on it. $G_{i,j}$ is `U`, `D`, `L`, or `R`.

You are initially at $(1, 1)$. You repeat the following operation until you cannot make a move.

> Let (i, j) be the square you are currently at.
> If $G_{i,j}$ is `U` and $i \neq 1$, move to $(i - 1, j)$.
> If $G_{i,j}$ is `D` and $i \neq H$, move to $(i + 1, j)$.
> If $G_{i,j}$ is `L` and $j \neq 1$, move to $(i, j - 1)$.
> If $G_{i,j}$ is `R` and $j \neq W$, move to $(i, j + 1)$.
> Otherwise, you cannot make a move.

Print the square you end up at when you cannot make a move.
If you indefinitely repeat moving, print `-1` instead.

Constraints

- $1 \leq H, W \leq 500$
- $G_{i,j}$ is `U`, `D`, `L`, or `R`.
- H and W are integers.

Input

Input is given from Standard Input in the following format:

$$
\begin{aligned}
&H\ W\\
&G_{1,1}G_{1,2}\dots G_{1,W}\\
&G_{2,1}G_{2,2}\dots G_{2,W}\\
&\vdots\\
&G_{H,1}G_{H,2}\dots G_{H,W}
\end{aligned}
$$

Output

If you end up at (i, j), print it in the following format:

i j

If you indefinitely repeat moving, print `-1`.

Sample 1

Input	Output
2 3 RDU LRU	1 3

You will move as $(1, 1) \to (1, 2) \to (2, 2) \to (2, 3) \to (1, 3)$, ending up here, so the answer is $(1, 3)$.

Sample 2

Input	Output
2 3 RRD ULL	-1

You will indefinitely repeat moving as $(1, 1) \to (1, 2) \to (1, 3) \to (2, 3) \to (2, 2) \to (2, 1) \to (1, 1) \to (1, 2) \to \ldots$, so `-1` should be printed in this case.

Sample 3

Input	Output
9 44 RRDDDDRRRDDDRRRRRRDDDRDDDDRDDRDDDDDDRRDRRRRR RRRDLRDRDLLLLRDRRLLLDDRDLLLRDDDLLLDRRLLLLLDD DRDLRLDRDLRDRLDRLRDDLDDLRDRLDRLDDRLRRLRRRDRR DDLRRDLDDLDDRLDDLDRDDRDDDDRLRRLRDDRRRLDRDRDD RDLRRDLRDLLLLRRDLRDRRDRRRDLRDDLLLLDDDLLLLRDR RDLLLLLRDLRDRLDDLDDRDRRDRLDRRRLDDDLDDDRDDLDR RDLRRDLDDLRDRLRDLDDDLDDRLDRDRDLDRDLDDLRRDLRR RDLDRRLDRLLLLDRDRLLLRDDLLLLLRDRLLLRRRRLLLDDR RRRRDRDDRRRDDRDDDRRRDRDRDRDRRRRRRDDDRDDDDRRR	9 5