Problem K. Kangaroo Puzzle

Input file: `standard input`
Output file: `standard output`

Your friend has made a computer video game called "Kangaroo Puzzle" and wants you to give it a try for him. As the name of this game indicates, there are some (at least 2) kangaroos stranded in a puzzle, and the player's goal is to control them to gather. As long as all the kangaroos in the puzzle get together, they can escape the puzzle by the miraculous power of kangaroos.

The puzzle is a $n \times m$ grid consisting of nm cells. There are walls in some cells, and the kangaroos cannot enter these cells. The other cells are empty. The kangaroos can move in the following directions: up, down, left, and right. It is guaranteed that one kangaroo can move from an empty cell to any other. It is also guaranteed that there is no cycle in the puzzle — that is, it's impossible for one kangaroo to move from an empty cell, pass by several distinct empty cells, and then return to the original cell.

There is exactly one kangaroo in every empty cell at the beginning. You can control the kangaroos by pressing the buttons `U`, `D`, `L`, `R` on your keyboard. The kangaroos will move simultaneously according to the button you press. For instance, if you press the button `U`, a kangaroo will move to the upper cell if it exists and is empty; otherwise, the kangaroo will stay still. You can press the buttons for at most 50000 times. If there are still two kangaroos standing in different cells after 50000 steps, you will lose the game.

Input

The first line contains two integers, n and m ($1 \leq n, m \leq 20$), the height and the width of the puzzle, respectively.

Each of the next n lines contains a (`0`,`1`)-string of length m, representing the puzzle. If the j-th character of the $i+1$-th line is `1`, then the cell at the i-th row and the j-th column is empty; otherwise (i.e., it is `0`), the corresponding cell is blocked and cannot be entered.

Output

Print a string consisting of `U`, `D`, `L`, `R`, such that all kangaroos will get together after pressing the buttons in the order of this string. The length of the string should not exceed 50000. There are many possible valid answers, so just print any of them.

Examples

standard input	standard output
4 4 1111 1001 1001 1110	LLUUURRRDD
2 15 111111111111111 101010101010101	ULLLLLLLLLLLLLL