3006   Graphics

In some graphics applications the screen is divided into 4 areas numbered 1, 2, 3, 4, with each area recursively divided in the same way, to an arbitrary depth. Using this scheme, each cell on the screen can be uniquely identified by a string of digits in the range 1-4, as in the following diagrams:

1	2
4	3

11	12	21	22
14	13	24	23
41	42	31	32
44	43	34	33

You are given a sequence of digits in the range 1-4 identifying an initial cell and a sequence of moves of the form U(up), D(down), L(left), R(right). Your task is to identify the destination of this move sequence, also as a sequence of digits in the range 1-4, or to write OUT if the trajectory gets beyond the screen borders.

Input

Input will consist of a series of scenarios, each specified by two lines of input:

- The first line consists of a string of 1 to 255 digits that specifies an initial cell, where each digit is in the range 1-4.

- The second line consists of a string of 1 to 255 letters that specifies the series of moves, where each letter is one of 'U', 'D', 'L', 'R'.

The end of the input is indicated by a line that consists of the word 'END'.

Output

Output for each scenario should consist of a single line that specifies the final cell, as a sequence of digits in the range 1-4, or the word 'OUT'.

Sample Input

```
1
RD
31
ULDRR
421
LLLDRRRU
244444
DL
END
```

Sample Output

```
3
32
OUT
422222
```