## Introduction

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| |  | | --- | | problem **0** | | **Escape The Vaults** | | y points | |  |
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The intrepid explorer Codington Warson has finally made it to the inner vaults of his latest dig. Unfortunately, he discovered each room has an intricate trap to unravel. There is a pressure plate which opens the exit door to the room, but the plate is too far away from the door. There are large artifacts in each room which can be slid to cover the plate, but they can only be slid in certain directions, requiring him to make several moves to finally cover the plate.

Codington has brought his trusty HP Envy Sceptre laptop to provide him the most economical set of moves needed to escape the room and is just waiting for your program to help him. Luckily, Codington knows that this civilization was a rather lethargic group, so any solution will involve moving objects no more than 30 times.

Your program should accept as input a diagram of the room. The first line will hold three integers representing:

* The number of rows in the grid.
* The number of columns in the grid.
* The number of moves required to cover the plate.

The remaining lines will each provide a description of one row of the grid. A digit (1-9) marks an artifact which can only be moved left or right. A letter (a-j) marks an artifact which can only move up or down. The capital letter X marks the pressure plate. A period (.) marks an empty square. If two squares are labeled by the same number or letter, they indicate a large artifact which covers that many squares and must move as one unit.

Your program should find the solution that uses the given number of moves and output on one line each individual move (xy, where x is the artifact and y is the direction U/D/L/R), separated by spaces. It should then print an empty line and a diagram of the final configuration of the room.

# Input

4 4 11

2acc

.1cX

b.33

b...

# Output

1L aD aD aD 2R 1R bU bU 3L 3L cD

b2..

b1cc

33c.

.a..