Gravity Rocks!

Program Name: gravity.java **Input File: gravity.in**

NASA has recently discovered how to create artificial gravity. As an intern at the space agency, it is your job to write a program that simulates the effects of artificial gravity on previously weightless rocks. Since full three dimensional models are very complicated, you start by writing a quick prototype that only considers two dimensions.

Write a program that will visually display the effect of gravity on a set of floating rocks in a 2-dimensional simulation.

Input

The first line of input contains a single integer, *n*, indicating the number of data sets to process. Each data set consists of:

1. Ten lines of 10 characters each representing a 10x10 grid of space containing some number of floating rocks. Each rock is represented by a single pound character ('#'), while empty space is represented by a period ('.').
2. A line containing one of the following characters indicating the direction of the artificial gravity field:
   U - up
   D - down
   L - left
   R – right

Output

For each data set in the input, first print the message, "Data Set #X" where X is 1 for the first data set, 2 for the second, etc. Then output the 10x10 grid of space, showing the new resting position of rocks after the indicated artificial gravity field has been applied. For instance, if an 'R'-type gravity field is applied to the rocks, they will all move as far as possible to the right of the 10x10 field, each stacking on top of any other blocks that might be in the way.

Don't forget: Each rock is a single character and moves independently.

Example Input File

```
2
.#........
..........
.#.#...#..
..........
.........#
....###...
##....#...
...#.#...#
.......#..
..........
L
..........
.......#..
...#.#...#
##....#...
....###...
.........#
..........
.#.#...#..
..........
.#........
U
```

Example Output To Screen

```
Data Set #1
#.........
..........
###.......
..........
#.........
###.......
###.......
###.......
#.........
..........
Data Set #2
##.#####.#
.#.#.###.#
.#........
..........
..........
..........
..........
..........
..........
..........
```