

Practice Problems

[A. Alien Numbers](#)**B. Always Turn Left**[C. Egg Drop](#)[D. Shopping Plan](#)[Questions asked](#)

- Submissions

Alien Numbers

40pt	Not attempted 320/432 users correct (74%)
80pt	Not attempted 271/338 users correct (80%)

Always Turn Left

40pt	Not attempted 108/135 users correct (80%)
80pt	Not attempted 96/114 users correct (84%)

Egg Drop

40pt	Not attempted 56/82 users correct (68%)
80pt	Not attempted 26/53 users correct (49%)

Shopping Plan

40pt	Not attempted 43/67 users correct (64%)
80pt	Not attempted 16/52 users correct (31%)

- Top Scores

sclo	480
jdmetz	480
lordmonsoon	480
ardiankp	480
krijgertje	480
ilyakor	400

Problem B. Always Turn Left

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
40 points

Solve B-small

Large input
80 points

Solve B-large

Problem

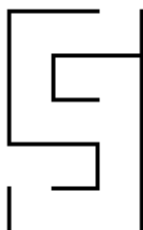
You find yourself standing outside of a perfect maze. A maze is defined as "perfect" if it meets the following conditions:

1. It is a rectangular grid of rooms, **R** rows by **C** columns.
2. There are exactly two openings on the outside of the maze: the entrance and the exit. The entrance is always on the north wall, while the exit could be on any wall.
3. There is exactly one path between any two rooms in the maze (that is, exactly one path that does not involve backtracking).

You decide to solve the perfect maze using the "always turn left" algorithm, which states that you take the leftmost fork at every opportunity. If you hit a dead end, you turn right twice (180 degrees clockwise) and continue. (If you were to stick out your left arm and touch the wall while following this algorithm, you'd solve the maze without ever breaking contact with the wall.) Once you finish the maze, you decide to go the extra step and solve it again (still always turning left), but starting at the exit and finishing at the entrance.

The path you take through the maze can be described with three characters: 'W' means to walk forward into the next room, 'L' means to turn left (or counterclockwise) 90 degrees, and 'R' means to turn right (or clockwise) 90 degrees. You begin outside the maze, immediately adjacent to the entrance, facing the maze. You finish when you have stepped outside the maze through the exit. For example, if the entrance is on the north and the exit is on the west, your path through the following maze would be

WRWWLWWLWWLWLRWRWRWWWRWWRLW:



If the entrance and exit were reversed such that you began outside the west wall and finished out the north wall, your path would be WWRRLWLWLWWLWWLRWRWRWWLW. Given your two paths through the maze (entrance to exit and exit to entrance), your code should return a description of the maze.

Input

Edu	400
Jonick	400
zibada	400
gpascale	400

The first line of input gives the number of cases, **N**. **N** test cases follow. Each case is a line formatted as

```
entrance_to_exit exit_to_entrance
```

All paths will be at least two characters long, consist only of the characters 'W', 'L', and 'R', and begin and end with 'W'.

Output

For each test case, output one line containing "Case #x:" by itself. The next **R** lines give a description of the **R** by **C** maze. There should be **C** characters in each line, representing which directions it is possible to walk from that room. Refer to the following legend:

Character	Can walk north?	Can walk south?	Can walk west?	Can walk east?
1	Yes	No	No	No
2	No	Yes	No	No
3	Yes	Yes	No	No
4	No	No	Yes	No
5	Yes	No	Yes	No
6	No	Yes	Yes	No
7	Yes	Yes	Yes	No
8	No	No	No	Yes
9	Yes	No	No	Yes
a	No	Yes	No	Yes
b	Yes	Yes	No	Yes
c	No	No	Yes	Yes
d	Yes	No	Yes	Yes
e	No	Yes	Yes	Yes
f	Yes	Yes	Yes	Yes

Limits

$1 \leq N \leq 100$.

Small dataset

$2 \leq \text{len}(\text{entrance_to_exit}) \leq 100$,
 $2 \leq \text{len}(\text{exit_to_entrance}) \leq 100$.

Large dataset

$2 \leq \text{len}(\text{entrance_to_exit}) \leq 10000$,
 $2 \leq \text{len}(\text{exit_to_entrance}) \leq 10000$.

Sample

Input

2

WRWWLWWLWWLWLRWRWRWWWRWRWLW WWRRLWLWWLWWLWWWRWRWWLW
 WW WW

Output

Case #1:

ac5

386

9c7

e43

9c5

Case #2:

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