02. Tron Racers

The new TRON tournament has started and you have to keep track of the players on the field.

You will be given an integer **n** for the size of the matrix. On the next **n** lines, you will receive the rows of the matrix. The game starts with two players (first player is marked with "f" and the second player is marked with "s") in random positions and **all of the empty slots** will be filled with "*".

Each turn you will be given commands **respectively for each player's movement.** The **first command** is for the first player and the **second** is for the second player. After a player moves, **he leaves a trail** on the field. The symbol that marks the trail is the same as the player's symbol. If a player **goes out** of the matrix, he comes in from **the other side**. If a player steps on the other player's trail, he dies. When a player dies in the field, you should write "x" in the position where he died.

When **only one of the players** is left alive on the field the game ends.

Input

- On the first line, you are given the integer N the size of the square matrix.
- The next N lines holds the values for every row.
- On each of the next lines you will get two commands in the format up, down, left or right.

Output

• In the end print the matrix.

Constraints

- The size of the matrix will be between [2...20].
- There will always be exactly two players.
- The players will always be indicated with "f" for the first one and "s" for the second one.
- There will always be enough commands to finish the game with one player alive.
- There will not be commands where a player goes back and steps on his trail from the previous turn.

Examples

Input	Output	Comments
5	***f*	The first command is down down so f moves down and s
***f*	**sff	moves down. After each turn the field is:
s	**s*f	1 2 3 4 5 6
****	**ssf	***f* ***f* ***f* ***f* ***f*
****	**sxf	**sf* **sff **sff **sff **sff
****		**s** **s** **s*f **s*f **s*f
down down		***** **s** **ss* **ssf **ssf **ssf
right down		***** **** **** ***S* **SSf **SXf
down right		On turn 6 f crashes into s's trail and f dies. As
down down		there is only one player left alive s is the only one left he is the winner.
down left		20.0 20 0
left left		



























