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

4 *f** **** **s* **** down up down right right right	*f** *fss *fx* ****	Here in the third turn **f** crashes into **s**'s trail so again we don't need to print **s**'s third position because he has won.