

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**. For example, if the player is on 0, 0 and the next command is left, he goes to the last spot in the first row.

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 separated by space .

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.
- Commands will be in the format **up**, **down**, **left** or **right**.

Examples

Input	Output	Comments																																				
5	***f*	The first command is down down so f moves down and s moves down. After each turn the field is: <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>***f*</td><td>***f*</td><td>***f*</td><td>***f*</td><td>***f*</td><td>***f*</td></tr><tr><td>**sf*</td><td>**sff</td><td>**sff</td><td>**sff</td><td>**sff</td><td>**sff</td></tr><tr><td>**s**</td><td>**s**</td><td>**s*f</td><td>**s*f</td><td>**s*f</td><td>**s*f</td></tr><tr><td>*****</td><td>**s**</td><td>**ss*</td><td>**ssf</td><td>**ssf</td><td>**ssf</td></tr><tr><td>*****</td><td>*****</td><td>*****</td><td>***s*</td><td>**ssf</td><td>**sxf</td></tr></table>	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
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																																
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***f*	**sff																																					
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down down																																						
right down																																						
down right																																						
down down																																						
		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.																																				

down left left left		
4 *f** **** **s* **** down up down right right right	*f** *fss *fX* ****	