# Re-Volt

You will be given an integer N for the size of the square matrix and then an integer for the count of commands. On the next **n** lines, you will receive the rows of the matrix. The player starts at a random position (the player is marked with **"f"**) and **all of the empty slots** will be filled with **"-" (dash)**. The goal is to reach the finish mark which will be marked with **"F"**. On the field there can also be bonuses and traps. Bonuses are marked with **"B"** and traps are marked with **"T"**.

Each turn you will be given commands for **the player’s movement.** If the 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 on the first row.

If the player steps on a **bonus**, he should move another step forward in the direction he is going. If the player steps on a **trap**, he should move a step backwards.

When the player reaches the **finish mark** or the **count of commands is reached,** the game ends.

### Input

* On the first line, you are given the integer N – the size of the square matrix.
* On the second you are given the count of commands.
* The next N lines hold the values for every row.
* On each of the next lines you will get commands for movement directions.

### Output

* If the player reaches the finish mark, print:
  + **"Player won!"**
* If the player reaches the commands count and hasn’t reached the finish mark print:
  + **"Player lost!"**
* In the end print the matrix.

### Constraints

* The size of the matrix will be between **[2…20].**
* The players will always be indicated with **"f".**
* If the player steps on the finish mark **at the same time** as his last command, he **wins** the game.
* Commands will be in the format **up**, **down**, **left** or **right**.
* There won't be a case where you bypass the finish while you are on a trap or a bonus.
* A trap will never place you into a bonus or another trap and a bonus will never place you into a trap or another bonus.

### Examples

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| **Input** | **Output** | **Comments** |