

Problem 10 – Domino Effect

Jeff loves setting up elaborate patterns of dominoes and watching them fall. He spends hours a day designing and testing different patterns. He wants to spend less time doing trial and error and more time creating patterns that work. One day, he has an idea that software could actually save him precious time by allowing him to proof his patterns first.

Jeff needs your help building a program to analyze his pattern of dominoes and provide him feedback to identify potential flaws in his design.

Note: Dominoes are frequently referred to as 'tiles' in this problem.

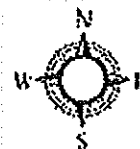
Key Points

- The letter 'S' marks the start of a pattern. There is only **one** starting point in a pattern.
- Patterns are **NOT** required to have a single ending point.
- No spaces are allowed between the starting point 'S' and the first tile.
- Tiles are represented in the grid with the following characters: pipe (|), dash (-), backslash (\), forward slash (/) and asterisk (*). ***Please refer to Figure 1 for more information.***
- No spaces are allowed between tiles. Furthermore, a space indicates the end of a run.
- Orientation and momentum should be considered for each falling tile. (i.e. A tile such as '|' is oriented to fall East-West, depending on the previous falling tile's momentum. If the tile is struck on its Eastern side, it should fall to the West.)
- A wildcard tile (indicated by *) is considered to represent several tiles, depending on the pattern layout. In other words, it is used when forming junctions and can trigger multiple runs based on the momentum of the tile striking it. ***Please refer to the example diagrams for more information.***
- A **falling** wildcard tile (indicated by *) can only affect neighboring piece(s) located at angles of 45 degrees or less (relative to the direction it is falling). This means a falling tile cannot fall directly to its right or left (a 90 degree angle).
- Any fallen tile must be changed to the letter 'O'. ***Please refer to the 'Output' section for more information.***

Domino Orientation & Momentum

Domino Orientation

Momentum



	↔	topples E or W only
-	↕	topples N or S only
\	↗	topples NE or SW only
/	↘	topples NW or SE only
* (wildcard)	⊗	topples N, S, E, W, NE, SW, NW or SE (Can represent multiple pieces)

Figure 1. Identification of tile characters, their orientation and momentum

Domino allowed moves



- Green = correct
- Red = incorrect

Figure 2. Valid and Invalid moves

Examples

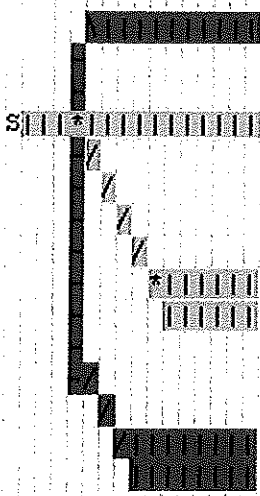


Figure 3. Green represents correct path followed

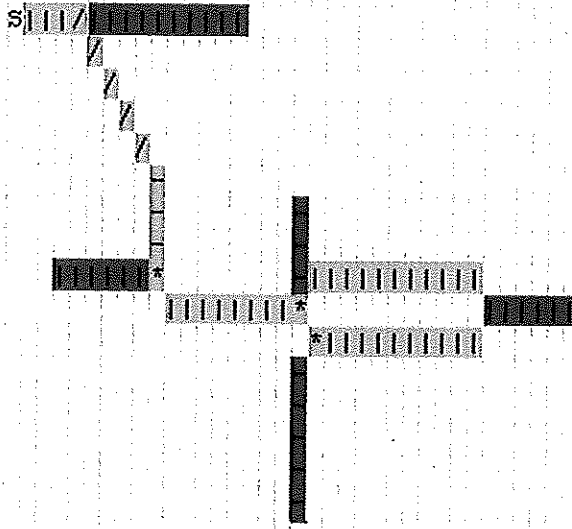


Figure 4. Green represents correct path followed

Input

The input will consist of multiple input lines delimited by a new line character. Each input line can consist of any of the tile characters and spaces as described in the 'Key Points' section. EOF will signal the end of input.

Output

The output will consist of the same exact layout as the input pattern (i.e. It will retain the original spacing and standing tiles.). The **only** difference is the fallen tiles will now be replaced with the letter 'O'. EOF will signal the end of input.

Sample Input

```

s|||||/|||||
 /
 /
 /
 /
-
-
-
-
|||||*  -|||||
|||||*  -|||||
*|||||  -|||||
-
-
-
-

```

Output for the Sample Input

```

s0000|||||
o
o
o
o
o
o
o
o
o
|||||o  -0000000000
00000000  -|||||
0000000000
-
-
-
-

```