

PSH: Loopy Puzzle

In order to solve a Loopy Puzzle, you must draw a continuous loop through a grid so that it visits every blank space exactly once. The loop must proceed across and down, never diagonally, and it must go straight through any cell marked with a circle.

Input Format

The input begins with two integer, r , c , which give the number of rows and columns in the puzzle, respectively.

The next r lines give the puzzle, with empty squares marked by a `.`, circles represented by the letter `O`, and non-empty squares represented by the letter `X`.

Constraints

$$4 \leq r, c \leq 10$$

Output Format

Output the grid with the path. In order to output the path, each cell in the grid should be represented by a 3x3 block with one of the following outputs:

Vertical Move:

```
.|.
.+
.|.
```

Horizontal Move:

```
...
-+-
...
```

Turn 1:

```
.|.
.+
...
```

Turn 2:

```
.|.
.+
...
```

Turn 3:

```
...
.+
.|.
```

Turn 4:

```
...
.+
.|.
```

Non-empty cell:

```
XXX
XXX
XXX
```

Sample Input 0

```
4 5
..X..
..0..
.....
X....
```

Sample Output 0

```
.....XXX.....
.+--+ .XXX. +--+ .
. | . | .XXX. | . | .
. | . | ..... | . | .
.+ . . +--+--+ . . + .
. | ..... | .
. | ..... | .
.+--+ . . +--+ . . + .
. . . | . | . | . | .
XXX. | . | . | . | .
XXX. +--+ . . +--+ .
XXX.....
```