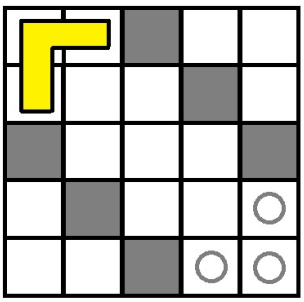
Problem E: Tile Maze



You have a L-shaped tile on a grid. Your goal is to move it so that it overlaps all of the end squares.

A move consists of one of these actions:

- Shifting the tile orthogonally by one square. The tile may not overlap any impassable tiles.
- Rotating the tile clockwise or counterclockwise. The $2x2$ grid that contains the tile will be the same before and after rotation.

Your goal is to get the tile to the goal squares in the minimum number of moves.

Input Specification:

The input consists of a series of testcases. Each testcase begins with two integers $1 \leq R \leq 20$ and $1 \leq C \leq 20$, the number of rows and columns in the grid, respectively. Following these are R lines of C characters, where:

. is a blank square

X is an impassable square

S is one of the 3 starting squares of the tile

E is one of the 3 ending squares of the tile

Input ends on a line where $R = 0$ and $C = 0$. Do not process this case.

Output Specification:

For each testcase, output the minimum number of moves to get the tile to the goal squares, or `IMPOSSIBLE` otherwise.

Sample Input:

```
5 5
SSX..
S..X.
X...X
.X..E
..XEE
0 0
```

Sample Output:

```
8
```