

PSH: Water Is Your New Best Friend

In order to survive, Katniss must find the fastest way to get from her current location in the arena to a water source while avoiding the other competitors. Your job is to find a shortest path for her to follow.

The arena is laid out in a grid, and Katniss may legally move horizontally or vertically one grid square at a time. It is not legal for her to move diagonally. She must avoid grid squares occupied by her opponents. A shortest path is one which involves a minimum number of legal moves.

Input Format

The input consists of an initial line with two integers l and w , on a line by itself, representing the size of the arena. Following this initial line are l lines of length w . These lines are made up of the characters '.', 'o', 'k', and 'w', where '.' represents a safe grid square, an 'o' represents a grid square occupied by an opponent, 'k' represents her current position, and 'w' represents a water source.

Constraints

$0 < w, l < 1000$

Output Format

Output the minimum number of moves that Katniss can make in order to reach water, if it a path exists.

If there is no way for Katniss to reach water, output an thirsty emoticon :-P if there is no way for Katniss to reach water.

Sample Input 0

```
9 10
*****O**
*k**O**OW*
***O***O**
**O***O**
*****O**
OOO*O*****
*****OOO**
OOOO*W***
W*****
```

Sample Output 0

```
11
```

Sample Input 1

```
11 10
k*****
oooooooo*
*****
*oooooooo
*****
oooooooo*
o**o**o*
o*o*o*o*
o*o*o*o*
o*o*o*o*
w*o***o**
```

Sample Output 1

