A game is played by a cat and a mouse named Cat and Mouse.

The environment is represented by a grid of size rows x cols, where each element is a wall, floor, player (Cat, Mouse), or food.

* Players are represented by the characters 'C'(Cat),'M'(Mouse).
* Floors are represented by the character '.' and can be walked on.
* Walls are represented by the character '#' and cannot be walked on.
* Food is represented by the character 'F' and can be walked on.
* There is only one of each character 'C', 'M', and 'F' in grid.

Mouse and Cat play according to the following rules:

* Mouse **moves first**, then they take turns to move.
* During each turn, Cat and Mouse can jump in one of the four directions (left, right, up, down). They cannot jump over the wall nor outside of the grid.
* catJump, mouseJump are the maximum lengths Cat and Mouse can jump at a time, respectively. Cat and Mouse can jump less than the maximum length.
* Staying in the same position is allowed.
* Mouse can jump over Cat.

The game can end in 4 ways:

* If Cat occupies the same position as Mouse, Cat wins.
* If Cat reaches the food first, Cat wins.
* If Mouse reaches the food first, Mouse wins.
* If Mouse cannot get to the food within 1000 turns, Cat wins.

Given a rows x cols matrix grid and two integers catJump and mouseJump, return true*if Mouse can win the game if both Cat and Mouse play optimally, otherwise return*false.

**Example 1:**

Diagram

Description automatically generated

**Input:** grid = ["####F","#C...","M...."], catJump = 1, mouseJump = 2

**Output:** true

**Explanation:** Cat cannot catch Mouse on its turn nor can it get the food before Mouse.

**Example 2:**

Diagram

Description automatically generated

**Input:** grid = ["M.C...F"], catJump = 1, mouseJump = 4

**Output:** true

**Example 3:**

**Input:** grid = ["M.C...F"], catJump = 1, mouseJump = 3

**Output:** false

**Constraints:**

* rows == grid.length
* cols = grid[i].length
* 1 <= rows, cols <= 8
* grid[i][j] consist only of characters 'C', 'M', 'F', '.', and '#'.
* There is only one of each character 'C', 'M', and 'F' in grid.
* 1 <= catJump, mouseJump <= 8