# Problem C. Cyclically Shifted Maze

| | |
|---|---|
| Input file: | *standard input* |
| Output file: | *standard output* |
| Time limit: | 2 seconds |
| Memory limit: | 512 mebibytes |

Let's call a maze a rectangular field of cells, where cells can either be empty or contain a wall, and one can move from an empty cell to its empty neighbour cells in four directions.

Let's call a maze connected if it's possible to reach any its empty cell from any other empty cell by moving in four directions.

There was a connected maze of size $n \times m$. It was cyclically shifted some rows down and some columns right, but nobody knows the exact shifts. Find all possible shifts.

## Input

The first line contains two integers $n$ and $m$ ($1 \le n, m \le 200$) — the sizes of maze.

Each of the next $n$ lines contains $m$ characters "`.`" or "`#`" — empty cells and walls, correspondingly.

There is at least one empty cell in the maze.

## Output

In the first line output a single integer $k$ ($0 \le k \le n \cdot m$) — the number of possible shifts.

In each of the next $k$ lines output two integers $r_i$ and $c_i$ ($0 \le r_i < n, 0 \le c_i < m$) — the number of rows the original maze was shifted down and the number of columns it was shifted right. Pairs ($r_i$, $c_i$) should be output in lexicographical order. Original maze must be connected for each of these cases.

## Examples

| standard input | standard output |
|---|---|
| 5 6<br>..####<br>.###..<br>...#.#<br>##...#<br>.###.. | 9<br>0 2<br>0 3<br>0 4<br>1 2<br>1 3<br>1 4<br>4 2<br>4 3<br>4 4 |
| 8 10<br>##########<br>..........<br>#.####..##<br>..###..##.<br>#....##...<br>######..##<br>....###...<br>....###... | 2<br>0 5<br>1 5 |