

Contest Duration: 2025-09-27(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250927T2100&p1=248>) - 2025-09-27(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250927T2240&p1=248>) (local time) (100 minutes)

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D - Ulam-Warburton Automaton

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 425 points

Problem Statement

There is a grid with H rows and W columns. We call the cell at the i -th row from the top ($1 \leq i \leq H$) and j -th column from the left ($1 \leq j \leq W$) as cell (i, j) .

Initially, cell (i, j) is colored black if $S_{i,j}$ is # and white if it is ..

Perform the following operation 10^{100} times:

- Let T be the set of cells that are colored white and have exactly one adjacent cell colored black. Color each cell in T black. Here, two cells (i_1, j_1) and (i_2, j_2) are adjacent if and only if $|i_1 - i_2| + |j_1 - j_2| = 1$.

Find the number of cells that are colored black after all operations are completed.

Constraints

- $2 \leq H, W$
- $HW \leq 3 \times 10^5$
- H and W are integers.
- $S_{i,j}$ is # or ..

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Input

The input is given from Standard Input in the following format:

H W
 $S_{1,1}S_{1,2} \dots S_{1,W}$
 $S_{2,1}S_{2,2} \dots S_{2,W}$
 \vdots
 $S_{H,1}S_{H,2} \dots S_{H,W}$

Output

Output the answer.

Sample Input 1

Copy

9 9
.....
.....
.....
.....
...#...
.....
.....
.....
.....

Copy

Sample Output 1

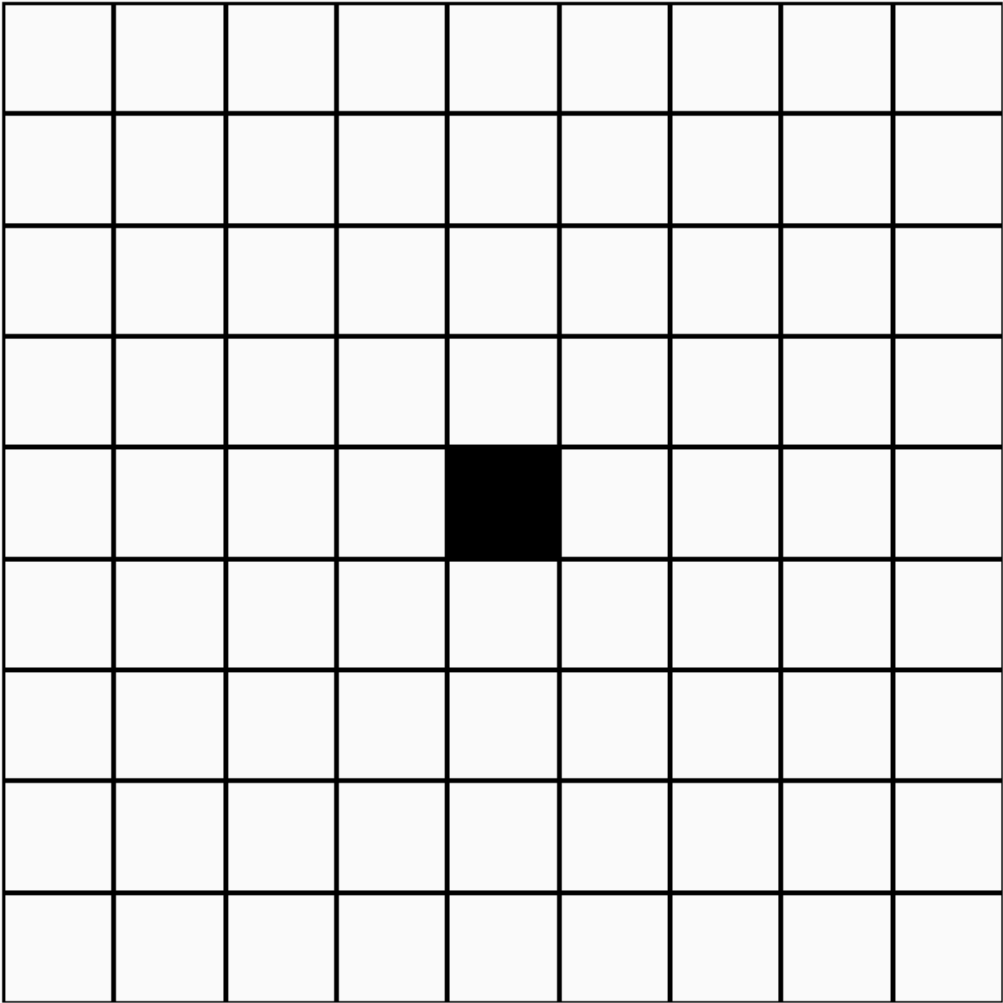
Copy

57

Copy

The grid changes as follows through the operations. (The number above represents the operation count. The first ten operations are displayed.)

0



Eventually, 57 cells are colored black.

Sample Input 2

Copy

```
2 2
..
..
```

Copy

Sample Output 2

Copy

```
0
```

Copy

Sample Input 3

[Copy](#)

```
10 10
.....
....#....
#.....#.
.....#..
.....#..
.....#..
.....#..
.....
.....
..#...#..
.....#..
```

[Copy](#)

Sample Output 3

[Copy](#)

```
64
```

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#telegram)

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