Chirag Rawal ⏻

Coding Area

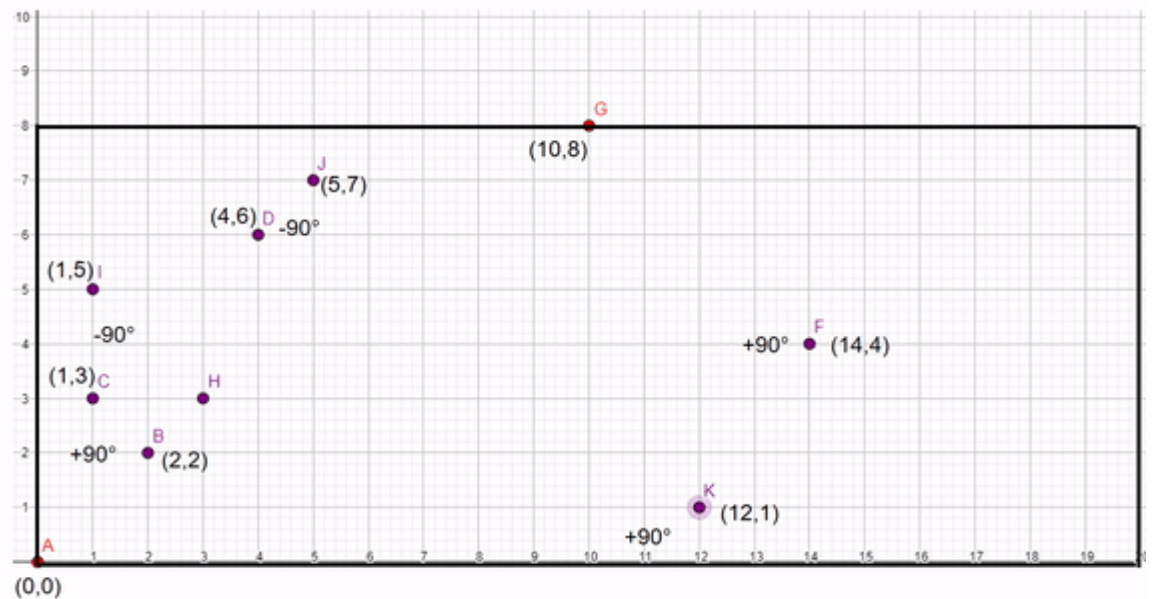| **A**	**B**	**C**	**D**	**E**	**F**

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Corona Virus

➕ Problem Description

A city is represented as two-dimensional rectangular matrix. The outer wall of the given matrix denotes the boundaries of the city. Citizen dispersed in the city at different locations. They are either depicted by {a, c}. Corona Virus has already infected the city.

The Corona Virus enters the city from coordinate (0, 0) and traverses along a diagonal path until it encounters a human. If it encounters a h designated as *a* , its trajectory rotates anti clockwise (right to left) by 90 degrees. Similarly, if it encounters a human, designated as trajectory rotates clockwise (left to right) by 90 degrees. After infecting the person, the virus continues to move along its diagonal path.

During its traversal if it hits the boundary of the city for the first time, it rotates 90 degrees to reenter the city. However if it hits any boundary wall, the second time, the virus gets destroyed.

You have to calculate the trajectory taken by the virus, print the city map where infected citizens can be found and finally report the num safe   and   infected   cit

➕ Input

An input matrix of 9 rows and 20 columns comprising of {*, a, c, . } characters where

- * denotes an element on the boundaries of the city
- a denotes citizen after encountering whom the virus trajectory changes by 90 degrees (anti clockwise direction)
- c denotes citizen after encountering whom the virus trajectory changes by 90 degrees (clockwise direction)
- . (dot) denotes empty location within the city

➕ Output

Random number of lines each denoting the coordinates of the trajectory of the virus.

From next line an output matrix of 9 rows and 20 columns comprising of {*, a, c, ., - } characters where

- * denotes an element on the boundaries of the city
- a denotes citizen after encountering whom the virus trajectory changes by 90 degrees (anti clockwise direction)
- c denotes citizen after encountering whom the virus trajectory changes by 90 degrees (clockwise direction)
- . (dot) denotes empty location within the city
- - denotes the location of the infected citizen

And the next two lines print the number of safe and infected citizens in the city

Refer Examples section for better understanding.

Constraints

0 <= x <= 20

0 <= y <= 8

The virus cannot hit the three corners (20, 8) (20, 0) (0, 8)

Time Limit

1

Examples

Example 1

Input

```
********************
*....c.............*
*...c.............*
*c................*
*............a....*
*c.c..............*
*.a...............*
*...........c......*
********************
```

Output

```
0 0
1 1
2 2
1 3
2 4
3 5
4 6
5 5
6 4
7 3
8 2
9 1
10 0
11 1
12 2
13 3
14 4
13 5
12 6
11 7
10 8
********************
*....c.............*
*...-.............*
*c................*
*............-....*
*-.c..............*
*.-...............*
*...........c......*
********************
```

safe=4

infected=4

Explanation

The virus trajectory starts from (0,0) and crosses (1,1) (2,2). At (2,2) we have a citizen of type *a* causing the virus trajectory to be rotated degrees anti clockwise. It moves until the next citizen in its path is encountered at (1, 3) of type *c* causing the virus trajectory to be rotated degree clockwise. It continues on its path till it reaches the next human in its path at (4,6) of type *c* Virus trajectory is again rotated by 90 de clockwise until it hits the boundary at (10,0). Since this is the first time that the virus hits the boundary, it rotates by 90 degrees anticlockw reenter the city. The trajectory then continues towards (11,1) (12,2) (13,3) and finally a citizen at (14,4) of type *a* rotating the trajectory degree anticlockwise. From there it continues its trajectory and hits the boundary at (10,8).

Since this is the second time the virus hits the boundary, the virus is destroyed.

So, along its trajectory starting from (0,0) it has infected 4 citizens at location (2,2) (1,3) (4,6) (14,4). The other 4 citizens who did not come virus trajectory are deemed to be safe.

Example 2

Input

```
********************
*.................*
*..c..............*
*....c............*
*.........a........*
*.................*
*.......a......c...*
*.................*
********************
```

Output

```
0 0
1 1
2 2
3 3
4 4
5 5
6 4
7 3
8 2
9 3
10 4
9 5
8 6
7 7
6 8
5 7
4 6
3 5
2 4
1 3
0 2
```

```
********************
*.................*
*..c..............*
*....-............*
*.........-........*
*.................*
*.......-......c...*
*.................*
********************
```

safe=2

infected=3

Explanation

The virus trajectory starts from (0,0) and crosses (1,1) (2,2) (5,5). At (5,5) we have a citizen of type c causing the virus trajectory to be rota 90 degrees clockwise. It moves until the next citizen in its path is encountered at (8,2) of type *a* causing the virus trajectory to be rotated degree anti clockwise. It continues on its path till it reaches the next human in its path at (10,4) of type *a* Virus trajectory is again rotated degrees clockwise until it hits the boundary at (6,8). Since this is the first time that the virus hits the boundary, it rotates by 90 de anticlockwise to reenter the city. The trajectory then continues towards (9,5) (8,6) (7,7) (6,8) and renters the city by rotating the trajectory degrees anti clockwise to follow the trajectory (5,7) (4,6) (3,5) (2,4) (1,3) (0,2).

At (0,2) it again hits the boundary and since this is the second time the virus hits the boundary, the virus is destroyed. So along its traje starting from (0,0) it has infected 3 citizens at location (5,5) (10,4) (8,2). The other 2 citizens who did not come in the virus trajectory are de to be safe.

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