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## 5. Disco Stew

**Program Name:** disco.java

**Input File:** disco.in

Disco Stu is a cannibal and wants to capture you for his next batch of, you guessed it, disco stew.

You must escape the dance floor, but the rotating colors cast by the disco ball make it difficult to move. In fact, you can only reliably move within a region of the floor that is all one color. If you want to move further, you must wait for the disco ball to rotate (90 degrees clockwise) and try again.

Note that a colored 'region' of the floor only consists of same-colored squares that are horizontally or vertically adjacent. Regions that are only diagonally adjacent (i.e., they meet at a corner) are separate.

### Input

The first line of the input file will contain a single integer,  $n$ , indicating the number of discos that you must attempt to escape from. For each disco, the first line of the input will have two integers,  $x$  and  $y$ , representing the row and column of the dance floor that you start on (rows are numbered 1-9 from top to bottom, columns are numbered 1-9 from left to right). The next nine lines in the input represent the dance floor and its coloring with the disco ball in its starting position. Note that all discos are 9x9 with the disco ball located above the center of the floor (5,5).

### Output

For each disco in the input, determine the minimum number of moves it takes to escape to the disco door (which is always in the upper left corner, at row 1 column 1).

In the first example below, you can immediately move from the starting position to the door because the entire room is blue. When you can escape, print a message, "I escaped from the disco # $s$  in  $z$  turn(s) of the disco ball." where  $z$  is the smallest number of moves possible to get you from your starting position to the disco door and  $s$  is 1 for the first disco, 2 for the second, etc. Since you can escape the disco in example 1 without the disco ball turning at all,  $z$  is 0.

In example 2, you are trapped because you must cross the green region to get to the exit, but you have no way to get into or out of it. When it is not possible to reach the exit in any number of rotations of the disco ball, print the message, "I'm the next ingredient in disco stew # $s$ ." where  $s$  is as described above.

To solve example 3, you must understand how the disco ball rotates. For purposes of this problem, the disco ball rotates clockwise in 90 degree increments. Here is how the dance floor would look for 0, 1, 2, and 3 rotations of the disco ball:

BBBBBBBBB	BBBBBBBBB	BBBBBBBBB	BBBBBBBBB
BGGGGGGGB	BGGGGGGGB	BGGGGGGGB	BGGGYGGGB
BGBBBBBGB	BGBRRRBGB	BGBBBBBGB	BGBRYRBGB
BGRRRRRGB	BGBRRRBGB	BGRRRRRGB	BGBRYRBGB
GGRR <b>R</b> YYYB	BGBRRRBGB	BYYYRRRRG	BGBRRRBGB
BGRRRRRGB	BGBR <b>Y</b> RBGB	BGRRRRRGB	BGBRRRBGB
BGBBBBBGB	BGBRYRBGB	BGBBBBBGB	BGBRRRBGB
BGGGGGGGB	BGGGYGGGB	BGGG <b>G</b> GGGB	BGGGGGGGB
BBBBBBBBB	BBBBBBBBB	BBBBBBBBB	BBBBBBBBB

In the beginning, you're in the red region, but if you move to (6, 5) and wait for the next rotation, you're in the yellow region and can move to (8,5) which after the next rotation puts you in the green region. You can then move to (5,9), which after one final rotation will land you in the blue region where you can move directly to the exit. In total, you made it with only three rotations of the disco ball. (Starting positions for each turn in this example are in bold.)

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### Example Input File

```
3
9 9
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
BBBBBBBBB
5 5
BBBBBBBBB
BGGGGGGGB
BGBBBBBGB
BGRRRRRGB
BGRRRRRGB
BGRRRRRGB
BGBBBBBGB
BGGGGGGGB
BBBBBBBBB
5 5
BBBBBBBBB
BGGGGGGGB
BGBBBBBGB
BGRRRRRGB
GRRRRYYYB
BGRRRRRGB
BGBBBBBGB
BGGGGGGGB
BBBBBBBBB
```

### Example Output To Screen

```
I escaped disco #1 in 0 turn(s) of the disco ball.
I'm the next ingredient in disco stew #2!
I escaped disco #3 in 3 turn(s) of the disco ball.
```