**Revenge of the feathered serpent - Level 1**  
*a CodinGame adventure in which you are the hero...*

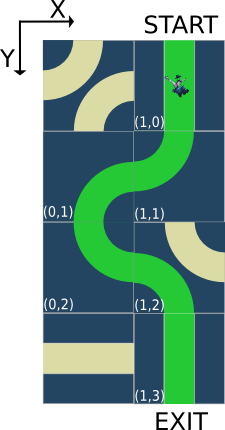


Indy, the greatest adventurer of modern times (except maybe Lara) finds himself once again in a sticky situation!  
  
During his exploration of a Mayan temple, at the very moment he grabbed a relic of the feathered serpent Quetzalcóatl, a concealed hatch opened up beneath his feet plunging him at high speed deep into a dark underground tunnel.  
  
Indy is at risk of slamming into a wall or getting permanently stuck underground at any moment.  
  
Luckily, you - his loyal assistant - are here to get him out of trouble.

**THE MISSION :**

**The tunnel consists of a patchwork of square rooms of different types.** The rooms can be accessed and activated by computer using an ancient RS232 serial port (because Mayans aren't very technologically advanced, as is to be expected...).  
  
**There is a total of 14 room types** (6 base shapes extended to 14 through rotations).  
  
Upon entering a room, depending on the type of the room and Indy's entrance point (TOP, LEFT, or RIGHT) he will either **exit the room through a specific exit point**, suffer a lethal collision or lose momentum and get stuck:

|  |  |  |  |
| --- | --- | --- | --- |
| http://files.codingame.com/codingame/indiana/question/part0.png *Type 0* | *This room type is not part of the tunnel per se as Indy cannot move across it.* | | |
| http://files.codingame.com/codingame/indiana/question/part1.png *Type 1* | *The green arrows indicate Indy's possible paths through the room.* | | |
| http://files.codingame.com/codingame/indiana/question/part2.png *Type 2* | http://files.codingame.com/codingame/indiana/question/part3.png *Type 3* |  | |
| http://files.codingame.com/codingame/indiana/question/part4.png *Type 4* | http://files.codingame.com/codingame/indiana/question/part5.png *Type 5* | *A red arrow indicate a path that Indy cannot use to move across the room.* | |
| http://files.codingame.com/codingame/indiana/question/part6.png *Type 6* | http://files.codingame.com/codingame/indiana/question/part7.png *Type 7* | http://files.codingame.com/codingame/indiana/question/part8.png *Type 8* | http://files.codingame.com/codingame/indiana/question/part9.png *Type 9* |
| http://files.codingame.com/codingame/indiana/question/part10.png *Type 10* | http://files.codingame.com/codingame/indiana/question/part11.png *Type 11* | http://files.codingame.com/codingame/indiana/question/part12.png *Type 12* | http://files.codingame.com/codingame/indiana/question/part13.png *Type 13* |

Indy is perpetually drawn downwards: **he cannot leave a room through the top**.  
  
At the start of the game, you are given the map of the tunnel in the form of a rectangular grid of rooms. Each room is represented by its type.  
  
For this first mission, you will familiarize yourself with the tunnel system, the rooms have all been arranged in such a way that Indy **will have a safe continuous route between his starting point (top of the temple) and the exit area (bottom of the temple)**.  
  
Your objective is to write a program **capable of predicting the route Indy will take on his way down**(Indy is not yet in danger of getting trapped in this first mission).  
  
For example :  
  
  
  
  
  
  
  
  
Indy starts in the room (1,0), progresses to (0,1) through (1,1), then goes on to (0,2), traverses (1,2) and finally reaches (1,3) from where he can safely escape.

Each game turn:

* You receive Indy's current position
* Then you specify what Indy's position will be next turn.
* Indy will then move from the current room to the next according to the shape of the current room.

The game ends when:

* Indy reaches the exit: mission accomplished :)
* You assert an incorrect position for Indy : mission failed :(

The program must first read the initialization data from standard input. Then, **within an infinite loop**, read the data from the standard input related to the current position of Indy and provide to the standard output the expected data.  
  
**Don’t forget to run all the tests!**  
  
**The tests provided are similar to the validation tests used to compute the final score but remain different.**

**INITIALIZATION INPUT:**

**Line 1 : W H**, 2 space seperated integers specifying the width and height of the grid.  
**H next lines:** each line represents a line in the grid and contains W integers **T**. T specifies the type of the room.  
**Last line: EX** an integer specifying the coordinate along the X axis of the exit (this data is not useful for this first mission, it will useful on the next question).

**INPUT FOR ONE GAME TURN:**

**Line 1: XI YI POS**. (XI, YI) two integers to indicate Indy's current position on the grid. POS a single word indicating Indy's entrance point into the current room: TOP if Indy enters from above, LEFT if Indy enters from the left and RIGHT if Indy enters from the right.

**OUTPUT FOR ONE GAME TURN:**

**One line** containing 2 integers **X Y** representing the (X, Y) coordinates of the room in which you believe Indy will be on the next turn.

**CONSTRAINTS:**

0 < W ≤ 20  
0 < H ≤ 20  
0 ≤ T ≤ 13  
0 ≤ EX < W  
0 ≤ XI, X < W  
0 ≤ YI, Y < H

Response time for one game turn ≤ 150ms

**EXAMPLE :**

|  |  |
| --- | --- |
| **Initialization input** *(out of the infinite loop)* | ***No output expected*** |
| |  |  |  | | --- | --- | --- | | 2 4 4 3 12 10 11 5 2 3 1 | *(W H)* *(T T)* *(T T)* *(T T)* *(T T)* *(EX)* | *Grid with 2 columns, 4 lines.* | | http://files.codingame.com/codingame/indiana/question/example0.png |
| **Input for turn 1** | **Output for turn 1** |
| |  |  |  | | --- | --- | --- | | 1 0 TOP | *(XI YI POS)* | *Indy enters room (1,0) from above* | | http://files.codingame.com/codingame/indiana/question/example1.png | | | | 1 1 *Determine that Indy will be in room (1,1) on the next turn* |
| **Input for turn 2** | **Output for turn 2** |
| |  |  |  | | --- | --- | --- | | 1 1 TOP | *(XI YI POS)* | *Indy is now in (1,1)* | | http://files.codingame.com/codingame/indiana/question/example2.png | | | | 0 1 *Determine that Indy will be in room (0,1) on the next turn* |
| * And so on until Indy reaches the exit at (1,3)   http://files.codingame.com/codingame/indiana/question/example3.png | |