Problem E
Smart Care Center I

Time limit: **3 seconds**
Memory limit: **1024 megabytes**

Problem Description

As society ages, ensuring the safety of elderly people has become a critical issue. Falls are among the most dangerous accidents in care centers.

Jim, a thoughtful developer, is designing a "Smart Wristband" that tracks the movement of elderly individuals. He wants to build a simulation system to verify if the wristband can correctly detect dangerous situations.

In this simulation, the care center is represented as a 2D grid map. In this 2D grid map, '`0`' represents a Safe Zone (Walkable). And '`1` represents a Puddle (Dangerous, causes a fall).

You are given the map size, the layout of the grid, the elderly person's starting position and direction, and a sequence of movement instructions.

Your task is to simulate the following movements:

- Wall Logic (Safety Barrier): If the person tries to walk outside the grid boundaries (hitting a wall), the wristband detects the barrier and IGNORES that instruction. The person stays in the current position. They do not fall.
- Puddle Logic (Danger): If the person walks into a Puddle, they slip and fall immediately. The simulation ends. (The starting position does not trigger a fall. Even if the person starts on a Puddle, they are considered safe until they attempt to move into another Puddle.)
- Safe Completion: If the person finishes all instructions without entering a puddle, they are safe.

The Movement Rules are shown as follows:

- Directions are represented by integers: `0` (North), `1` (East), `2` (South), `3` (West).
- Instructions string consists of:
  - `F`: Move forward one step in the current direction.
  - `R`: Turn right (90 degrees clockwise).
  - `L`: Turn left (90 degrees counter-clockwise).

Input Format

The input consists of multiple test cases until EOF. Each test case contains $R + 3$ lines. The first line contains two integers R and C (Rows and Columns of the map). Each of the following R lines

contains C integers consists of `0` or `1`, representing the $R \times C$ grid. The $R + 2$ line contains three integers sr, sc and dir, which represent the starting row and column (0-indexed) (sr, sc) and the initial direction dir (`0`:N, `1`:E, `2`:S, `3`:W). The last line contains a string of instructions.

Output Format

For each test case, output '`Fall`' if the person falls due to a puddle. Otherwise, output '`Safe`'.

Technical Specification

- $1 \leq R, C \leq 50$
- $0 \leq sr < R$
- $0 \leq sc < C$
- $0 \leq dir \leq 3$
- The instruction length is at most 100.

Sample Input 1

```
3 3
0 0 0
0 1 0
0 0 0
0 0 1
FF
3 3
0 0 0
0 1 0
0 0 0
0 0 1
RFLF
3 3
0 0 0
0 1 0
0 0 0
0 0 0
F
```

Sample Output 1

```
Safe
Fall
Safe
```