
Robots**P16248_en**

We have a board $n \times m$ where each square is marked with a S, L, R, or E. Initially, a robot is placed in any square, looking at the north (N), east (E), south (S) or west (W). Repeteadly, the robot does two operations:

- To turn or to explode:
 - If the robot is in a square marked with a L, it turns 90 degrees to the left;
 - If the robot is in a square marked with a R, it turns 90 degrees to the right;
 - If the robot is in a square marked with a S, it does not turn (it continues straight);
 - If the robot is in a square marked with an E, it explodes.
- Advance: The robot advances a square in the direction it is looking at (if it did not explode previously, of course).

Write a program that indicates if the robot will go out of the board, it will explode or it will be moving in the board forever.

Input

The input consists of a natural $t \geq 0$ followed by t test data separated by a line in white. Each test data consists of a line with n and m (both of them between 1 and 60), followed by n lines with m characters (S, L, R, or E) each one. Finally, the last line of each test data contains the initial row (a number between 1 and n), and the initial direction (N, E, S or W).

Output

For each test data, your program must print “explodes”, “goes out”, or “does not go out” as required.

Sample input 1

```
5
1 4
XSSS
1 4 W
4 5
XXRSR
SSLXS
XXXXS
XXLSR
2 1 E
2 2
RR
RR
1 1 N
```

```
2 3
XLL
SSL
2 1 E
1 1
X
1 1 S
```

Sample output 1

explodes
explodes

goes out
goes out
explodes

Problem information

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