

# Problem HANDWIRE: Handwiring

Back in the old days circuit boards were still wired by hand. As humans tend to make errors, it is crucial to frequently check the function of the board while it is still being assembled. Such a check is simply testing if current flows between two points on the board or not.

## Input

The input consists of the size of a rectangular circuit board in the first line, given by the width and height of the board in “board units” which are two integers  $0 < x_{max}, y_{max} \leq 1,000$  separated by a space. Each unit can be thought of as a small square which has possible connection points at each of the four corners. Exceptions are the corners at the border of the board, they are not connection points. After the board size a list consisting of two different actions follows until the end of the input (at most 500,000):

- **WIRE**  $(x_1, y_1) (x_2, y_2)$ , which means that a wire is soldered between the two connections points, or
- **CHECK**  $(x_1, y_1) (x_2, y_2)$ , which means that a test should be performed,

with  $0 < x_{1,2} < x_{max}$  and  $0 < y_{1,2} < y_{max}$ .

## Output

For each **CHECK** action in the input output a line stating either **FLOW**, if current flows between the two points (directly or indirectly), or **NO FLOW**, if no current can flow.

### Sample Input 1

```
4 4
WIRE (1, 1) (2, 2)
WIRE (1, 3) (2, 3)
CHECK (2, 2) (2, 3)
WIRE (2, 3) (2, 2)
CHECK (2, 2) (2, 3)
WIRE (3, 2) (2, 2)
CHECK (1, 1) (3, 2)
```

### Sample Output 1

```
NO FLOW
FLOW
FLOW
```