Art College

Mouse Peter studies modern art at the college of art where he learnt about the famous artist Piet Mousedrian. The signature paintings of Mousedrian consist of verticle and horizontal lines of different colours. His special technique for painting these was to pour paint on the tires of a bicycle and then drive across the canvas.

One day Mouse Peter visits an exhibition of Mousedrian in a museum. He notices that some of the paintings are however very suspicious and might be fake.

Your task is to help Peter determine if a painting could really have been painted with the bicycle technique or if it is impossible to paint it using a bicycle.

You are given an m by n grid of squares where each square is a certain colour. A bicycle wheel is exactly as wide as one square. When a line is drawn, it is either vertical or horizontal and goes all the way from one edge of the canvas to the other. It may however be covered partially or completely by other lines drawn later.

Input

The first line of the input contains two numbers m, the height (number of rows), and n, the width (number of columns), separated by a single space.

The following m lines contain n positive integers each, denoting the colour of the squares on that line (we use numbers instead of colours to make it easier to read input. The number of a colour is between 1 and 2500).

Output

You need to output a single line that reads "`real`" if it is possible to draw the picture using only verticle and horizontal lines, or "`fake`" if it is impossible.

Constraints

- $1 \leq m, n \leq 1000$
- $1 \leq$ #colours ≤ 2500

Examples

Input	Output

`3 3`
`3 1 1`
`1 4 2`
`1 1 2`
	`fake`

Input	Output

`3 3`
`1 1 1`
`1 4 2`
`1 1 2`
	`real`

Input	Output
3 5 1 2 2 2 2 1 3 4 4 4 1 5 5 5 5	real