(Adv.) Competitive Programming

Submit until 19.07.2019 13:30, via the judge interface

Problem: editor (4 second timelimit)

For CompProg you installed a Vim plugin that prints the text in each split window in a different color. When you close a split window, it fuses with an adjacent split window to form a new rectangular split. Unfortunately, the plugin has a bug. Upon closing a split, the window fills with red 'k's before it is combined with its neighbor. The screen area of the closed window freezes until you restart the PC. To confuse you even more, the bug leaves a rectangular region of the closed split window intact, where you can see nicely colored characters. All other split windows are unaffected — even the one you are merging with. If your split window already contains some frozen regions, the randomly unaffected rectangle is outside the frozen area. You close all splits and take a picture of the screen with your Nokia 3310. Quickly rebooting, you see at StackOverflow that many users posted pictures of this bug after they closed all splits. The comments suggest that some trolls posted fake instructions that will format your hard drive. Not wanting to lose 90GB of memes, you decide to validate the posted picture below each fix before you follow any instructions.

Input The input contains screen space coordinates of all regions that are not filled with red 'k's. It starts with an integer $n \leq 2000$. Then n lines follow with 4 integers $0 \leq l, t, r, b \leq 10^9$ for left, top, right, and bottom borders of each text region.

Output Print "LEGIT" if there exists a partitioning of split windows that can yield the described result after closing all splits. Otherwise print "FAKE"

Sample input

```
4
0 0 1 2
0 2 1 3
1 0 2 1
1 1 2 3
```

Sample output

```
LEGIT
```

```
4
0 0 2 1
1 2 3 3
2 0 3 2
0 1 1 3
```

```
FAKE
```

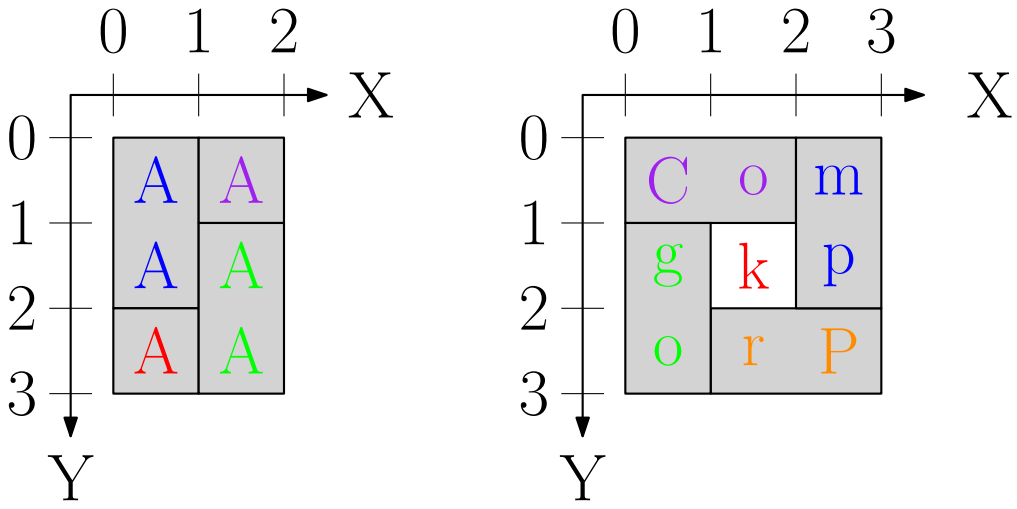

Figure 1: Photo for sample tests.