

6. Paint the Streets (linn)

60 points

Next year, the Especially Important Olympiad will take place in the Greatly Magnificent City. In order to impress the guests, several construction projects are underway. This includes painting all the city streets.

As one might expect, the city consists of V junctions and E bidirectional streets connecting them. The junctions are indexed $1 \dots V$. No pair of junctions is connected by more than one street, no street connects a junction to itself and it is possible to walk from any junction to any other using these streets.

Each street should be painted either red or blue. The mayor thinks that it's a lot more interesting to walk around the city if every street is different from the last. Therefore, the mayor has issued an additional constraint: "if p and q are different junctions, then it must be possible to walk from p to q such that every street on the path is painted in a different color from the street before it." Such a path may also visit some streets or junctions multiple times.

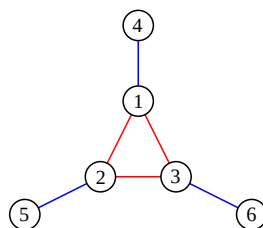
Your task is to suggest a way to paint all the streets so that the mayor is satisfied. It is guaranteed for all input files given in the problem that there is at least one way to paint the streets so that the mayor is satisfied.

Grading. In this task you are given (via the grading server) 10 input files and you should submit the corresponding output files as your solution. You should not submit a program and it will not be graded. Each input file contains a city plan with some special properties, therefore it is recommended to analyze each input file separately. To conveniently view the city plans, one can use https://csacademy.com/app/graph_editor/.

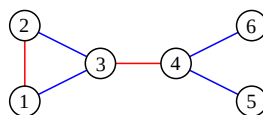
Input. The first line of the input file contains two integers V and E —the number of junctions and streets, respectively ($1 \leq V \leq 1000$, $1 \leq E \leq 3000$). Each of the following E lines consists of two integers u and v ($1 \leq u \leq V$, $1 \leq v \leq V$), denoting a street between junctions u and v .

Output. Write E lines in the output file. Each row should contain the color of one street (punane for red, sinine for blue) in the order the streets were given in the input.

Example.	Input file	Output file
	6 6	punane
	1 2	punane
	2 3	punane
	3 1	sinine
	4 1	sinine
	5 2	sinine
	6 3	



Example.	Input file	Output file
	6 6	punane
	1 2	sinine
	2 3	sinine
	3 1	punane
	3 4	sinine
	4 5	sinine
	4 6	



In the second sample, one possible path from junction 5 to junction 6, for example, is $5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 3 \rightarrow 4 \rightarrow 6$. Note that this path visits two junctions and a street twice.