Problem J. Joyful Guided Tour

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Dwarf the Entrepreneur wants to start a tourist guide business in Wrocław. His tours will be conducted by bus driving through the city, and whenever the bus passes an interesting landmark, a recorded description of that landmark will play over the bus sound system.

The dwarf has prepared a map that includes N landmarks, numbered from 1 to N, and M bidirectional streets, each connecting a pair of landmarks. A surprising feature of his map is that every landmark is incident to **at most** 7 **streets**. Every tour will be a **sequence of** 3 different landmarks, where every two consecutive landmarks are connected by a street.

Now, before choosing the tours, the dwarf needs to prepare the recorded descriptions of the landmarks and hire professional narrators. He can only afford **to hire** 4 **narrators**, and he can record description for every landmark only once, using a single narrator. However, Entrepreneur is concerned that even the best narrator's voice may become monotonous for the audience, so he has decided that in any possible tour, all 3 descriptions **cannot** be narrated by the same narrator.

The dwarf has not yet decided on any specific tour, and his recording studio reservation is tomorrow. Help him assign narrators to landmarks so that they will not be narrated by the same narrator in any possible tour.

Input

The first line of input contains two space-separated integers N and M, denoting the number of landmarks and the number of streets on the dwarf's map.

The next M lines describe the streets connecting the landmarks, where the i-th line contains two space-separated integers a_i and b_i denoting the numbers of the landmarks connected by this street.

Output

Print a single line of N space-separated integers $c_1, \ldots, c_N$, where c_i ($1 \leq c_i \leq 4$) denotes the id of the narrator that should record the description of the i-th landmark.

If there are many solutions, print any of them. You can assume that in every test case some solution exists.

Limits

$1 \leq N \leq 10^6$,

$1 \leq M \leq 3.5 \cdot 10^6$,

$1 \leq a_i, b_i \leq N$,

$a_i \neq b_i$,

no street connects any landmark to itself,

no pair of landmarks is connected by more than one street,

each landmark is incident to at most 7 streets.

Examples

standard input	standard output
3 3 1 2 2 3 3 1	2 1 1
8 13 1 2 1 3 1 4 1 5 1 6 1 7 2 3 3 4 4 5 5 6 6 7 7 8 8 2	2 3 1 3 1 3 1 1