

Problem G

Assigning Frequencies

Time limit: 1 second

The NCPC kingdom has n cities, numbered $0, 1, \dots, n-1$. There are also some bidirectional roads, each connecting two distinct cities. Sensibly, each road intersects only with the two cities that it connects. Because the engineers do not know how to build viaducts, the roads in the kingdom lie flat on the ground, without any two roads crossing each other. To avoid traffic jam, furthermore, each city is incident to at most four roads.

To facilitate wireless communication, the NCPC queen wants to assign each city a frequency for emitting radios. The frequencies available are 0, 1, 2 and 3. To avoid interference, any two cities connected by a road must receive different frequencies. Please help the queen.

Input File Format

The first line is the number (≤ 10) of test cases. Each test case is as follows: The first line is the number $n \leq 10000$ of cities. The second line is the number m of roads. Then each of the next m lines contains a road, specified by the two cities that it connects. Two consecutive numbers in a line are separated by a space.

Output Format

For each test case, output the frequencies of cities $0, 1, \dots, n-1$, in that order. If there are many correct outputs, just output one of them. It is guaranteed that a solution exists.

Sample Input

```
2
6
11
1 5
2 1
0 1
3 1
4 3
4 5
0 5
3 0
```

2 4
2 5
4 0
5
9
0 1
4 0
4 1
3 4
2 4
0 2
1 2
3 1
2 3

Output for the Sample Input

0 1 0 2 1 2
0 1 2 0 3