

Problem I. Travel Agency

Input file: `travel.in`
Output file: `travel.out`
Time limit: 3 seconds
Memory limit: 256 megabytes

Anthony is working in the intergalaxy travel agency. He often meets the requests to find a path from one planet to another using available spaceship routes. Unfortunately, spaceships have only limited number of routes, so passengers usually have to make connections at intermediate planets.

Anthony noticed that some planets are used as intermediate more often than other. He decided to make an investigation — for each planet A he would like to know how many pairs of distinct planets (B, C) are there, such that any path from planet B to planet C visits planet A . Help him!

Input

The first line of the input file contains two integer numbers: n and m — the number of planets and the number of spaceship routes, respectively ($2 \leq n \leq 20\,000$, $1 \leq m \leq 200\,000$). The following m lines describe spaceship routes. Each route is bidirectional, and is described with the numbers of planets it connects. It is possible to get from any planet to any other.

Output

Output n integer numbers — for each planet A output the number of pairs of distinct planets such that any path from one to another goes through A .

Example

| <code>travel.in</code> | <code>travel.out</code> |
|------------------------|-------------------------|
| 7 9 | 18 |
| 1 2 | 6 |
| 1 3 | 6 |
| 1 4 | 6 |
| 1 5 | 6 |
| 1 6 | 6 |
| 1 7 | 6 |
| 2 3 | |
| 4 5 | |
| 6 7 | |