

D. Konrad and Company Evaluation

time limit per test: 4 seconds
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

Konrad is a Human Relations consultant working for VoltModder, a large electrical equipment producer. Today, he has been tasked with evaluating the level of happiness in the company.

There are n people working for VoltModder, numbered from 1 to n . Each employee earns a different amount of money in the company — initially, the i -th person earns i rubles per day.

On each of q following days, the salaries will be revised. At the end of the i -th day, employee v_i will start earning $n + i$ rubles per day and will become the best-paid person in the company. The employee will keep his new salary until it gets revised again.

Some pairs of people don't like each other. This creates a great psychological danger in the company. Formally, if two people a and b dislike each other and a earns more money than b , employee a will brag about this to b . A *dangerous triple* is a triple of three employees a , b and c , such that a brags to b , who in turn brags to c . If a dislikes b , then b dislikes a .

At the beginning of each day, Konrad needs to evaluate the number of *dangerous triples* in the company. Can you help him do it?

Input

The first line contains two integers n and m ($1 \leq n \leq 100\,000$, $0 \leq m \leq 100\,000$) — the number of employees in the company and the number of pairs of people who don't like each other. Each of the following m lines contains two integers a_i , b_i ($1 \leq a_i, b_i \leq n$, $a_i \neq b_i$) denoting that employees a_i and b_i hate each other (that is, a_i dislikes b_i and b_i dislikes a_i). Each such relationship will be mentioned exactly once.

The next line contains an integer q ($0 \leq q \leq 100\,000$) — the number of salary revisions. The i -th of the following q lines contains a single integer v_i ($1 \leq v_i \leq n$) denoting that at the end of the i -th day, employee v_i will earn the most.

Output

Output $q + 1$ integers. The i -th of them should contain the number of *dangerous triples* in the company at the beginning of the i -th day.

Examples

input	Copy
4 5 1 2 2 4 1 3 3 4 2 3 2 2 3	
output	Copy
4 3 2	

input	Copy
3 3 1 2 2 3 1 3 5 1 2 2	

Dasha Code Championship - SPb Finals Round (only for onsite-finalists)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Problem tags

graphs

No tag edit access

1

3

output

Copy

1

1

1

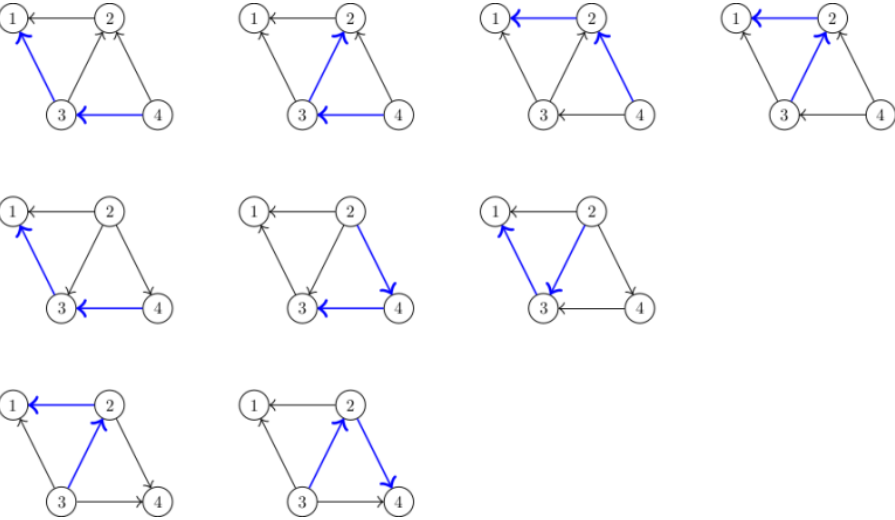
1

1

1

1

Note
Consider the first sample test. The i -th row in the following image shows the structure of the company at the beginning of the i -th day. A directed edge from a to b denotes that employee a brags to employee b . The dangerous triples are marked by highlighted edges.



Supported by

