(Challenge) Delete DAG

Problem Code: **DLDAG**

All Submissions (/DEC18B/status/DLDAG)

Successful Submissions +

Read problems statements Hindi (http://www.codechef.com/download/translated/DEC18/hindi/DLDAG.pdf), Vietnamese (http://www.codechef.com/download/translated/DEC18/vietnamese/DLDAG.pdf), Mandarin Chinese (http://www.codechef.com/download/translated/DEC18/mandarin/DLDAG.pdf), Russian (http://www.codechef.com/download/translated/DEC18/russian/DLDAG.pdf) and Bengali (http://www.codechef.com/download/translated/DEC18/bengali/DLDAG.pdf) as well.

You are given a directed acyclic graph with N vertices (numbered 1 through N) and M edges. You want to destroy it all! To destroy the graph, you should delete all of its vertices.

In one step, you are allowed to delete at most two vertices; you may only delete a vertex when there is no edge from it to another (not yet deleted) vertex. You may not delete two vertices when there is an edge between them either.

Find a way to destroy the graph in the minimum number of steps.

Input

- The first line of the input contains two space-separated integers N and M.
- Each of the next M lines contains two space-separated integers U and V denoting an edge from vertex U to vertex V.

Output

- The first line of the output should contain a single integer S denoting the minimum number of steps needed to destroy the graph.
- Each of the next S lines should describe one step; it should contain an integer K ($1 \leq K \leq 2$), followed by a space and K space-separated integers denoting the numbers of vertices deleted in this step.

Constraints

- $1 \leq N, M \leq 10^6$
- the graph on the input does not contain any cycles or self-loops

Scoring

The score for each test file is $10 \cdot (C/S)^2$, where C is the number of steps in which you deleted exactly 2 vertices. The final score of your submission is equal to the sum of scores for each test file.

There are twenty test cases. During the contest, the displayed score will account for exactly four test files, i.e. your score reflects your submission's performance on 20% (4/20) of the test files. However, if your program gets a non-AC verdict on any test file, your submission's verdict will be non-AC. In other words, an AC verdict denotes that your program runs successfully on all the test files. After the end of the contest, your score will be changed to include the sum of your program's scores over the other sixteen test files.

Example Input

```
6 6
1 2
2 3
1 3
3 4
3 5
1 6
```

Example Output

```
4
2 4 5
2 6 3
1 2
1 1
```

Author:	4★ fekete (/users/fekete)
Date Added:	14-11-2018
Time Limit:	1 secs
Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, rust, SCALA, swift, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, kotlin, PERL6, TEXT, SCM chicken, PYP3, CLOJ, COB, FS

Comments ▸

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CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section (https://www.codechef.com/problems/easy) - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete (https://www.codechef.com/problems/easy) - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming skills**. Take part in our 10 day long monthly coding contest and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), $700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools

Online IDE (https://www.codechef.com/ide)

Upcoming Coding Contests (http://www.codechef.com/contests#FutureContests)

Contest Hosting (http://www.codechef.com/hostyourcontest)

Problem Setting (http://www.codechef.com/problemsetting)

CodeChef Tutorials (http://www.codechef.com/wiki/tutorials)

CodeChef Wiki (https://www.codechef.com/wiki)

Practice Problems

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FAQ's (https://www.codechef.com/wiki/faq)

Initiatives

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