

## F. Koala and Notebook

time limit per test: 2 seconds  
memory limit per test: 512 megabytes  
input: standard input  
output: standard output

Koala Land consists of  $m$  bidirectional roads connecting  $n$  cities. The roads are numbered from 1 to  $m$  by order in input. It is guaranteed, that one can reach any city from every other city.

Koala starts traveling from city 1. Whenever he travels on a road, he writes its number down in his notebook. He doesn't put spaces between the numbers, so they all get concatenated into a single number.

Before embarking on his trip, Koala is curious about the resulting number for all possible destinations. For each possible destination, what is the smallest number he could have written for it?

Since these numbers may be quite large, print their remainders modulo  $10^9 + 7$ . Please note, that you need to compute the remainder of the minimum possible number, **not** the minimum possible remainder.

### Input

The first line contains two integers  $n$  and  $m$  ( $2 \leq n \leq 10^5, n - 1 \leq m \leq 10^5$ ), the number of cities and the number of roads, respectively.

The  $i$ -th of the following  $m$  lines contains integers  $x_i$  and  $y_i$  ( $1 \leq x_i, y_i \leq n, x_i \neq y_i$ ), representing a bidirectional road between cities  $x_i$  and  $y_i$ .

It is guaranteed, that for any pair of cities there is at most one road connecting them, and that one can reach any city from every other city.

### Output

Print  $n - 1$  integers, the answer for every city except for the first city.

The  $i$ -th integer should be equal to the smallest number he could have written for destination  $i + 1$ . Since this number may be large, output its remainder modulo  $10^9 + 7$ .

### Examples

input

```
11 10
1 2
2 3
3 4
4 5
5 6
6 7
7 8
8 9
9 10
10 11
```

Copy

output

```
1
12
123
1234
12345
123456
1234567
12345678
123456789
345678826
```

Copy

input

Copy

Codeforces Round #584 - Dasha Code Championship - Elimination Round (rated, open for everyone, Div. 1 + Div. 2)

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: 

选择文件

 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

data structures

dfs and similar

graphs

shortest paths

strings

trees

\*2600

No tag edit access

Contest materials

```
12 19
1 2
2 3
2 4
2 5
2 6
2 7
2 8
2 9
2 10
3 11
11 12
1 3
1 4
1 5
1 6
1 7
1 8
1 9
1 10
```

**output**

Copy

```
1
12
13
14
15
16
17
18
19
1210
121011
```

**input**



Copy

```
12 14
1 2
2 3
3 4
4 5
5 6
6 7
7 8
8 9
9 10
10 11
11 12
1 3
1 4
1 10
```

**output**

Copy

```
1
12
13
134
1345
13456
1498
149
14
1410
141011
```

- [Announcement \(en\)](#) 
- [Tutorial \(en\)](#) 

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