COCI '06 Contest 3 #5 Bicikli

Time limit: 0.6s **Memory limit:** 32M

A bicycle race is being organized in a land far, far away. There are N towns in the land, numbered 1 through N. There are also M one-way roads between the towns. The race will start in town 1 and end in town 2.

How many different ways can the route be set? Two routes are considered different if they do not use the exact same roads.

Input Specification

The first line of input contains two integers N and M $(1 \leq N \leq 10\,000, 1 \leq M \leq 100\,000)$, the number of towns and roads.

Each of the next M lines contains two different integers A and B, representing a road between towns A and B.

Towns may be connected by more than one road.

Output Specification

Output the number of distinct routes that can be set on a single line. If that number has more than nine digits, output only the last nine digits of the number. If there are infinitely many routes, output `inf`.

Sample Input 1

```
6 7
1 3
1 4
3 2
4 2
5 6
6 5
3 4
```

Sample Output 1

```
3
```

Sample Input 2

```
6 8
1 3
1 4
3 2
4 2
5 6
6 5
3 4
4 3
```

Sample Output 2

```
inf
```

Sample Input 3

```
31 60
1 3
1 3
3 4
3 4
4 5
4 5
5 6
5 6
6 7
6 7
7 8
7 8
8 9
8 9
9 10
9 10
10 11
10 11
11 12
11 12
12 13
12 13
13 14
13 14
14 15
14 15
15 16
15 16
16 17
16 17
17 18
17 18
18 19
18 19
19 20
19 20
20 21
20 21
21 22
21 22
22 23
22 23
23 24
23 24
24 25
```

```
24 25
25 26
25 26
26 27
26 27
27 28
27 28
28 29
28 29
29 30
29 30
30 31
30 31
31 2
31 2
```

Sample Output 3

```
073741824
```