

旅行商(TSP)

Description

Shrek is a postman working in the mountain, whose routine work is sending mail to n villages. Unfortunately, road between villages is out of repair for long time, such that some road is one-way road. There are even some villages that can't be reached from any other village. In such a case, we only hope as many villages can receive mails as possible.

Shrek hopes to choose a village A as starting point (He will be air-dropped to this location), then pass by as many villages as possible. Finally, Shrek will arrived at village B. In the travelling process, each villages is only passed by once. You should help Shrek to design the travel route.

Input

There are 2 integers, n and m , in first line. Stand for number of village and number of road respectively.

In the following m line, m road is given by identity of villages on two terminals. From v1 to v2. The identity of village is in range [1, n].

Output

Output maximum number of villages Shrek can pass by.

Example

Input

```
4 3
1 4
2 4
4 3
```

Output

```
3
```

Restrictions

$1 \leq n \leq 1,000,000$

$0 \leq m \leq 1,000,000$

There is no loop road in the input.

Time: 2 sec

Memory: 256 MB

Hints

Topological sorting

描述

Shrek是一个大山里的邮递员，每天负责给所在地区的 n 个村庄派发信件。但杯具的是，由于道路狭窄，年久失修，村庄间的道路都只能单向通过，甚至有些村庄无法从任意一个村庄到达。这样我们只能希望尽可能多的村庄可以收到投递的信件。

Shrek希望知道如何选定一个村庄A作为起点（我们将他空投到该村庄），依次经过尽可能多的村庄，路途中的每个村庄都经过仅一次，最终到达终点村庄B，完成整个送信过程。这个任务交给你来完成。

输入

第一行包括两个整数 n ， m ，分别表示村庄的个数以及可以通行的道路的数目。

以下共 m 行，每行用两个整数 v_1 和 v_2 表示一条道路，两个整数分别为道路连接的村庄号，道路的方向为从 v_1 至 v_2 ， n 个村庄编号为 $[1, n]$ 。

输出

输出一个数字，表示符合条件的最长道路经过的村庄数。

样例

见英文题面

限制

$1 \leq n \leq 1,000,000$

$0 \leq m \leq 1,000,000$

输入保证道路之间没有形成环

时间：2 sec

空间：256 MB

提示

拓扑排序

UI powered by Twitter Bootstrap (<http://getbootstrap.com/>).
Tsinghua Online Judge is designed and coded by Li Ruizhe.
For all suggestions and bug reports, contact
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