**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 <= n <= 1,000,000

0 <= m <= 1,000,000

These 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v1和v2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v1至v2，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 ≤ n ≤ 1,000,000

0 ≤ m ≤ 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

**无线广播(Broadcast)**

**描述**

某广播公司要在一个地区架设无线广播发射装置。该地区共有n个小镇，每个小镇都要安装一台发射机并播放各自的节目。

不过，该公司只获得了FM104.2和FM98.6两个波段的授权，而使用同一波段的发射机会互相干扰。已知每台发射机的信号覆盖范围是以它为圆 心，20km为半径的圆形区域，因此，如果距离小于20km的两个小镇使用同样的波段，那么它们就会由于波段干扰而无法正常收听节目。现在给出这些距离小 于20km的小镇列表，试判断该公司能否使得整个地区的居民正常听到广播节目。

**输入**

第一行为两个整数n，m，分别为小镇的个数以及接下来小于20km的小镇对的数目。 接下来的m行，每行2个整数，表示两个小镇的距离小于20km（编号从1开始）。

**输出**

如果能够满足要求，输出1，否则输出-1。

**输入样例**

4 3

1 2

1 3

2 4

**输出样例**

1

**限制**

1 ≤ n ≤ 10000

1 ≤ m ≤ 30000

不需要考虑给定的20km小镇列表的空间特性，比如是否满足三角不等式，是否利用传递性可以推出更多的信息等等。

时间：2 sec

空间：256MB

**提示**

BFS

**重名剔除(Deduplicate)**

**Description**

Mr. Epicure is compiling an encyclopedia of food. He had collected a long list of candidates nominated by several belly-gods. As candidates in list are nominated by several people, duplication of name is inevitable. Mr. Epicure pay you a visit for help. He request you to remove all duplication, which is thought an easy task for you. So please hold this opportunity to be famous to all belly-gods.

**Input**

1 integer in fist line to denote the length of nomination list. In following n lines, each nomination is given in each line.

**Output**

All the duplicated nomination (only output once if duplication appears more multiple times), which is sorted in the order that duplication appears firstly.

**Example**

Input

10

brioche

camembert

cappelletti

savarin

cheddar

cappelletti

tortellni

croissant

brioche

mapotoufu

Output

cappelletti

brioche

**Restrictions**

1 < n < 6 \* 10^5

All nominations are only in lowercase. No other character is included. Length of each item is not greater than 40.

Time: 2 sec

Memory: 256 MB

**Hints**

Hash

**描述**

Epicure先生正在编撰一本美食百科全书。为此，他已从众多的同好者那里搜集到了一份冗长的美食提名清单。既然源自多人之手，其中自然不乏重复 的提名，故必须予以筛除。Epicure先生因此登门求助，并认定此事对你而言不过是“一碟小菜”，相信你不会错过在美食界扬名立万的这一良机

**输入**

第1行为1个整数n，表示提名清单的长度。以下n行各为一项提名

**输出**

所有出现重复的提名（多次重复的仅输出一次），且以其在原清单中首次出现重复（即第二次出现）的位置为序

**样例**

见英文题面

**限制**

1 < n < 6 \* 10^5

提名均由小写字母组成，不含其它字符，且每项长度不超过40

时间：2 sec

空间：256 MB

**提示**

散列