5. Delivery robots (pakk) 1 sec / 3 sec 60 points

Juku likes hot dogs. A lot.

Juku lives in a town that has V intersections and E two-way streets connecting the intersections. Intersections have been numbered $1 \ldots V$. No pair of intersections is connected by more than one street and no street connects an intersection to itself. From every intersection it is possible to get to every other intersection along the streets. Also, there is a hot dog stand on every intersection.

Juku has started building delivery bots that would bring hot dogs to him. He wants to choose two intersections—initial location of robots s and his own location f—and code robots such that he could get hot dogs from as many different stands as possible.

Unfortunately, programming the robots is rather limited. Every robot can store an array n and a variable b in memory. Robot starts moving from intersection s and repeats the following steps:

1. If robot is located at intersection b, it will buy a hot dog from the stand there.
2. If robot is located at intersection f, it will give the hot dog to Juku and stop.
3. Robot moves to intersection $n[i]$ where i is its current location.

For every $i \in 1 \ldots V$ there must be a street between intersections i and $n[i]$, otherwise the robot will crash.

Find the maximum number of different stands that Juku can get hot dogs from if he chooses s and f optimally and enters n and b into robots optimally as well. The values s and f are the same for all robots, but n and b can be different for every robot. You may assume that Juku can use arbitrarily many robots.

Input. First line of file pakksis.txt contains two integers V and E—numbers of intersections and streets ($1 \leq V \leq 10^5$, $1 \leq E \leq 3 \cdot 10^5$). On the next E lines there are two integers u and v on each, indicating a street between intersections u and v.

Output. The file pakkval.txt should contain a single integer—the maximum number of different stands that Juku can get hot dogs from.

Example.

```
pakksis.txt    pakkval.txt
6 6            5
1 2
2 3
3 1
4 1
5 2
6 3
```

The maximum number of stands is 5. For this we can pick for example $s = 4$, $f = 5$ and code the robots in the following way:

b	$n[1]$	$n[2]$	$n[3]$	$n[4]$	$n[5]$	$n[6]$
1	3	5	2	1	2	3
2	2	5	6	1	2	3
3	3	5	2	1	2	3
4	2	5	1	1	2	3
5	2	5	2	1	2	3

But however we try, it is not possible to get hot dogs from six stands.

Grading.

In tests worth 15 points in total, additionally $V \leq 300$ and $E \leq 300$.
In tests worth 15 points in total, additionally $V = E + 1$.