6. STAZA

A bicycle race is being organized in a country. The transport network of the country consists of N cities numbered 1 through N, with M bidirectional roads connecting them. We will use the following terms:

- A **path** is a sequence of roads in which each road starts in the city the preceding road ended in.
- A **simple path** is a path which never visits a city more than once.
- A **ring** is a **simple** path ending in the same city it started in.

The network is such that there is **at least one path** between every pair of cities. Additionally, every **road** in the network is part of **at most one ring**.

Your task is to find the longest path for the race satisfying two constraints:

- The path may begin in any city, but must end in city 1.
- The path may visit a city more than once, but it must not contain any road more than once.

Input

The first line of input contains two integers N and M ($2 \leq N \leq 10000$, $1 \leq M \leq 2N-2$) – the numbers of cities and roads in the network.

Each of the following M lines contains two different integers A and B ($1 \leq A, B \leq N$). These numbers indicate that there is a bidirectional road between cities A and B. No two cities will be directly connected by more than one road.

Output

Output the length of the longest race path on a single line.

Sample test data

input

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

output

```
2
```

input

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

output

```
5
```

input

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

output

```
6
```