Mock CCO '19 Contest 2 Problem 3 - A Cactus Problem

Time limit: 0.6s   **Memory limit:** 162M

Given a cactus graph, compute the maximum distance between two vertices.

Constraints

$1 \leq N \leq 5 \cdot 10^4$

$0 \leq M \leq 10^4$

$2 \leq K_i \leq 10^3$

Input Specification

The first line contains two space-separated integers, N and M. There are N vertices labeled from 1 to N.

M lines follow. Each line starts with an integer K_i, followed by K_i space-separated integers. Adjacent integers in each line are connected with an edge. The graph is guaranteed to be a connected cactus.

Output Specification

Output the diameter of the graph.

Sample Input

```
15 3
9 1 2 3 4 5 6 7 8 3
7 2 9 10 11 12 13 10
5 2 14 9 15 10
```

Sample Output

```
8
```