Problem C. Opinion Pool

Time limit: 1 second

MOLOCO, a global company with an unbeatable global reach, is developing a new survey platform to increase user engagement.

There are N people who want to vote on an issue. Each person is either in support of the issue or against the issue.

There are M not necessarily disjoint sets of people $S_1, S_2, \cdots, S_M$. For these M sets and a constant p ($0 \leq p \leq 1$), the propositions below are established.

- For every set S_i, at least $p \cdot |S_i|$ people belonging to S_i is in support of the issue.

If $p = 0$, no information can be obtained from this proposition. $p = 1$ shows that everyone is in support of the issue. That is, as p grows, it becomes easier to ascertain who is in support of the issue.

Thus, if a proposition is established for a sufficiently large p, we can know that everyone is in support of the issue. Find the maximum value of p such that you can not be certain everyone is in support.

Input

The first line contains two integers N and M, where N denotes the number of people and M denotes the number of sets.

The next M lines describe the information of each of the M sets.

The ith line starts with an integer $|S_i|$, denoting the number of elements in the set S_i, followed by $|S_i|$ distinct integers $S_{i,j}$, denoting the elements in the set S_i.

Output

Output the maximum value of p such that you cannot be certain everyone is in support of the issue.

Your answer will be considered correct if it has an absolute or relative error less than 10^{-6}.

Constraints

- $1 \leq N, M \leq 200\,000$
- $S_i \subseteq \{1, 2, \cdots, N\}$ $(1 \leq i \leq M)$
- $\sum_{i=1}^{M} |S_i| \leq 1\,000\,000$
- Everyone appears in at least one set.

Subtask 1 (10 points)

This subtask has additional constraints:

- $N \leq 10$
- $M \leq 500$

Subtask 2 (15 points)

This subtask has an additional constraint:

- $N, M \leq 500$

Subtask 3 (75 points)

This subtask has no additional constraints.

Examples

standard input	standard output
3 3 1 1 1 2 1 3	0
4 2 2 1 2 2 3 4	0.5
10 7 4 8 6 10 5 4 9 5 6 1 4 4 8 1 10 4 1 5 9 3 4 6 10 5 1 4 8 3 1 10 6 5 7 6 8 1 2	0.833333333

Note

In example 2, the proposition can be established for $p = 0.5$, if people 1, 3 are for and people 2, 4 are against.

However, if the proposition is established for $p > 0.5$, it is a contradiction to the proposition if there exists a person against an issue.