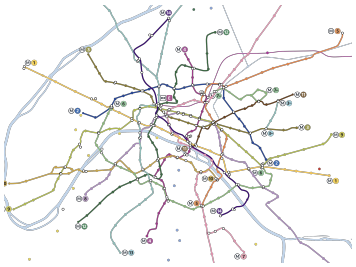
C: Metro quiz

Time limit: 5 seconds



Two Olympics spectators are waiting in a queue. They each hold a copy of the metro map of Paris, and they devised a little game to kill time. First, player A thinks of a metro line (chosen uniformly at random among all metro lines) that player B will need to guess. In order to guess, player B repeatedly asks whether the line stops at a metro station of her choice, and player A answers truthfully. After enough questions, player B will typically know with certainty which metro line player A had in mind. Of course, player B wants to minimise the number of questions she needs to ask.

You are given the map of the M metro lines (numbered from 1 to M), featuring a total of N metro stations (numbered from 0 to $N-1$) and indicating, for each line, those stations at which the line stops. Please compute the expected number of questions that player B needs to ask to find the answer, in the optimal strategy.

In other words, given a strategy S, note $Q_{S,j}$ the number of questions asked by the strategy if the metro line in the solution is line j. Then, note

$$E_S = \mathbb{E}[Q_S] = \frac{1}{M}\sum_{j=1}^{M} Q_{S,j}$$

the expected value of $Q_{S,j}$ assuming that j is uniformly chosen from the set of all metro lines. Your task is to compute $\min_S E_S$.

If it is not always possible for player B to know which line player A had in mind with certainty, output `not possible`.

Input

The first line contains the number N. The second line contains the number M. Then follow M lines: the k^{th} such line contains first a positive integer $n \leqslant N$, then a space, and then n space-separated integers $s_1, s_2, \ldots, s_n$; these are the metro stations at which line k stops. A line stops at a given station at most once.

Output

The output should contain a single line, consisting of a single number: the minimum expected number of questions that player B must ask in order to find the correct metro line, or `not possible` (in lowercase characters). Answers within 10^{-4} of the correct answer will be accepted.

Limits

- $1 \leqslant N \leqslant 18$;
- $1 \leqslant M \leqslant 50$.

Sample Input 1

```
5
4
3 0 3 4
3 0 2 3
3 2 3 4
2 1 2
```

Sample Output 1

```
2
```

Sample Input 2

```
3
3
1 0
1 1
1 2
```

Sample Output 2

```
1.66666666666667
```

Sample Explanation 2

Ask the first question about station 0: this is optimal by symmetry of the problem. This lets us distinguish between line 1, which stops at station 0, and lines 2 and 3, which do not. If needed, ask a second question to distinguish between lines 2 and 3.

Player B asks one question if the answer is line 1, and two questions otherwise. Thus, the expected number of questions she will ask is $(1 + 2 \times 2)/3$.