Problem H. Homework Of Xenia

Time limit: 1 second
Memory limit: 1024 mebibytes

Xenia is attending a course on discrete algebraic topological geometry at her university. She skipped a lot of lectures on this topic. To punish Xenia, her teacher gave her the following problem as a homework assignment. The teacher gave Xenia a planar graph G and asked her to embed it into $\mathbb{Z}^{10}$ in such a way that all its vertices are distinct, all coordinates do not exceed 10^6 by absolute value, all edges are segments and have the same length. Note that it is not prohibited for the edges of the embedding to cross.

Help Xenia with this problem.

Input

The first line contains two integers n and m — the number of vertices and edges in the graph ($1 \le n \le 1000$, $0 \le m \le \frac{n(n-1)}{2}$). The next m lines contain the description of the edges. Each of these lines contains two integers u_i and v_i ($1 \le u_i, v_i \le n$) and describes an edge between vertices u_i and v_i.

It is guaranteed that the graph is planar and does not contain loops or multiple edges.

Output

If it is not possible to embed the graph, output a single integer -1.

Otherwise, output n lines — the points in $\mathbb{Z}^{10}$. The i-th of these lines must contain 10 integers $c_{i,1} \ldots c_{i,10}$, $|c_{i,j}| \le 10^6$. These values must satisfy the following property: there exists a positive number d such that for any two vertices u and v connected by an edge in the given graph, $dist(c_u, c_v) = d$. Here, $c_u = (c_{u,1}, \ldots, c_{u,10})$ and $dist(c_u, c_v) = \sqrt{\sum_{i=1}^{10}(c_{u,i} - c_{v,i})^2}$.

Examples

standard input	standard output
2 1 1 2	0 0 0 0 0 0 0 0 0 0 0 5 7 0 1 7 9 0 2 0
4 6 1 2 2 3 2 4 3 4 1 3 1 4	0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0