

Pondo Shortest Paths

time limit per test: 1 second (3 seconds for Python)

memory limit per test: 500 megabytes

input: standard input

output: standard output

points: 100 · problem code: pondoshortestpaths

You are given a connected undirected graph with n vertices and m weighted edges. For every pair of vertices, determine the shortest-path distance between them.

Input

The first line contains two space-separated integers n and m .

Each of the next m lines contains three integers u , v , and w , denoting an undirected edge between u and v with weight w . There may be multiple edges between the same pair of vertices, and there may be self-loops.

Vertices are numbered 1 through n .

Output

Print n lines. The i^{th} line should contain n space-separated integers $a_{i,1}, a_{i,2}, \dots, a_{i,n}$, where $a_{u,v}$ is the shortest-path distance from u to v .

Constraints

- $1 \leq n \leq 100$
- $1 \leq m \leq \frac{n \cdot (n-1)}{2}$
- $1 \leq u, v \leq n$
- $1 \leq w \leq 100$

Example 1

Input

```
4 5
1 2 5
1 3 9
2 3 1
4 2 3
3 4 2
```

Output

```
0 5 6 8
5 0 1 3
6 1 0 2
8 3 2 0
```