Heavy Rain in Drainage Ditches

Description

Given a simple connected undirected weighted graph with N nodes and M edges. Output a $N \times N$ matrix $a_{N \times N}$, where $a_{i,j}$ is the minimum cut such that node i and node j are in different vertex set. If $i = j$, then we define $a_{i,j}$ as 0.

Input

For each case, the first line contains two space-separated integers, N and M.

Each of the following M lines contains three integers, S_i, E_i, and C_i. It means that there's an edge that connects S_i and E_i and with weight C_i.

- $2 \leq N \leq 150$
- $N - 1 \leq M \leq \frac{N(N-1)}{2}$
- $1 \leq S_i, E_i \leq N$
- $1 \leq C_i \leq 10^6$

Output

Output N lines, and each line contains N integers. The j-th integer on the i-th line is $a_{i,j}$

Sample Input

```
5 6
1 3 4
3 5 2
2 4 5
1 4 7
2 5 8
1 5 9
```

Sample Output

```
0 13 6 12 16
13 0 6 12 13
6 6 0 6 6
12 12 6 0 12
16 13 6 12 0
```