G is an undirected simple graph. G has n nodes and m edges, and G is connected. Each edge in G has an integral weight $\omega(e) \geq 1$. We define the **minimum product spanning tree** of G to be a spanning tree T so that T has the minimum **product**

$$\rho(T) \equiv \prod_{e \in T} \omega(e)$$

among all spanning trees of G. Write a program to output the minimum product spanning tree of the input graph G.

Hint

1. $\log ab = \log a + \log b$ for $a, b > 0$.
2. Using floating-point numbers in a program is like opening a Pandora's box.

Input

The first line contains n and m, where n is an integer in $[2, 10^3]$ and m is an integer in $\left[n-1, \binom{n}{2}\right]$. Each of subsequent m lines contains three integers u, v, $\omega(u, v)$, where $u < v$, indicating that G has an undirected edge (u, v) with weight $\omega(u, v)$. Note that we label each node in G with a unique number in $\{1, 2, \ldots, n\}$, and thus u and v are integers in $[1, n]$. Each edge weight $\omega(u, v)$ is an integer in $[1, 2^{61}]$.

Output

The edges in the minimum product spanning tree T of the input graph G. You need to output the edges in the lexicographic order, one edge per line; i.e. (u_i, v_i) needs to be outputted before (u_j, v_j) iff any of the following conditions holds:

(a) $u_i < u_j$

(b) $u_i = u_j$ and $v_i < v_j$.

If there are multiple minimum product spanning trees, it suffices to output the edges of any of them.

Sample Input

```
4 6
1 2 6
1 3 3
1 4 5
2 3 2
2 4 4
3 4 1
```

Sample Output

```
1 3
2 3
3 4
```