Problem M. Minimal Variance Tree

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

Sophie learned today that the notion of variance can be extended to edge-weighted trees: given a tree with edges E this is a sum (over E) of squared differences between the weights of the edges and the mean weight of the edges. She was able to come up with a formula for that: if w_e denotes the weight of the edge e then the variance of the tree is

$$\sum_{e \in E} (w_e - S_T)^2, \text{ where } S_T = \sum_{e \in E} \frac{w_e}{|E|} \ .$$

Sophie wonders, whether for a given multigraph she can compute its spanning tree with the smallest variance. Help her in this task.

Input

First line of the input contains two positive integers n and m ($2 \le n \le 10\,000$, $1 \le m \le 10\,000$), denoting the number of vertices and edges of the graph. Each of the following m lines contains three positive integers a_i, b_i and w_i ($1 \le a, b \le n$, $a \ne b$, $1 \le w \le 100\,000$), this is the description of the ith edge, which connects the vertices a_i and b_i and has the weight w_i.

The described graph is connected, it can have many edges between any two vertices, those edges can have different weights.

Output

You should one real number: minimal value of variance of a spanning tree of the given graph. The answer is accepted if the relative or absolute error is at most 10^{-6}.

Example

standard input	standard output
4 6 1 2 3 2 3 9 3 4 7 1 3 5 1 3 6 4 1 2	4.666666667