Problem I. Potential Well

Input file:	potentials.in
Output file:	potentials.out
Time limit:	3 seconds *(6 seconds for Java)*
Memory limit:	256 mebibytes

Billionaire Christian has learned today about Dijkstra's algorithm with Johnson's potentials. He liked it so much that he decided to add potentials to all of his favorite graphs. Christian's tastes are very peculiar — he keeps only directed weighted graphs in his secret room.

Let us recall how potentials work. Each vertex v is assigned a potential: a real number $\varphi(v)$. If there was an edge from u to v with initial weight w, then its new weight will be $w' = w - \varphi(v) + \varphi(u)$.

The strength of a graph is defined as the minimum of its edges' weights. Christian does not want weak graphs in his room, so he wants to choose potentials in such way that the strength of the graph is maximized. Help him do that.

Input

The first line contains two integers n ($2 \le n \le 1000$) and m ($1 \le m \le 100\,000$), the number of vertices and edges in Christian's favorite graph. Each of the next m lines contains three integers u_i, v_i and w_i describing an edge: its start, end and weight, respectively. ($1 \le u_i, v_i \le n$, $|w_i| \le 10^6$).

Output

The first line must contain the maximum strength of the graph. If it is possible to make the answer infinitely large, print the string "+inf" instead.

If the answer is finite, the second line must contain n real numbers: the potentials of vertices. Each of them must not exceed 10^{10} by absolute value. Your answer must differ from the correct one, and also from the answer computed based on your potentials, by no more than 10^{-5}.

Examples

potentials.in	potentials.out
3 3 1 2 1 2 3 1 3 1 1	1.0 0.0 0.0 0.0
2 1 1 2 1	+inf