Problem J. Potential

Input file:	potential.in
Output file:	potential.out
Time limit:	3 seconds
Memory limit:	256 mebibytes

You are given a weighted directed graph. Let each vertex i have potential Φ_i. Let w_{uv} be the weight of the edge (u, v). Then, define the new weight as $w'_{uv} = w_{uv} + \Phi_u - \Phi_v$.

Find such integer potentials Φ_i that the weights w' for all edges will be equal.

Input

The first line of input contains an integer t, the number of test cases.

Each test case starts with a line containing two integers n and m: the number of vertices and edges in the graph ($1 \le n \le 300\,000$, $0 \le m \le 300\,000$). Each of the next m lines contains three integers x_i, y_i and w_i: start vertex, end vertex and weight of an edge ($1 \le x_i, y_i \le n$, $-10^9 \le w_i \le 10^9$). It is guaranteed that there are no self-loops and no multiple edges in the graph.

That the sum of all n and all m is guaranteed to not exceed 600 000.

Output

For each test case, on the first line, print "YES" if an integer solution exists, or "NO" otherwise.

If the answer is positive, on next line, print n integers: the potentials of the vertices. The potentials must not exceed 10^{18} by absolute value. It is guaranteed that, if a solution exists, there also exists a solution satisfying the above requirement.

If there is more than one solution, output any one of them.

Example

potential.in	potential.out
2 5 4 1 2 -1 2 3 2 3 4 1 4 5 179 5 5 1 2 1 2 3 1 3 4 1 4 5 0 5 1 2	YES 0 -1 1 2 181 YES 0 0 0 0 -1