Problem J.
Mean Weight of a Critical Cycle
Time limit: 3 seconds

Intelligent Computer Programming Company (ICPC) is a well-established company for developing artificial intelligence, which attracts many young talents to join this strong team every year. ICPC has n divisions, denoted by $0, 1, \ldots, n-1$, and a work-flow for completing a task requested by a delegator. In the progress of executing a task, a division may need to plan and preprocess some subtasks, and then transfer this semi-finished task to another division. If Division i transfer a semi-finished task to another Division j, Division i is a predecessor of Division j. Moreover, let weight $w(i, j)$ be the cost for transferring a semi-finished task from Division i to Division j. We can represent a work-flow of ICPC using a directed graph $G = (V, E)$ with a weight function $w : E \mapsto \mathbb{Z}_+ \cup \{0\}$, in which n vertices represent n divisions, and a directed edge from Vertex i (*head*) to Vertex j (*tail*) exists if Division i is a predecessor of Division j. In addition, for two arbitrary vertices i and j in G, there is at most one directed edge between i and j.

Due to budget restriction, ICPC wants to improve the performance of the work-flow G by finding the minimum mean weight μ^* of all directed cycles in G. The mean weight of a cycle is defined as the summation of all the edge weights of the cycle divided by the number of edges. We call a cycle C for which the mean weight of C is equal to μ^* a *critical cycle*. Your task is to write a computer program to compute μ^* in an irreducible fraction form $\frac{p}{q}$ with p and q being non-negative integers, and output the numerator p and the denominator q; otherwise, if no critical cycle exists, please output -1.

For an example as shown in Figure 1, the bold cycle illustrated in Fig. 1(a) is a critical cycle C with $\mu^* = \frac{3+2+0}{3} = \frac{5}{3}$. The output is 5 and 3. On the other hand, the bold cycle illustrated in Fig. 1(b) is not a critical cycle.

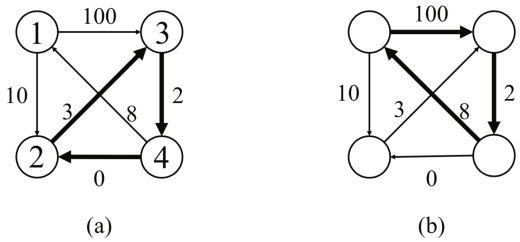


Figure 1: Examples of (a) a critical cycle and (b) a non-critical cycle.

Input

The first line of the input file contains an integer T that indicates the number of test cases as follows.

For each test case, the first line contains two integers (separated by a space) representing the number of divisions and the number of edges m. Then it is immediately followed by m lines, in which each line contains three integers that represent the head vertex, the tail vertex, and the corresponding weight; moreover, any two consecutive integers are separated by a space.

- $1 \leq T \leq 11$.
- $2 \leq n \leq 1000$ for each test case.
- The weight of each edge is non-negative and no larger than 1000000.

Output

The output contains one line for each test case. Each line contains two positive integers p and q, separated by a space, where p and q are the numerator and denominator of μ^*, respectively. Note that $\frac{p}{q}$ is an irreducible fraction. (i.e., the greatest common divisor of p and q is 1.)

Sample Input	Sample Output
3 4 6 1 2 10 1 3 100 2 3 3 3 4 2 4 1 8 4 2 0 10 10 1 2 1 2 3 1 3 4 1 4 5 1 5 6 1 6 7 1 7 8 1 8 9 1 9 10 1 10 1 1 2 1 1 2 1	5 3 1 1 -1

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