Problem B. BUCHiGiRE Berserker

Time limit: 5 seconds
Memory limit: 1024 mebibytes

You are given a simple undirected connected graph G with N vertices and M edges. i-th edge connectes vertices u_i and v_i and has weight w_i.

For a nonempty proper subset X of $V(G)$, let $C(X) = \sum_{uv \in E(G), u \in X \wedge v \notin X} w(uv)$. That is, $C(X)$ is the sum of weights of edges with one end in X and the other end in $V(G) \setminus X$.

You should find the minimum possible $C(X)$, as well as the number of X achieving the minimum value.

Input

Each test contains multiple test cases.

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

Each test case is described as follows.

The first line contains two integers N and M.

The i-th of the following M lines contains three integers u_i, v_i, and w_i.

Output

For each test case, print two integers on a separate line — the minimum possible $C(X)$ and the number of subsets X achieving the minimum value, separated by a blank space. As the number of subsets X might be large, print it modulo 998 244 353.

Constraints

- $1 \leq t \leq 100$
- $2 \leq N \leq 500$
- $N - 1 \leq M \leq N(N-1)/2$
- $1 \leq u_i, v_i \leq N$, $1 \leq w_i \leq 10$ $(1 \leq i \leq M)$
- G is a simple connected graph.
- The sum of M over all testcases does not exceed 5 000.

Example

standard input	standard output
4 4 3 1 2 1 2 3 1 3 4 1 4 6 1 2 2 3 4 2 1 3 1 1 4 1 2 3 1 2 4 1 6 15 1 2 10 1 3 10 2 3 8 4 5 10 4 6 9 5 6 9 1 4 1 1 5 2 1 6 5 2 4 3 2 5 4 2 6 3 3 4 5 3 5 3 3 6 2 10 15 6 9 10 2 3 2 4 7 4 1 2 4 5 9 2 2 8 10 3 10 10 1 6 10 8 10 5 4 5 3 7 1 5 3 4 7 5 7 10 1 9 10 6 8 3	1 6 4 10 28 14 14 20