Problem F. Minimal Cut

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	1024 mebibytes

Today Rikka got an undirected graph G with n vertices and m edges. The vertices are numbered by integers from 1 to n. The i-th edge connects vertices u_i and v_i, and its weight is w_i.

Rikka likes Hamiltonian graphs: the ones that have a Hamiltonian cycle. Therefore, Rikka constructs a graph based on G that is surely Hamiltonian. She does so by inserting n extra edges: the i-th edge connects vertices i and $(i \bmod n + 1)$, and its weight is 10^9.

Let $c(i, j)$ be the value of the minimal cut between the i-th and the j-th vertices. Rikka wants you to calculate

$$\sum_{i=1}^{n} \sum_{j=i+1}^{n} c(i, j).$$

Given a graph $G_0 = \langle V, E \rangle$, a set of edges $C \subseteq E$ is a *cut* between vertices i and j if and only if in graph $G_1 = \langle V, E \setminus C \rangle$, vertices i and j are not (indirectly or directly) connected. The *minimal cut* between i and j is the cut with the minimal sum of edge weights. The *value* $c(i, j)$ of the minimal cut is this minimal sum itself.

Input

The first line contains two integers n and m ($3 \le n \le 20\,000$, $0 \le m \le 20\,000$).

Then m lines follow. Each of them contains three integers u_i, v_i, and w_i ($1 \le u_i, v_i \le n$, $u_i \ne v_i$ and $1 \le w_i \le 10\,000$).

Note that the graph has no self-loops, but may contain multiple edges.

Output

Output a single line with a single integer, the answer modulo 998 244 353.

Example

standard input	standard output
4 2 1 3 2 2 4 2	21067776