

Classic Problem

Input file: **standard input**
Output file: **standard output**
Time limit: 8 seconds
Memory limit: 1024 megabytes

Given an undirected complete graph with n vertices and m triples P_1, P_2, \dots, P_m where $P_i = (u_i, v_i, w_i)$, it's guaranteed that $1 \leq u_i < v_i \leq n$, and for any two triples P_i and P_j with different indices we have $(u_i, v_i) \neq (u_j, v_j)$.

For any two vertices x and y in the graph ($1 \leq x < y \leq n$), define the weight of the edge connecting them as follows:

- If there exists a triple P_i satisfying $u_i = x$ and $v_i = y$, the weight of edge will be w_i .
- Otherwise, the weight of edge will be $|x - y|$.

Calculate the total weight of edges in the minimum spanning tree of the graph.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \leq T \leq 10^5$) indicating the number of test cases. For each test case:

The first line contains two integers n and m ($1 \leq n \leq 10^9$, $0 \leq m \leq 10^5$) indicating the number of vertices in the graph and the number of triples.

For the following m lines, the i -th line contains three integers u_i, v_i and w_i ($1 \leq u_i < v_i \leq n$, $0 \leq w_i \leq 10^9$) indicating the i -th triple. It's guaranteed that for all $1 \leq i < j \leq m$ we have $(u_i, v_i) \neq (u_j, v_j)$.

It's guaranteed that the sum of m of all test cases will not exceed 5×10^5 .

Output

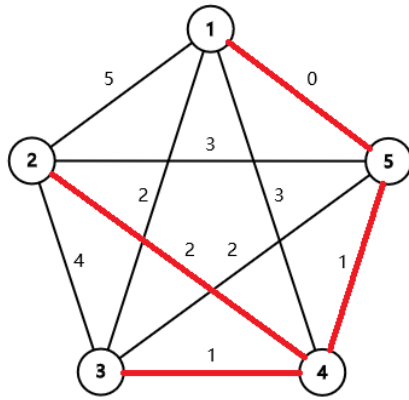
For each test case output one line containing one integer indicating the total weight of edges in the minimum spanning tree of the graph.

Example

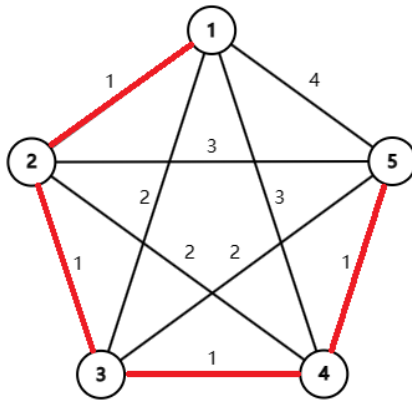
standard input	standard output
3	4
5 3	4
1 2 5	1000000003
2 3 4	
1 5 0	
5 0	
5 4	
1 2 1000000000	
1 3 1000000000	
1 4 1000000000	
1 5 1000000000	

Note

The first sample test case is illustrated as follows. The minimum spanning tree is marked by red segments.



The second sample test case is illustrated as follows. The minimum spanning tree is marked by red segments.



The third sample test case is illustrated as follows. The minimum spanning tree is marked by red segments.

