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G. Omg Graph

time limit per test: 2 seconds memory limit per test: 256 megabytes

You are given an undirected connected weighted graph. Define the cost of a path of length \boldsymbol{k} to be as follows:

• Let the weights of all the edges on the path be $w_1,\dots,w_k.$

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• The cost of the path is $(\min_{i=1}^k w_i) + (\max_{i=1}^k w_i)$, or in other words, the maximum edge weight + the minimum edge weight.

Across all paths from vertex 1 to n, report the cost of the path with minimum cost. Note that the path is not necessarily simple.

Input

The first line contains an integer t ($1 \le t \le 10^4$) — the number of test cases.

The first line of each test case contains two integers \boldsymbol{n} and \boldsymbol{m} (

$$2 \leq n \leq 2 \cdot 10^5, n-1 \leq m \leq \min(2 \cdot 10^5, \frac{n(n-1)}{2})$$
).

The next m lines each contain integers u,v and w ($1 \le u,v \le n, 1 \le w \le 10^9$) representing an edge from vertex u to v with weight w. It is guaranteed that the graph does not contain self-loops or multiple edges and the resulting graph is connected.

It is guaranteed that the sum of n over all test cases does not exceed $2\cdot 10^5$ and that the sum of m over all test cases does not exceed $2\cdot 10^5$.

Output

For each test case, output a single integer, the minimum cost path from vertex 1 to n.

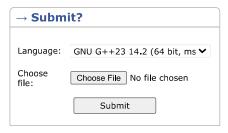
Example

input	Сору
4	
3 2	
1 2 1	
2 3 1	
3 2	
1 3 13	
1 2 5	
8 9	
1 2 6	
2 3 5	
3 8 6	
1 4 7	
4 5 4	
5 8 7	
1 6 5	
6 7 5	
7 8 5	
3 3	
1 3 9	
1 2 8	
2 3 3	
output	Сору
2	
18	
10	
11	

Note

For the second test case, the optimal path is $1 \to 2 \to 1 \to 3$, the edge weights are 5,5,13 so the cost is $\min(5,5,13) + \max(5,5,13) = 5+13 = 18$. It can be proven that there is no path with lower cost.





→ Last submissions		
Submission	Time	Verdict
323476133	Jun/08/2025 18:33	Accepted

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