Potato walk - Large

Assignment 4
Data Structures and Algorithms

Problem Statement: Tanu loves taking walks and he also loves potatoes. He lives in country Y. Y has n towns and m roads. The i-th road connects two towns u_i and v_i, has p_i potatoes along it and require cost c_i to maintain. There might be multiple roads between two towns

Tanu finds a walk beautiful if the bitwise **and** of potatoes along the roads in the walk is greater than x.

You are given a task to select some roads in the country, the others will be removed. After this, the country should be connected i.e you should be able to reach any town from any other town only through selected roads. As you don't want to disappoint Tanu, You want every walk in the country to be beautiful.

You need to minimize the total cost of maintenance of selected roads such that all the conditions are satisfied

Note
Walk Defintion: A walk is a sequence of vertices and edges of a graph i.e. if we traverse a graph then we get a walk.Vertex can be repeated. Edges can be repeated

Input
First line contains three integers n and m and x.
Next m lines contains description of the roads
i-th of the next m lines contains 4 integers u_i, v_i, p_i, c_i.
Output
Print the minimum total cost such that all conditions are satisfied or -1 if its not possible to satisfy all conditions.
Constraints
$1 \le n, m \le 10^5$
$1 \le c_i \le 10^9$
$0 \le p_i, x < 2^{20}$
It is guaranteed the country will be connected initially.
Time Limit: 2 sec
Memory Limit: 256 MB

Sample Test Case

Input	Output
3 3 2	16
1 2 4 5	
2 3 4 11	
1 3 3 1	