The Road-Bill

Assignment 2
Data Structures & Algorithms
Due date: 2 February, 2020

Problem Statement: There are N cities in a country. the cities are connected by M bidirectional roads. The roads are old and need to be renovated, each road has a different price of renovation 'C' . Being the Transport minister of the country you need to sanction the renovation of these roads. you have only two choices, renovate a road or shut it down.
You face the following problem.
You cannot sanction renovation of over-expensive roads. you have to decide a price P such that you shut down roads which demand price above P and sanction any road with price lesser than or equal to P.
'J' is defined as the disconnectedness of the country, it is defined as the unordered count of pairs of cities 'A' and 'B' such that there is no path connecting 'A' to 'B'. In any case you cannot let J exceed a given threshold value as the country should be as connected as possible.
To please everybody you decide to find the minimum value of P such that J is below a given a threshold (threshold value is given as input).

Input
First line of input has N,M
M lines follow with 3 integers i,j,x which says a road exists between i and j and C is the cost of renovating it.
Last line contains the threshold value for J.
Output
A single non-negative integer which is the minimum value of P.
Constraints
$1 \leq N, M \leq 100000$
$1 \leq J \leq N * (N-1)/2$
$1 \leq i, j \leq N$
$1 \leq C \leq 1000000000$
Time Limit: 1 sec
Memory Limit: 256 MB

Sample Test Case

Input	Output
4 4 1 2 1 2 3 2 3 4 1 1 4 2 5	1

Explanation

<if the P is set as 1, the disconnectedness will be 4 which is still lesser than the allowed threshold value of J=5. note that setting P as 0 will take the disconnectedness to 6 which is greater than 5 and hence not allowed. >