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Difficulty:

Easy - Medium

Prerequisites:

Graph - (Tutorial)
Binary Search - (Tutorial)
Breadth First Search - (Tutorial)

Problem in Brief:

Given a graph G where each edge has a cost associated with it. Find the least cost C such that if all the edges having cost > C are removed from G, G still remains connected.

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Let us say we need to find out if C = x is a valid cost or not. We do a BFS on G ignoring all the edges having cost > x. If we visit all the nodes that means C = x is valid cost.

To find the least cost, Consider the fact that
If x is a valid solution then so is x + 1.
This means that the validity function is monotonous in nature,
Hence we can binary search on the cost to find the least cost that is valid.

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Time Complexity:

We do a BFS in each iteration of Binary Search and we do log(N) such iterations. Hence the Time Complexity is

O(N * log(N))

Similar Problems:

First
Second