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Assignement 3 :

Question :

Given an undirected graph, explain how you can determine whether it is a tree or not. What would

be the running time?

Answer :

A graph is tree if and only if it is connected undirected , acyclic and has edges equal to Total number of nodes which is n minus 1 (n-1) , so to deteremine whether a graph is tree or not , we can perform like in the code implemented in this Assignment a Depth First Search (DFS) or Breadth First Search (BFS) traversal starting from any node as starting node , if the traversal cover all the nodes and number of edges equal to n-1 (which the total number of nodes minus 1 ) then we can call that this graph is a tree but we need to check during the traversal that if from my current node if we can visit an already visited node before , this means that this graph is cyclic and hence is not a tree

Running time complexity for both DFS and BFS is O(V+E) where the V is the number of vertices (nodes ) and the E is the number of edges in the graph .