2. Design a distributed algorithm with which nodes of a distributed system form a spanning tree.

This Algorithm uses metrics such as ID, Distance, Status(Visited_BOOL).

Through Each Node there will be message passing to the other adjacent Nodes, And message Format is {Root_Node_id, distance}.

Root_ID and distance will be stored at each node along with its status of visited.

It is considered that root are arranged according to their increasing ID's.

Initially every node is considering itself root Node.

Algorithm:-

At Each Node in the network:-

If a message {Root_Node_id, distance} is recieved from other adjacent nodes then:-

Compare the ID number-

------> If Root_Node_id>ID then:

----------> Ignore The message

------> else:

----------> If Visited(ID) is false:

----------> Set Root_ID=Root_Node_id and Distance_cur=distance+1, Visited(ID)=true

----------> Send message {ID, Distance_cur} to other Adjacent Nodes

----------> else:

----------> If Distance_cur > (distance+1):

----------> Set Root_ID=Root_Node_id and Distance_cur=distance+1

----------> Send message {ID, Distance_cur} to other Adjacent Nodes

----------> else:

----------> Ignore The Message

By above Algorithm Spanning tree Will be formed containing their respective root nodes.

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