SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Department of Electronics and Communication Engineering

Laboratory Report Cover Sheet

18ECC303J – COMPUTER COMMUNICATION NETWORKS

EVEN SEM 2022-23

Name :

Reg No :

Section :

Venue :

Experiment title : **Implementation of Distance Vector Routing algorithm**

PARTICULARS	MAX MARKS	MARKS OBTAINED
Pre lab & Post lab	10	
Lab performance	15	
Record	05	
Viva	10	
Total	**40**	

Report Verification

Staff Name:

Signature with date:

8. Implementation of Distance Vector Routing algorithm

8.1 Introduction

To simulate the distance vector routing protocol to maintain routing tables asthe traffic and topology of the network changes

8.2 Hardware Requirement

- 3PCs with NIU card
- Network Emulation Unit
- Jumper Cables

8.3 Background

The name distance vector is derived from the fact that routes are advertised as vectors of (distance, direction), where distance is defined in terms of a metric and direction is defined in terms of the next-hop router. For example, "Destination A is a distance of 5 hops away, in the direction of next-hop router X." As that statement implies, each router learns routes from its neighboring routers' perspectives and then advertises the routes from its own perspective. Because each router depends on its neighbors for information, which the neighbors in turn may have learned from their neighbors, and so on, distance vector routing is sometimes facetiously referred to as "routing by rumor."

The common Characteristics are

Periodic Updates

Periodic updates means that at the end of a certain time period, updates will be transmitted.

Neighbors

In the context of routers, *neighbors* always mean routers sharing a common data link.

Broadcast Updates

When a router first becomes active on a network, how does it find other routers and how does it announce its own presence? Several methods are available.

Full Routing Table Updates

Most distance vector routing protocols take the very simple approach of telling their neighbors everything they know by broadcasting their entire route table, with some exceptions that are covered in following sections.

Split Horizon

A route pointing back to the router from which packets were received is called a *reverse route*. *Split horizon* is a technique for preventing reverse routes between two routers.

8.4 Prelab Questions

1. What is Routing?

2. Describe about the Design Goals of Routing

3. What is a distance vector routing protocol?

4. List the common characteristics of DVR

5. List out common fields in a routing table

8.5 Procedure:

1. Double click on LanT 

Routing Simulator icon from the desktop.

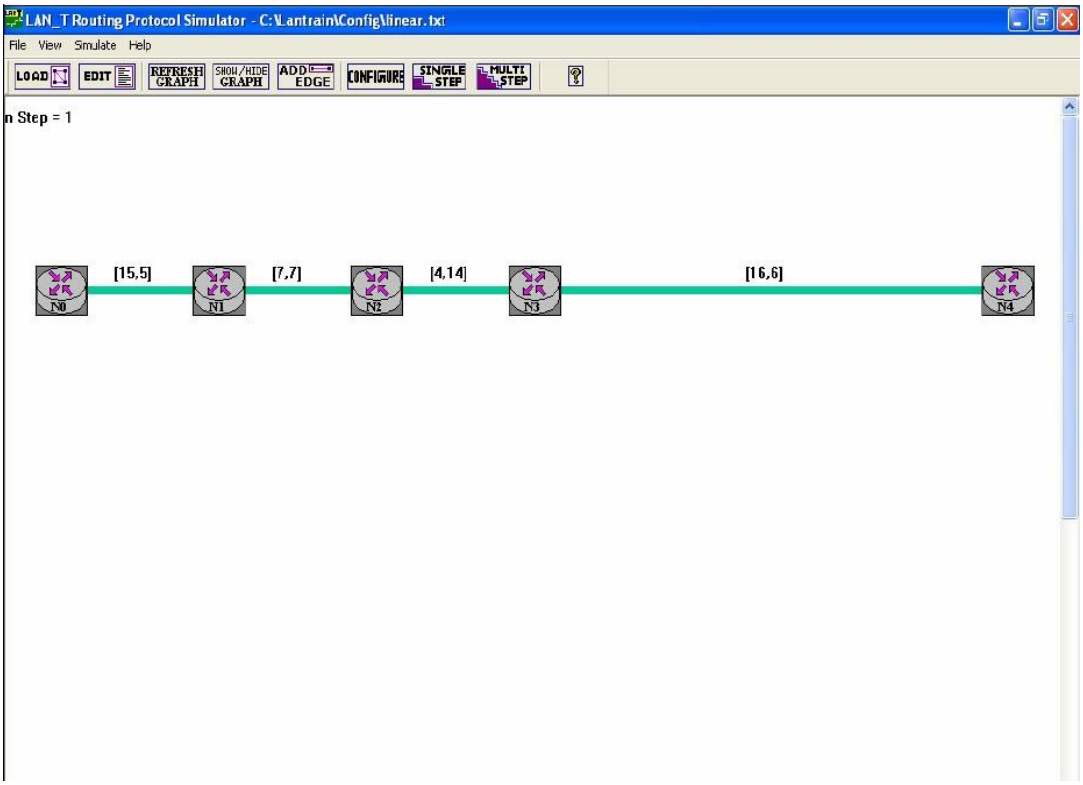
2. Click button 

and browse open C:\Lantrain\Config\ linear.txt.

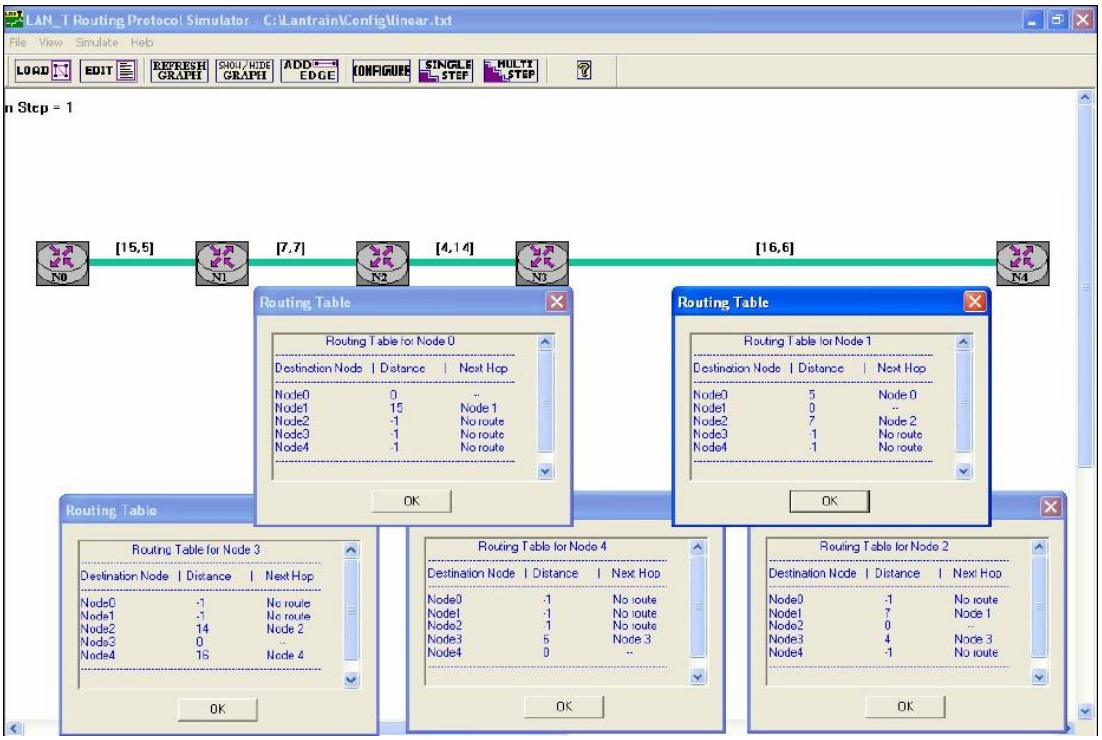
3. Click button 

and select Distance vector algorithm

4. The icon in the screen represents the nodes and the green color line represents the path. The values inside the braces represents the 'Forward and Reverse' weights.

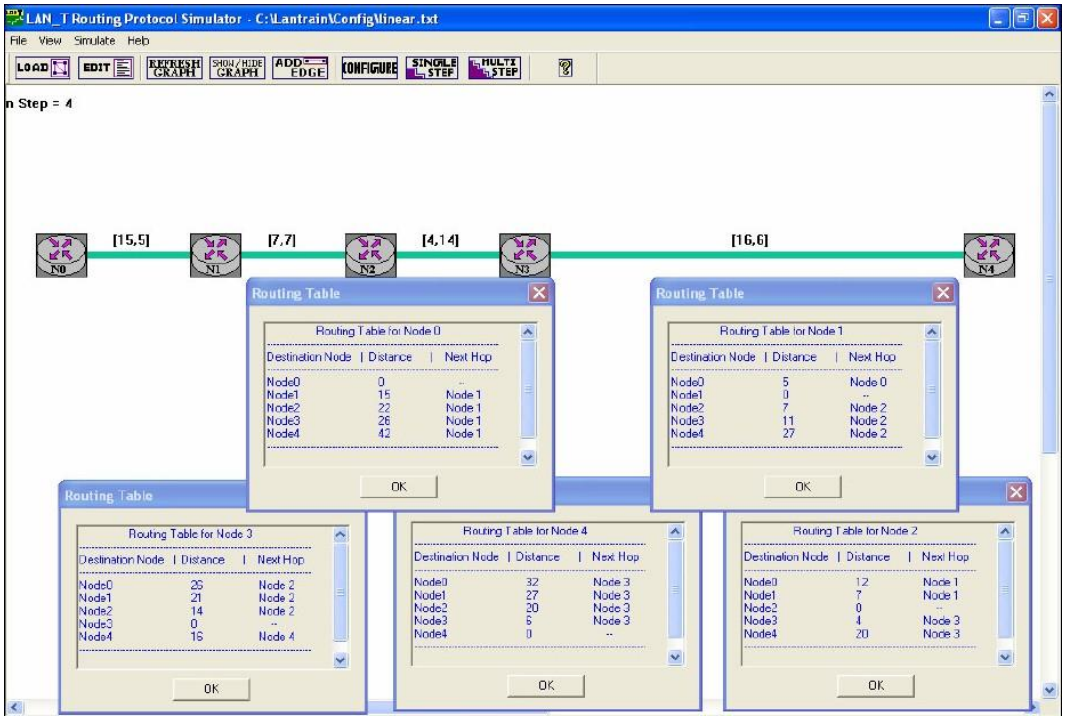


5. Click on the node icon  to obtain the routing table.



6. The above picture shows the nodes and its routing table.

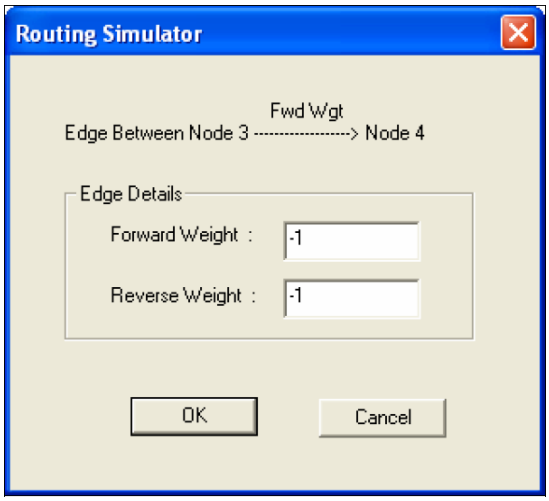
7. Hopping happens by clicking  button.

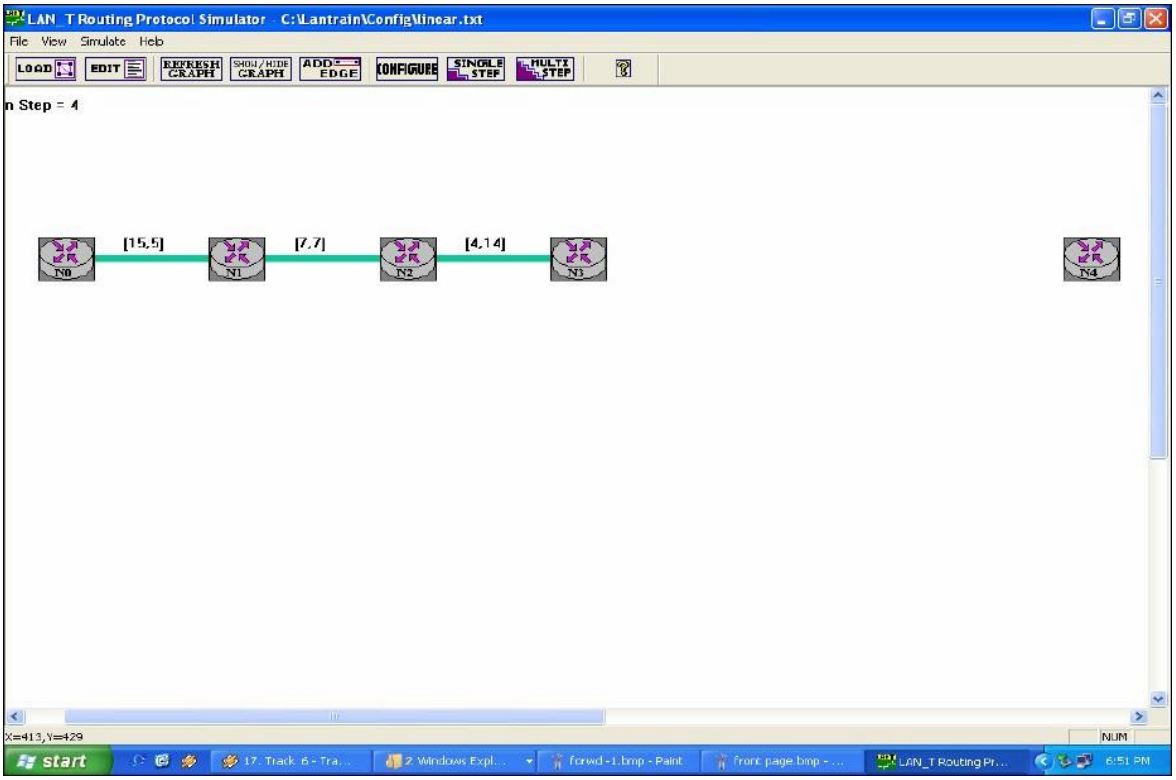


8. Now after several hopping the routing table gets updated. As the number nodes increases, the number of hopping increases. This is one of the disadvantages of distance vector algorithm.

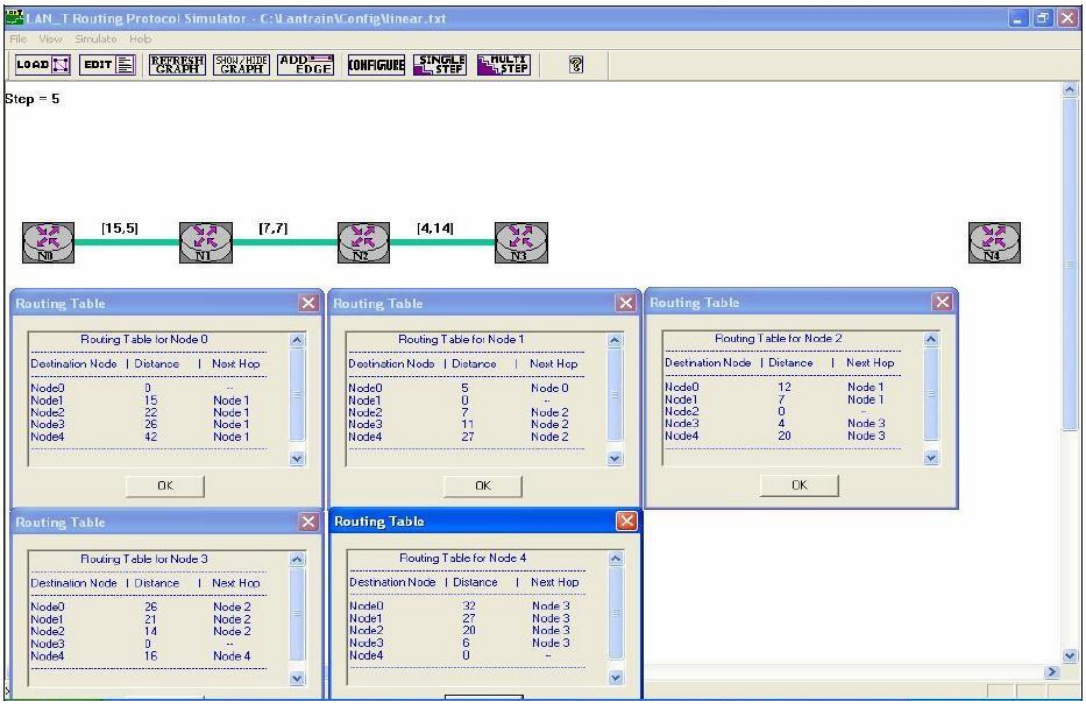
Count to Infinity problem

9. Click the green color line lying between N3 and N4.
10. Enter the forward and reverse weight as '-1' in order to disconnect N4 from the other nodes





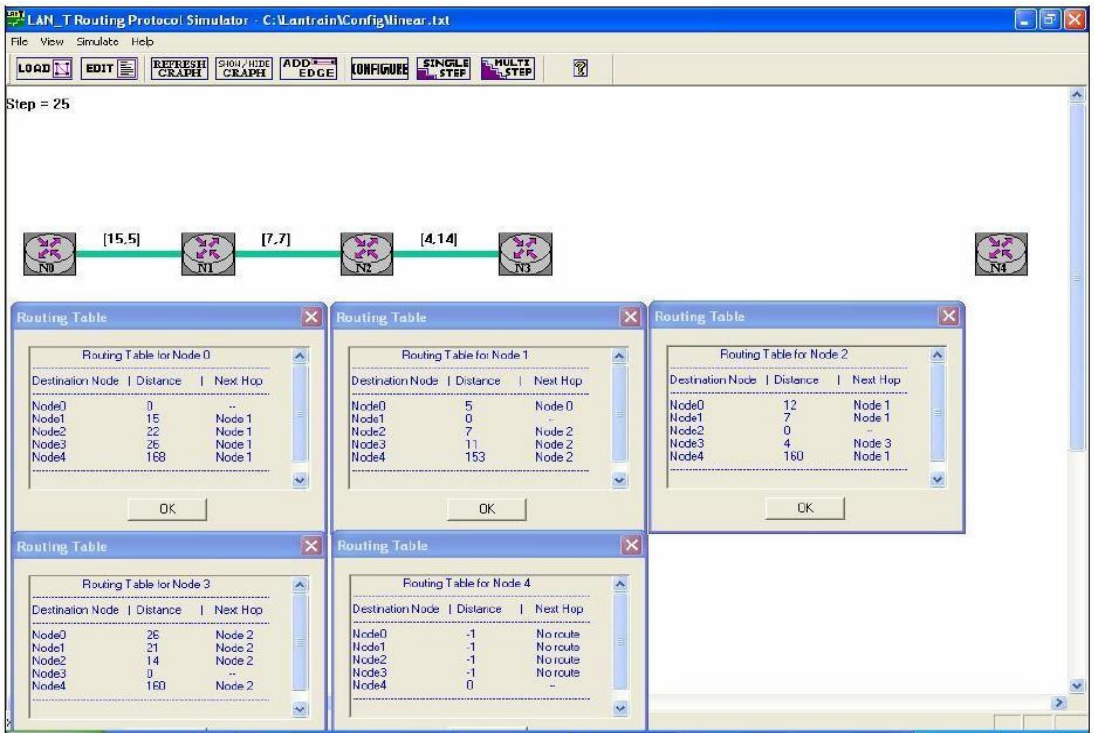
11. Now observe the routing table.



12. Now you could observe that there are no changes in the routing table, as they are not updated.

Click 

button to update the routing table.



13. Even after several hopping the routing tables of N0, N1, N2, N3 shows the path and weight toN4. These false updates are another disadvantage in the ‘Distance vector algorithm’.

8.6 Post Lab Questions

1. Name several problems associated with distance vector protocols

2. What is counting-to-infinity problem, and how can it be controlled?

3. Describe about the various Routing Metrics

4. Explain with an example two node instability

5. How the routing table is shared in DVR?

RESULT