

## OBJECTIVE:

Implementation of link state routing algorithm.

## EQUIPMENTS:

- N-SIM
- Computer with win-2K / XP

## PROCEDURE:

1. Run N-SIM software from your computer.
2. To check working of state routing algorithm in the form of animated representation click on state routing under routing protocols.

**Link State Algorithm**

Link Between Router: 5

Cost of Path from A: 2, 3, 5

Cost of Path from AD: 2, 4

Cost of Path from ADE: 2, 3, 4

Cost of Path from ADEB: 3, 4

Cost of Path from ADEBC: 4

Cost of Path from ADEBCF: 4

Step	Start N	D (B), p(B)	D (C), p(C)	D (D), p(D)	D (E), p(E)	D (F), p(F)
0	A	2, A	5, A	1, A	infinity	infinity
1	AD	2, A	4, D		2, D	infinity
2	ADEB		3, E			4, E
3	ADEBC					4, E
4	ADEBCF					
5	ADEBCF					

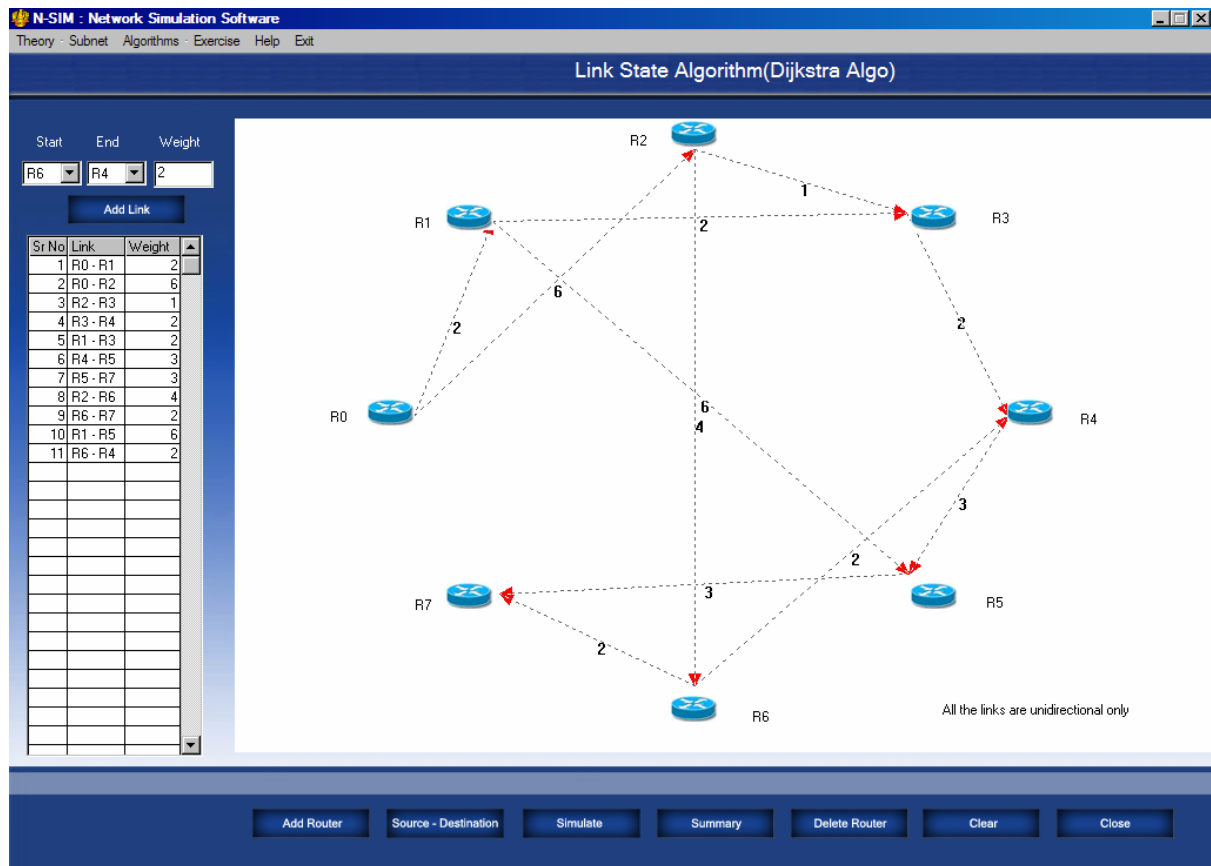
Final Link established is ADEBCF

BACK

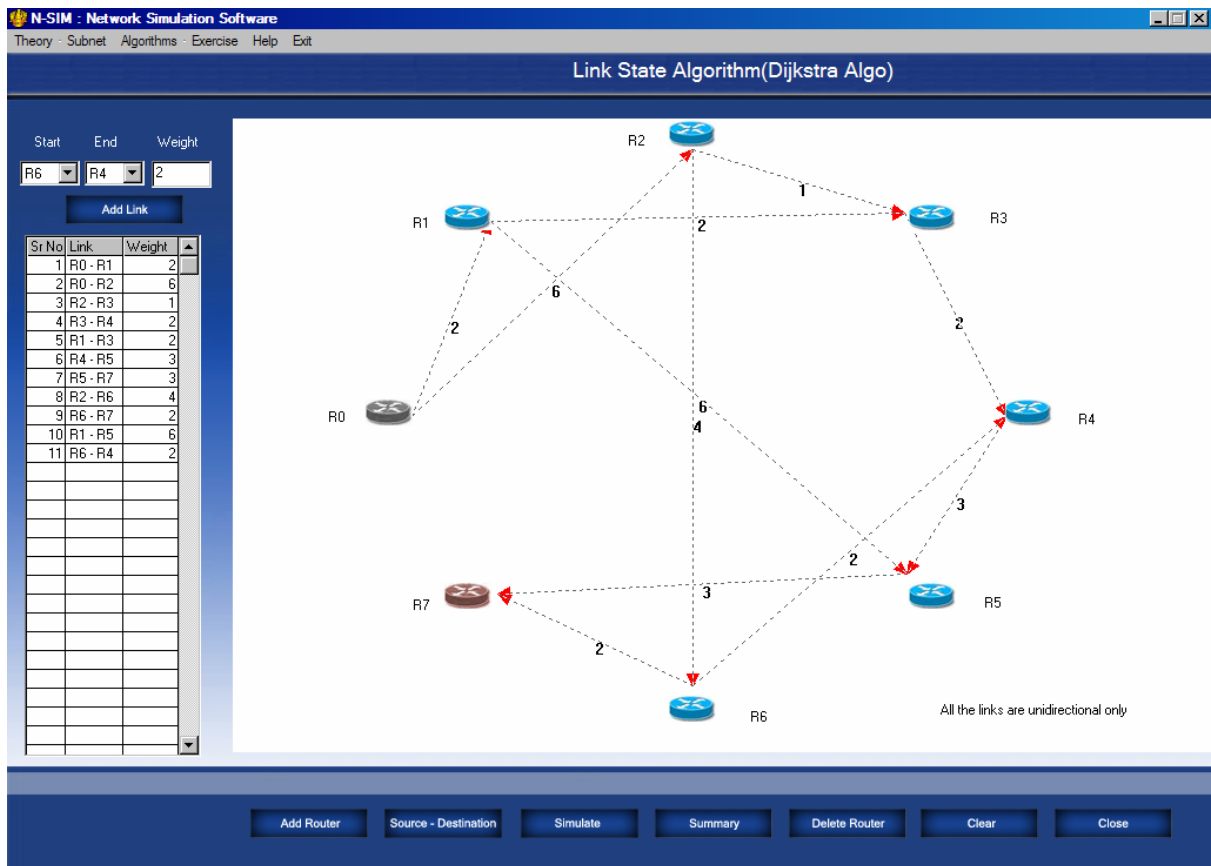
Close

3. You can study the working of state routing algorithm through this animated movie.
4. To implement this algorithm click on algorithms under menu and click on state routing.

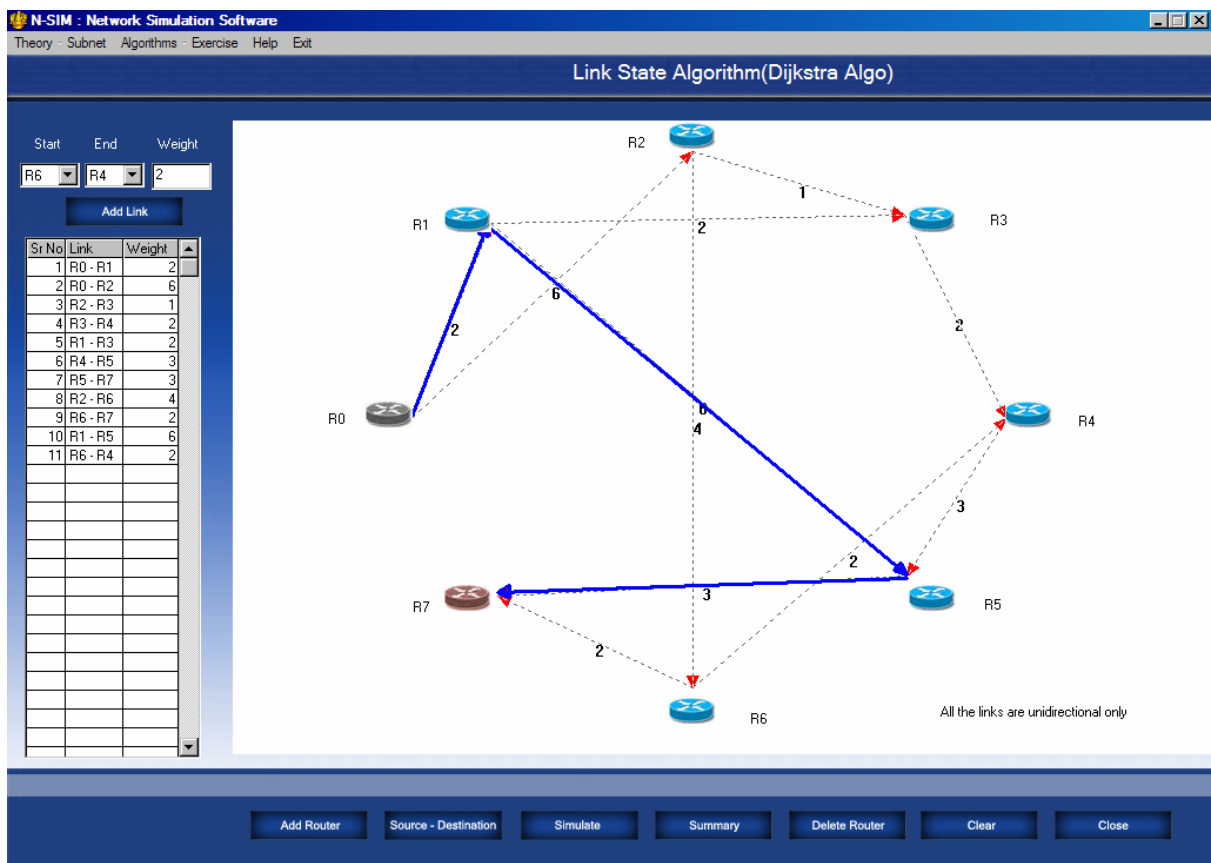




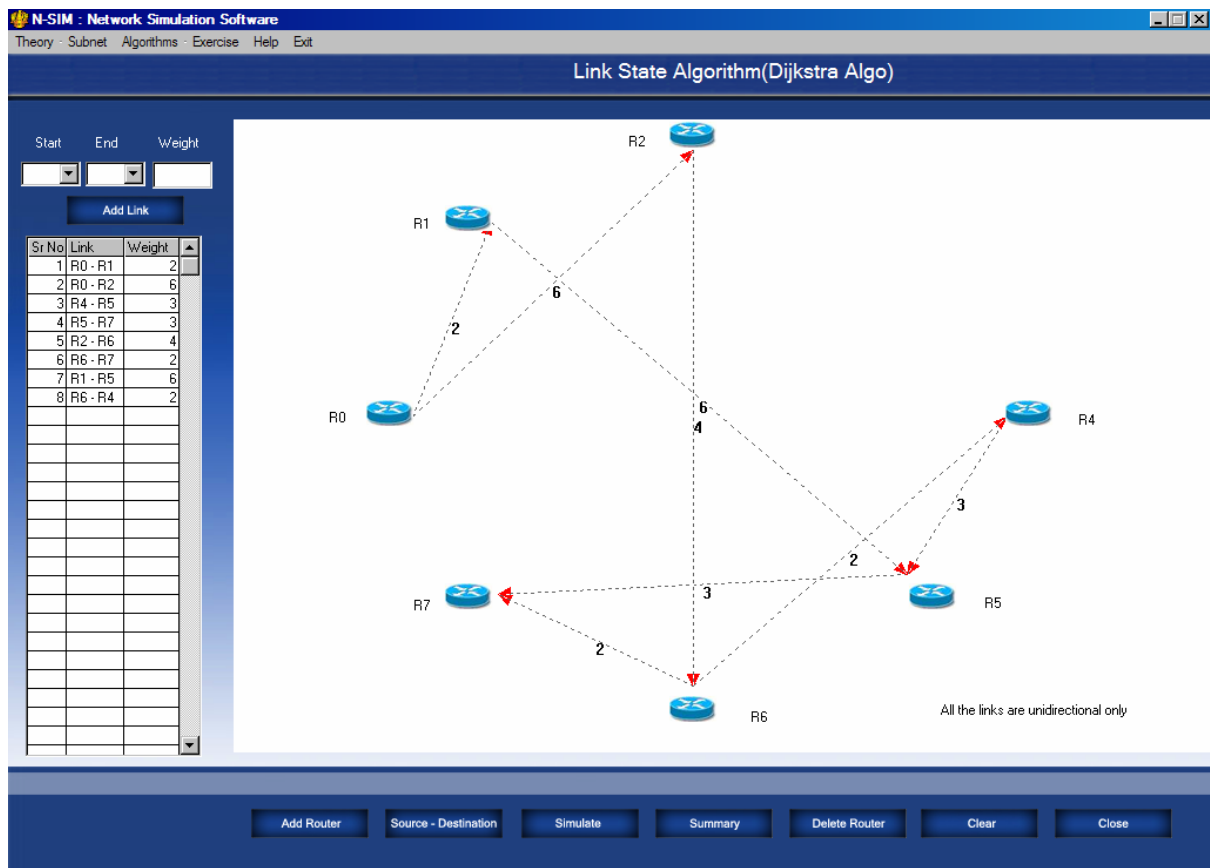
6. Select the routers from 'Start' and 'End' Combo Box. Enter the cost in Weight Textbox.
7. Click "Add Link" button to define the links between pair of routers and define its cost in kilometers.
8. Depending on the configuration you will see all the possible links defined by you are implemented and drawn in the screen near the routers added.
9. You can edit cost by selecting the respective 'Start' and 'End' Combo box; enter the cost in 'Weight' textbox and click on the "Add Link" button. Cost of respective links between pair of router can be changed.



- To simulate and find out shortest path select the source and destination routers.



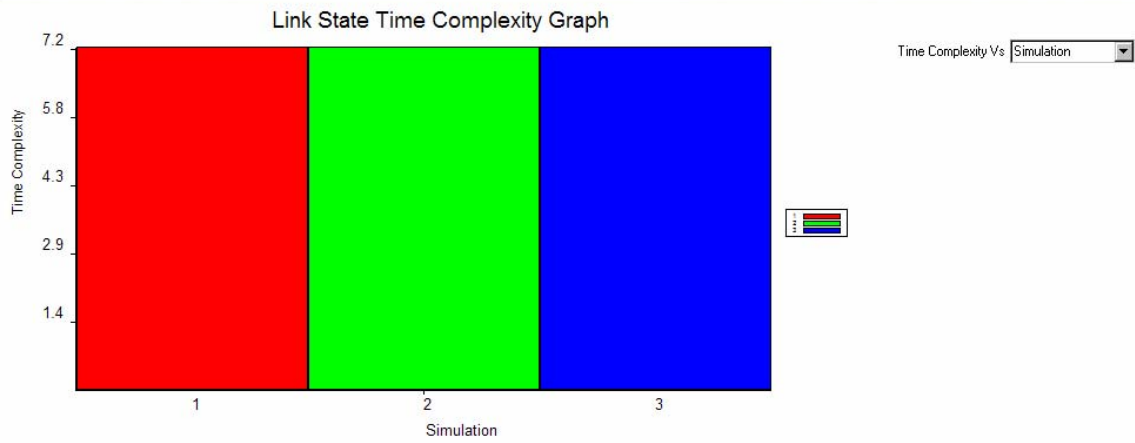
- Click on simulate button to start the algorithm, this will calculate the shortest path and will be shown on the screen.



- Click on "Delete Router" to delete the router and its entire links.



Link State Algorithm(Dijkstra Algo)



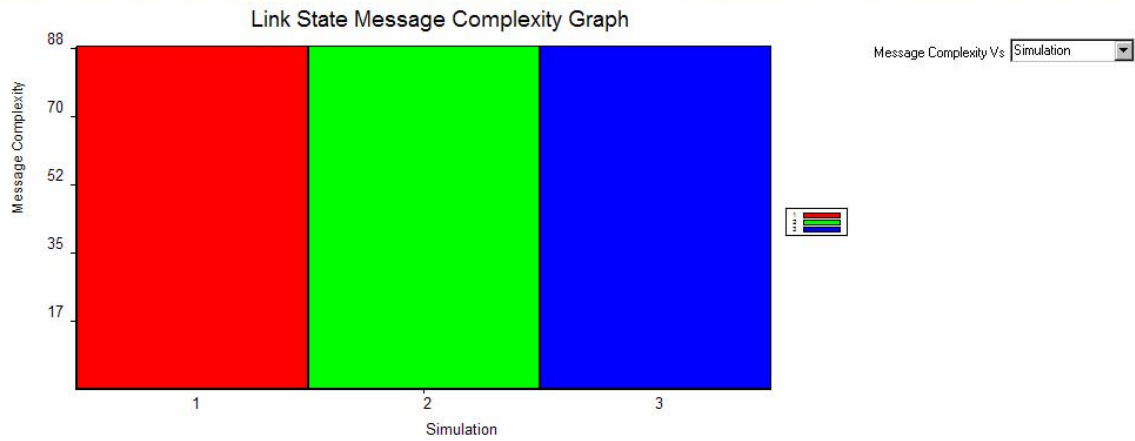
Formulas used in Link State Routing Algorithm

► Time Complexity  
 $T = N * \log(N)$

Let N be numbers of Routers.  
 T be the Time Complexity

Print Save Close

Link State Algorithm(Dijkstra Algo)



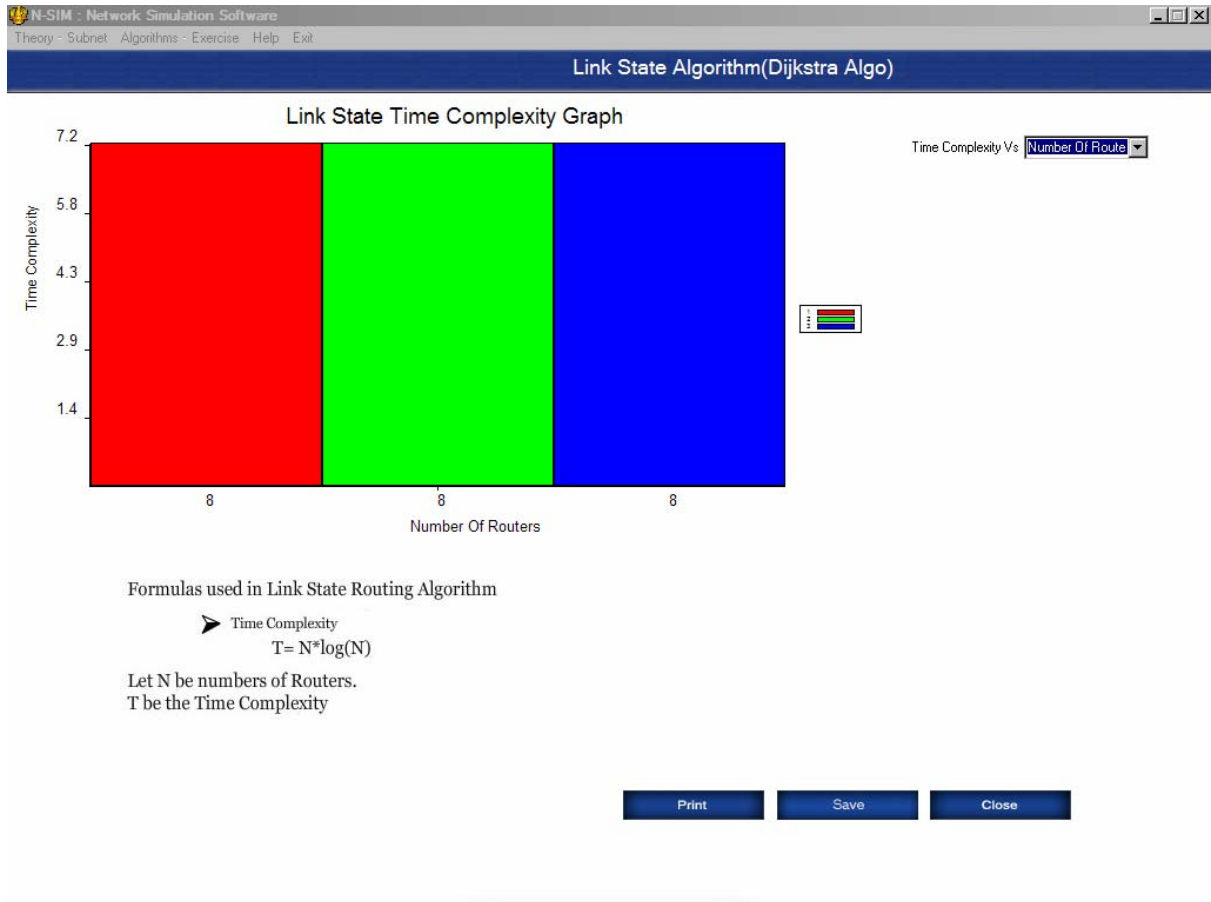
Formulas used in Link State Routing Algorithm

► Message Complexity  
 $M = N * E$

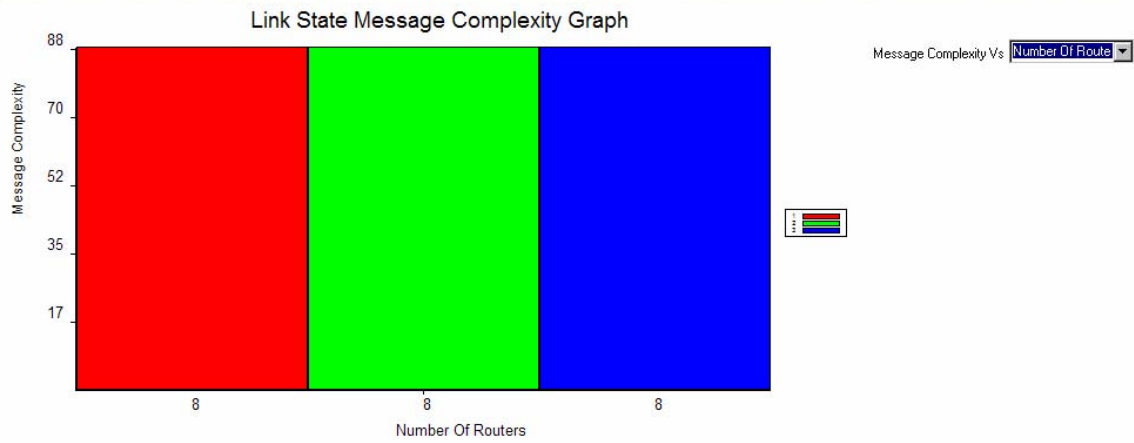
Let N be numbers of Routers.  
 M be the Message Complexity  
 E be the numbers of edges (Links) between routers

Print Save Close

16. Select the parameters from Combo Box on top “Time Complexity Vs Number Of Router” or “Message Complexity Vs Number Of Router”.







Formulas used in Link State Routing Algorithm

➤ Message Complexity  
 $M = N * E$

Let N be numbers of Routers.  
M be the Message Complexity  
E be the numbers of edges (Links) between routers

Print Save Close

17. Select Number of Link from Combo box same as Router.
18. Click on "Save" button to save the Graph.
19. Click on "Print" button to print the Graph.