CSE 4344

LAB 2-Distance Vector Routing

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Objectives:

1. Simulate Distance Vector Routing

2. Continued work with IDEs and GUIs

Instructions to execute:

1. make (Compile the program)
2. java DistanceVector input.txt

Observations

I run my program with the example input file. All the nodes exchange tables at the same time and then make one iteration with the new information. Each distance vector table shows the current node information that the node has. 16 indicates that two nodes are unreachable with current information.

Here is the Initial link state table for Router1

```
---------------------------------------------
Distance Vector Table of Router1
---------------------------------------------
  1  2  3  4  5  6
 ---------------------------
1|  0   7  16 16  1  16  |
2|  7   0  16 16 16 16 |
3| 16 16  0  16 16 16  |
4| 16 16 16  0  16 16  |
5|  1  16 16 16  0  16  |
6| 16 16 16 16 16  0  |
 ---------------------------
```

For every iteration, the system displays each distance vector table for each router. When the algorithm reaches a stable state. The program stops and indicates that nodes are not getting any new information. The number of cycles that the system takes to reach a stable state with the example input file is 3.

In the system, I also have the option that allows user to choose the single step mode. When I chose not to enable the single step mode, the simulation runs without intervention and display a total time until the algorithm reaches a stable state which is 5 milliseconds. I also suppress updating the display of the tables as they change until after the system reaches a steady state.

Here is the distance vector table that has reach to stable:

```
--------------------------------
Distance Vector Table
--------------------------------
   1  2  3  4  5  6
  -------------------------
1|  0  6  5  3  1 16  |
2|  6  0  1  3  5 16  |
3|  5  1  0  2  4 16  |
4|  3  3  2  0  2 16  |
5|  1  5  4  2  0 16  |
6| 16 16 16 16 16  0  |
  ------------------------
```

I adjust the cost of the link between node 3 and node 4 to 16 after initial table is set up. Then I continue running the system. The distance vector table of node 1 and node 2 is updated by this changes. It took the system 3 cycles this time. The running time is 11 milliseconds.

Then I set the cost back to what it was originally. It took the system 3 cycles this time. The running time is 3 milliseconds.