

Distance Vector - Assignment 4

Due date: 16/4/18

Instructions

This will be a group assignment. You can pair with the same partner from Assignment 3.

Assignment

The assignment is to understand distance vector (DV) algorithm, especially the “count upto infinity” problem. The assignment will have two parts.

Problem 1

In this problem, you have to simulate the distance vector algorithm in one machine. The network is given as input just like the previous assignment (using the header file). Your algorithm will take the input and produce the distance vectors required at every node. The algorithm will output the total number of messages passed before it stops. Then, it asks users to change the cost between two routers. The distance vector algorithm is run again and the number of messages passed before it stops.

Input and Output

(output text) Total number of message run is 25
(input prompt) Give new cost between nodes: (67.100.3.8, 60.80.33.10,100)
(output text) Total number of message run is 104

How to simulate DV

1. Messages are implemented using a structure
2. A queue is used to simulate message passing.
3. When you want to send a message, insert message into queue
4. When you want to read a message, remove it from the queue

The algorithm will look like this

```
while (queue is not empty)
{
    P = remove from queue
    If P is send to node x, run DV on node x
    If x needs to send message to y, insert “message to y” on queue
}
```

Problem 2

In this problem, you need to run the DV algorithm with the “poisoned reverse” technique. Now check the total number of messages send before the algorithm stops. Also try to come up with a network where “count to infinity” still happens even for this modified algorithm?

Input and Output

(output text) DV with poisoned reverse, total messages is 13
(input prompt) Give new cost between nodes: (67.100.3.8, 60.80.33.10,100)
(output text) DV with poisoned reverse, total messages is 15