#### COEN 146: Computer Networks – Fall 2018

**Lab assignment 8: Distance vector routing**

**Objectives**

##### To develop distance vector routing algorithm

##### **Part 1: Distance vector routing protocol [26 points]**

Use the same network topology used Lab assignment 7. The set of nodes, edges, and costs are formally defined as:

* N = set of nodes (routers) = {u, v, w, x, y, z }

w

3

4

v

x

u

5

3

7

4

y

8

z

2

7

9

* E = set of edges (links) = {(u,v), (u,x), (u,w), (x,y), (x,w), (x,z), (w,v), (w,y), (v,z), (y,z)}
* C = {{0,7, 3, 5, 10,000, 10,000}, {7, 0, 3, 10,000, 4, 10,000}, {3, 3, 0, 4, 8, 10,000}, {5, 10,000, 4, 0, 7, 9}, {10,000, 4, 8, 7, 0, 2}, {10,000, 10,000, 10,000, 9, 2, 0}} //10,000 is INFINITY

Using distance vector routing algorithm, write a C program to compute the routing table for each node, the number of cycles it took to converge.

As explained in the class, the algorithm is given as follows:

**Initialization:**

for all destinations y in N:

Dx(y)= c(x, y) /\* if y is not a neighbor then c(x, y)= ∞ \*/

for each neighbor w

Dw(y) = ? for all destinations y in N

for each neighbor w

send distance vector **D**x = [Dx(y): y in N] to w

**loop**

**wait** (until I see a link cost change to some neighbor w or

until I receive a distance vector from some neighbor w)

for each y in N:

Dx(y) = minv {c(x, v) + Dv(y)}

**if** Dx(y) changed for any destination y

send distance vector **D**x = [Dx(y): y in N] to all neighbors

**forever**

Demonstrate to the TA and upload your source code to Camino.

**Part 2: Quiz [4 points]**

Complete the quiz on Part 2 of Google Lab8\_Turn-in Form through Camino.

**Requirements to complete the lab**

1. Show the TA correct execution of the program you wrote for Part 1 and upload source code to Camino.
2. Complete the quiz on Google Lab8\_Turn-in Form through Camino.