Lab 4 report

(i) How distance vector routing works

Distance vector routing is calculating the best path to a destination based on the amount of hops and the distance. The routers send their distance vector to neighboring routers to get back the neighboring routers distance vectors, so they can find out which path is the best to use. After the main router has received every routing update it calculates the best path to any destination.

(ii) How you tested the algorithms

We tested by doing our own calculations and then comparing them to the results our program gave us and we got the results we anticipated.

(iii) Some cases in which poisoned reverse may fail

First off, poison reverse is used because the Bellman Ford algorithm can not directly handle loops. A case where poison reverse may fail is with the count to infinity problem which is when two routers deliver updates simultaneously and routing loops may occur. An example of this case is when node 1 thinks that node 2 is the path to node 3 but in the meantime node 2 believes that node 1 is the path to node 3, when then a packet is sent from either node 1 or node 2 it will be sent back and forth between the two. This is what causes an infinite loop, in cases where the network topology is complex or there are delays in propagating updates, routers might still end up in a state of counting to infinity, where each router increments the metric for a route indefinitely, unable to converge.

(iv) A solution to this problem

RIP(Routing Information Protocol) is a solution for solving the poison reverse problem, which is using the split horizon rule. The rule is that if a router gets routing information from a neighbor it should not send back to the same direction which it was received. Which prevents looping problems because the routers will never send routing information back to a router from which it has received routing information from.