CPSC 441

Assignment 4

Distance Vector Routing

1. Explain how distance vector routing works.

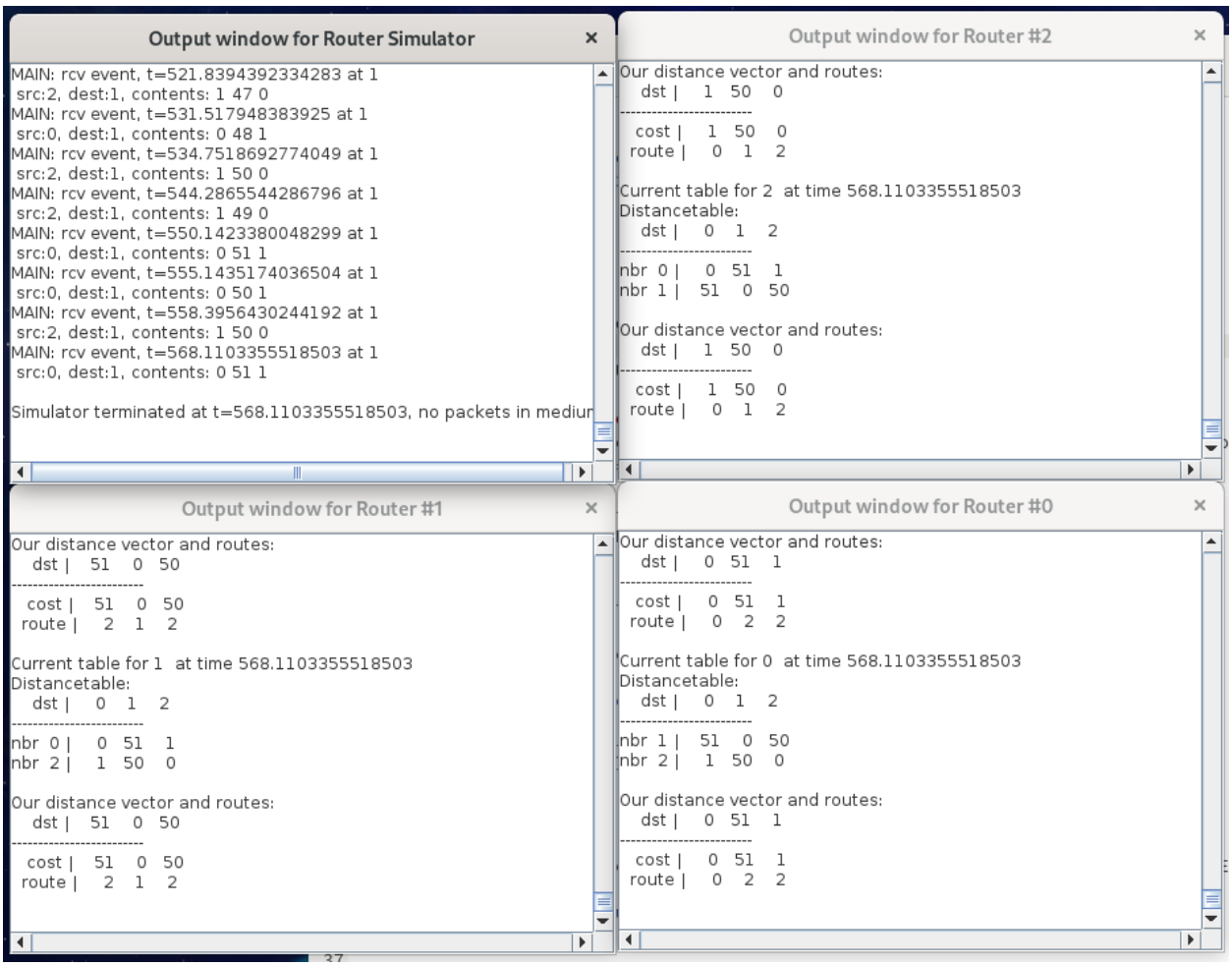
   Distance vector routing is a simple protocol used in packet switching networks that utilizes distance to decide the best packet forwarding path. Distance is typically represented by hop count. The distance vector routing protocol is a shortest path from one router to another across a network.

2. Describe how you tested your solution.

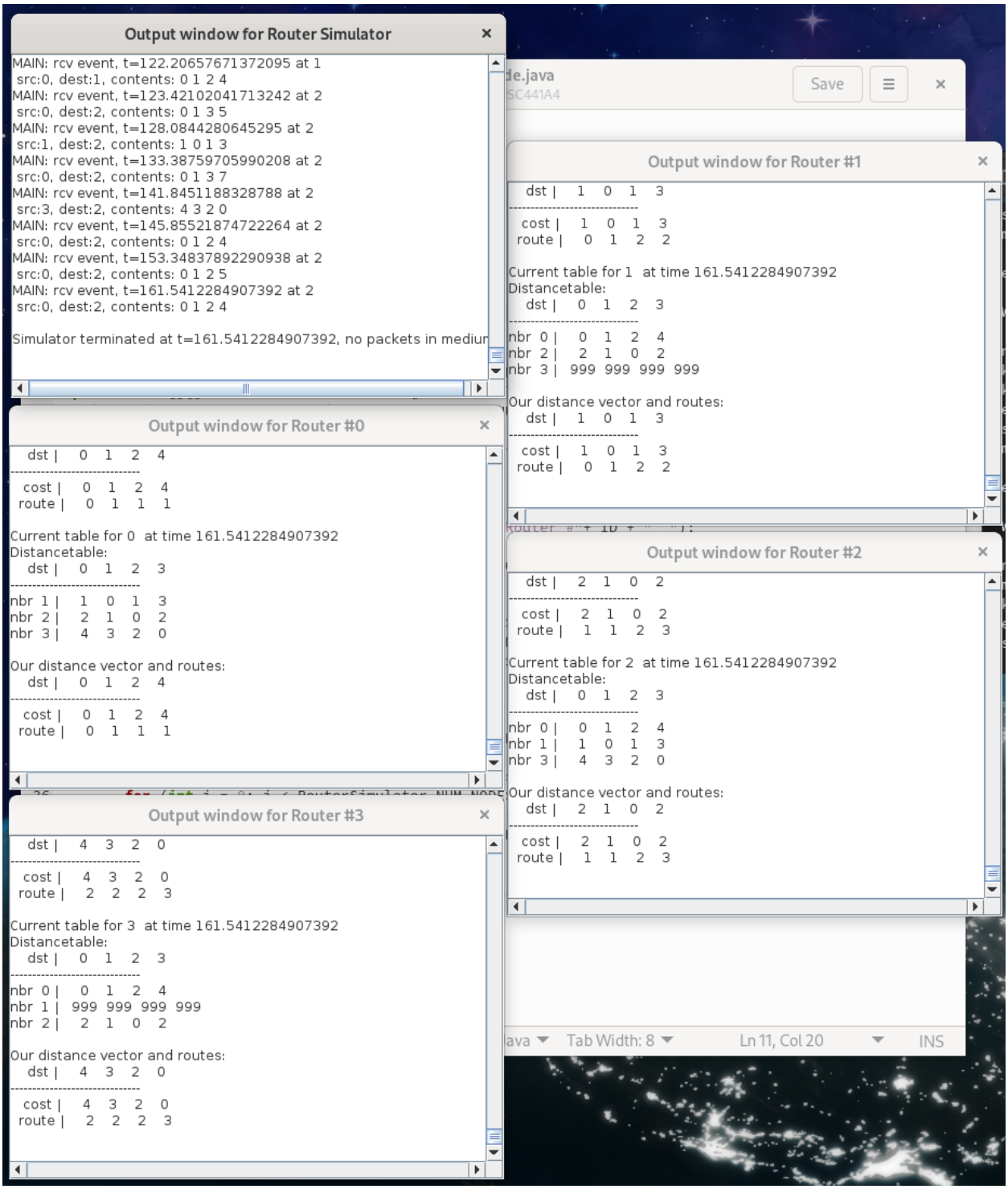
   I tested my solution against the three given test cases and observed the output was as expected. The screenshots at question #3 contain information regarding how I executed the tests.

3. Screenshots of your outputs for three test cases.

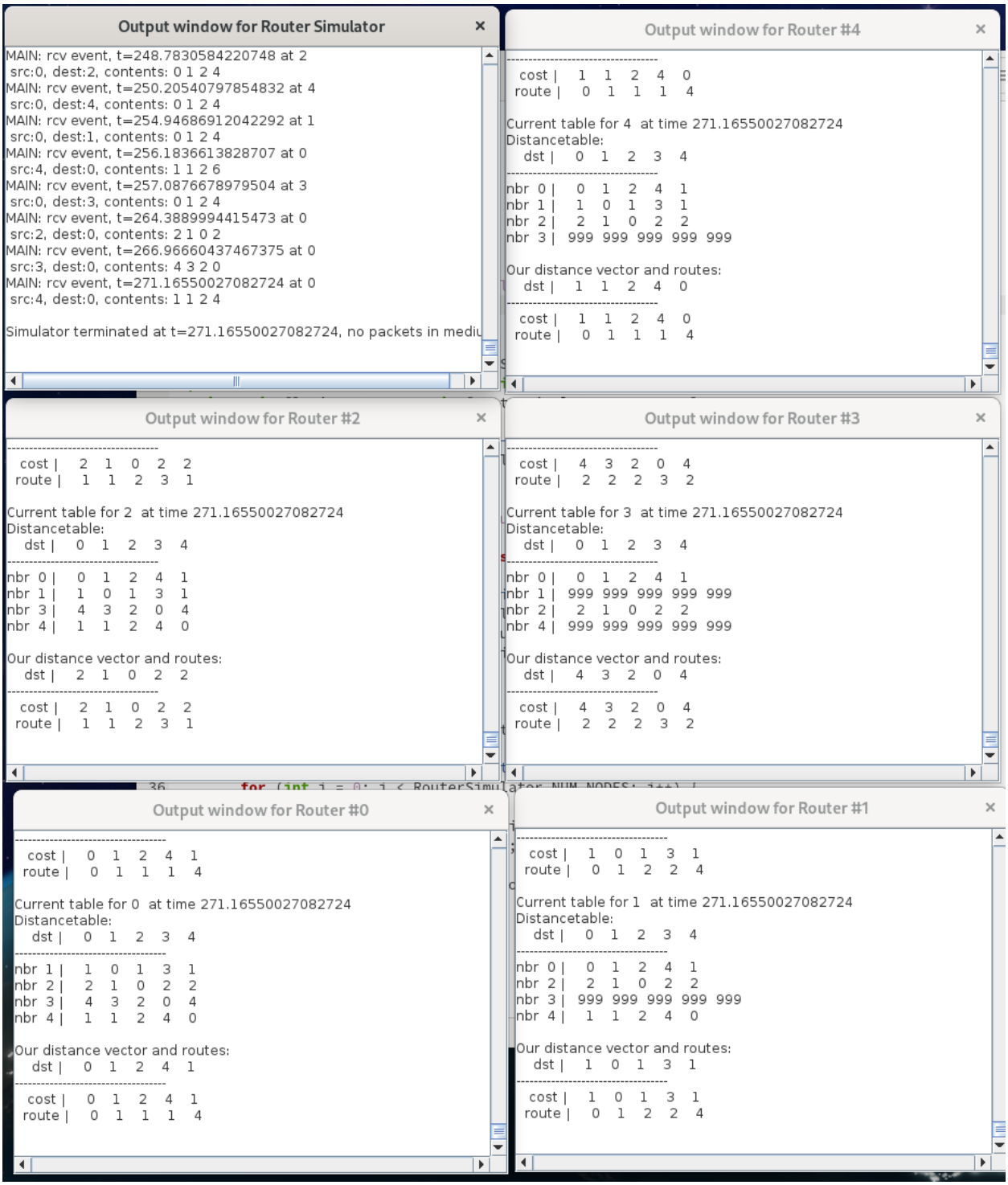
   The following commands have were ran to get the output in the screenshots. (Note: poisoned reverse was set to *false*).



- make install 3
- make test



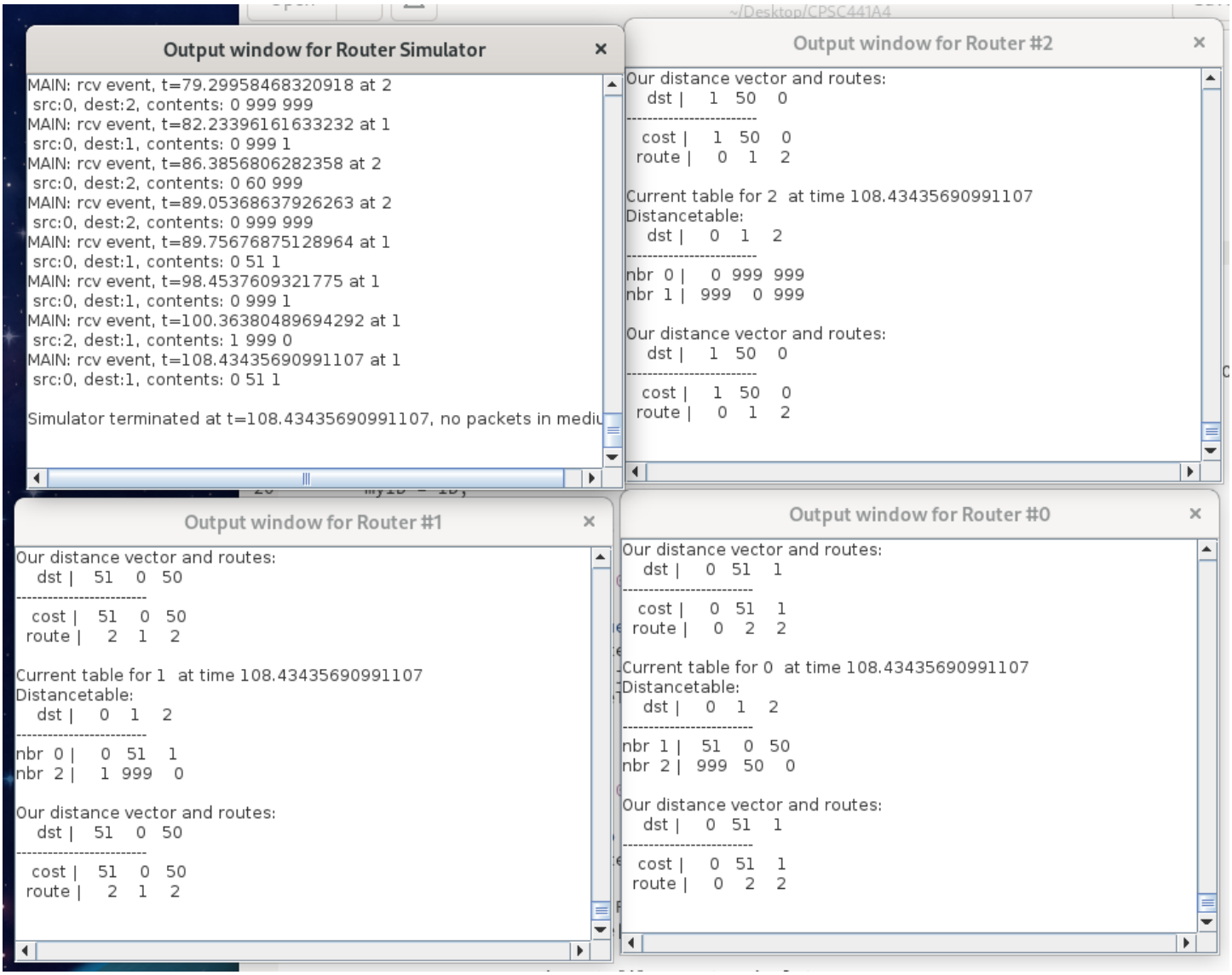
- make install4
- make test



- make install5
- make test

4. Show in a test case why poisoned reverse is necessary.

This is RouterSimulator3.java being ran. In this case, Poisoned Reverse was set to True. The simulation terminated at time 108.43, whereas before (with poisoned reverse set to False), the simulator would take up to time 568.11 to finish. In this scenario, Poisoned Reverse was necessary, because RouterSimulator3 has a change in default Link Costs, and without poisoned reverse, the algorithm needs longer to find the shortest path.



5. Explain how poisoned reverse works.

   The idea of poison reverse is to make sure that a path does not turn back into the same node if a cost has changed within the network of routers, this would lead to a count-to-infinity problem. With poison reverse, two routers, A and B, that have no way to get rid of the loop in a timely manner using plain Bellman-Ford, announce an infinite metric default route to each other, so that the algorithm gets rid of the routing loop as soon as an update is successfully transmitted.