

## Programming Assignment 4 — Distance Vector Routing Extension

*Assigned: Mar. 14**Due: Mar. 27, 23:59:59.*

## 1 Extensions to Distance Vector Routing

Extend your previous assignment to handle three new mechanisms:

- Triggered update: Implement triggered update to speed up the convergence of routing tables.
- Counting up to infinity (for two nodes): Implement poison reverse to handle the counting up to infinity problem.
- Node Failure: Add a heartbeat message to your protocol. The heartbeat message should be sent periodically. Devise a mechanism using the heartbeat messages to detect when a peer is no longer reachable and tear-down all links to that peer. Your DV implementation should eventually converge and find routes to all reachable destinations.

We will test your program by manually stopping specific nodes. The remaining nodes should detect the set of nodes that are no longer reachable and re-configure routing tables as necessary.

Note that you will have to devise the format of the heartbeat message and neighbor reachability protocol yourself. Please justify the inclusion and length of each field in the heartbeat message; you will need to write up a brief description of the mechanism you use to detect node failure.

## 2 Submission

- Please submit your code as described in the forum.
- What to turn in: All of your source code along with a Makefile and a README file. Your Makefile must produce an executable named `rt`. The README file should include a short description about your protocol (e.g., what is the packet format, how does the protocol execute, why does it work, etc).