NWEN243 Lab 4

Due: **Friday 15 September 2017**

No demo is required. You need to submit the source code, network topology file and lab report via the online submission system (https://apps.ecs.vuw.ac.nz/submit/NWEN243)

The purpose of this lab is to further your understanding of routing by implementing one of the following two protocols:

1. Link state
2. Distance Vector

You do not need to worry about:

1. Changes to the network - consider it static. You, however, will need to provide the format of your topology file. Any topology file must have at least 6 nodes. This is the file that contains all information necessary to run the routing protocols such as:
    1. The number of nodes
    2. The links between nodes.
    3. The cost of each link
2. You also don't have to build your table dynamically - we are cheating and know how many nodes there are in the network.
3. This is a standalone application that could use any programming language. You can use C/C++ or Java. We did not provide a template for this code as it is up to you to design the algorithms and the data structures.
4. Visualising the network. If you cannot draw nodes and links, you can still use the command line terminal (i.e. print outs). If you are using Java, you may want to utilise the ecs100 library from

    https://ecs.victoria.ac.nz/Courses/COMP102_2017T2/JavaResources.

Finally, once you have everything working:

1. Generate the routing table for each router
2. For the DV protocol, simulate a change of the cost of one link and show how the new routing table is generated. You don't need to worry about such a change in link state.
3. Randomly chose a source and a destination node and show how data is routed from the former to the latter.
4. Measure the time it takes for the routing table to be generated. You don't need to send any packet across the network; just the time it takes to generate the routing table.

Grading

1. I expect students who successfully implement the protocol correctly to be awarded a grade in the B range.
2. I expect students who successfully implement the protocol and visualise the network will be awarded a grade in the A range.

Tutorial

A lab tutorial will be held on Thursday 24 August 2017 at 12:00pm in Maclaurin LT102. This tutorial will be video recorded.

Submission

You must submit your functioning code using the submission system - submit all source needed to compile.

1. You will also need to submit any topologies you have created for your experiments.
2. You need to ensure your code works and compiles
3. Your code should be well designed, commented
4. Include in your submission a 2-page PDF document "design.pdf" which outlines your design. In this case, be sure to include and explain your code .