HW5 (6 points)

# Tools:

* Dnsmasq: <https://linux.die.net/man/8/dnsmasq>, <https://www.tutorialspoint.com/unix_commands/dnsmasq.htm>

# Setup:

1. Setup a CORE scenario as shown below. For node n2, I edited its configuration and removed the IPv4 and IPv6 addresses that were assigned to it automatically.

Graphical user interface

Description automatically generated

## Part 1: Setting up DHCP server and obtaining an address (2 points)

1. Start the CORE scenario. Node n2 should not have an address.
2. Create a configuration for dnsmasq.conf for dnsmasq that allows you to give DHCP addresses in the range from 10.0.0.40 to 10.0.0.60.
3. You can run the dnsmasq server on n1 as follows: dnsmasq -C yourconfigfile -d
   1. -d for debug mode
4. (1pts) Show the content of your dnsmasq config file
5. Use dhclient to run a DHCP client on n2
   1. dhclient -i eth0
6. (0.5pts) Show the dnsmasq debug messages shown at the n1
7. (0.5pts) Show the address given to eth0 on n2.
8. Release the address given to n2 using dhclient -r

## Part 2: Addition DHCP services (4 points)

1. Repeat part 1 but this time add the appropriate configuration to the dnsmasq file to:
   1. Always assign interface eth0 on node n2 the address 10.0.0.52.
   2. Set default route to 10.0.0.100
   3. Set default dns-server to 10.0.0.101
   4. Hint: look at the dhcp-host and dns-option configuration in the dnsmasq config.
2. (1pts) Show the content of your dnsmasq config file
3. Start Wireshark on the node n2 interface
4. (1pts) Describe the exchange between the client (n2) and the server (n1)
   1. What is the purpose of the each DHCP message?
   2. Justify the source IP address used in each message?
5. (0.5pts) Show where in the exchange the “default router” information is passed to the client
   1. Show a screenshot of the command: ip route show, on n2. Do you see the default router added to the host?
6. (0.5pts) Show where the DNS server information is passed to the client
7. (0.5pts) Show where the duration of the DHCP lease is in the exchange
8. (0.5pts) Show the message where the address is assigned to the client. Show the address value