CSIS 3230 Computer Networking Principles
Lab 3 – Network addressing and monitoring

Name: _____

1. Give yourself an IP address

a) ☐ Successfully changed IP address

b) Record the ping results

IP address	% lost	Min/avg/max

2. Examine the ARP cache

a) How many IP/MAC address entries are in your ARP cache? _____

b) Does the ARP cache have any addresses that you did not `ping`? If so, explain why you think they are there.

c) How long are entries stored in the ARP cache? _____

3. Examine network traffic

a) Was there a packet in the `ping` sequence that took noticeably longer than the others? If so, which one?

b) <u>ARP Request</u>   (Make sure the Ethernet II Source is *your* MAC address)

Ethernet II

i) Destination: [   ]   Source: [   ]

Address Resolution Protocol

ii) Sender MAC: [   ]   Target MAC: [   ]

Sender IP: [   ]   Target IP: [   ]

<u>ARP Reply</u>   (Make sure the Ethernet II Destination is your MAC address)

Ethernet II

i) Destination: [   ]   Source: [   ]

Address Resolution Protocol

ii) Sender MAC: [   ]   Target MAC: [   ]

Sender IP: [   ]   Target IP: [   ]

c) Ethernet frame type (look in the middle panel for this). Give both the name and the hexadecimal number

ARP packet: [   ]

ICMP (ping) packet: [   ]

d) The bottom border of the Wireshark window shows the size in bytes of the item selected in the middle panel.

What is the total number of bytes in the frame for a ping packet? (click on Frame)

[   ]

How many bytes are in the Ethernet header? (click on Ethernet II)

[ ]

How many bytes are in the IP header? (click on Internet Protocol Version 4)

[ ]

How many bytes are in the payload? (click on Internet Control Message Protocol)

[ ]

e) Check the ARP cache again and describe anything that has changed.

[ ]

4. Generate some more network traffic

a) What messages are displayed in the terminal?

[ ]

What kind of packets are generated (name shown in the Protocol column)?

[ ]

Check the Time column and estimate how often ARP requests are sent.

[ ]

b) Describe the output of the `ping` command and the contents of the packet trace.

[ ]

5. Duplicate IP addresses

a) Are the ping packets successfully sent and received?

Describe the packets captured during the pings.

Describe where you think the request and reply ping packets are going.

b) Describe what happens when a third computer pings the duplicate IP address.

6. Script to restart the NIC

Show the command you used to restart the interface: