

# Part A

## Local

```
Terminal: Local x + v
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py 127.0.0.1
Pinging 127.0.0.1 using Python:
36 bytes from 127.0.0.1 time=0.000 ms
36 bytes from 127.0.0.1 time=0.000 ms
36 bytes from 127.0.0.1 time=0.000 ms
36 bytes from 127.0.0.1 time=0.000 ms
^C--- 127.0.0.1 ping statistics ---
round-trip min/avg/max 0.000/0.000/0.000 ms
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap>
```

## 8.8.8.8

```
Terminal: Local x + v
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py 8.8.8.8
Pinging 8.8.8.8 using Python:
36 bytes from 8.8.8.8 time=9.036 ms
36 bytes from 8.8.8.8 time=1.013 ms
36 bytes from 8.8.8.8 time=0.000 ms
36 bytes from 8.8.8.8 time=9.201 ms
^C--- 8.8.8.8 ping statistics ---
round-trip min/avg/max 0.000/4.813/9.201 ms
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap>
```

## cs.stonybrook.edu

```
Terminal: Local x + v
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py cs.stonybrook.edu
Pinging 23.185.0.2 using Python:
36 bytes from 23.185.0.2 time=15.621 ms
36 bytes from 23.185.0.2 time=13.330 ms
36 bytes from 23.185.0.2 time=0.000 ms
36 bytes from 23.185.0.2 time=9.803 ms
^C--- 23.185.0.2 ping statistics ---
round-trip min/avg/max 0.000/9.688/15.621 ms
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap>
```

## yahoo.co.jp

```
Terminal: Local x + v
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py yahoo.co.jp
Pinging 182.22.16.251 using Python:
36 bytes from 182.22.16.251 time=194.914 ms
36 bytes from 182.22.16.251 time=166.745 ms
36 bytes from 182.22.16.251 time=163.197 ms
36 bytes from 182.22.16.251 time=165.876 ms
^C--- 182.22.16.251 ping statistics ---
round-trip min/avg/max 163.197/172.683/194.914 ms
```

sweden.se

```
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py sweden.se
Pinging 104.26.0.74 using Python:
36 bytes from 104.26.0.74 time=47.255 ms
36 bytes from 104.26.0.74 time=287.472 ms
36 bytes from 104.26.0.74 time=7.494 ms
36 bytes from 104.26.0.74 time=10.036 ms
^C--- 104.26.0.74 ping statistics ---
round-trip min/avg/max 7.494/88.064/287.472 ms
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap>
```

english.customs.gov.cn

```
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap> python ping.py english.customs.gov.cn
Pinging 59.63.226.67 using Python:
36 bytes from 59.63.226.67 time=235.867 ms
36 bytes from 59.63.226.67 time=231.864 ms
36 bytes from 59.63.226.67 time=224.006 ms
36 bytes from 59.63.226.67 time=227.966 ms
^C--- 59.63.226.67 ping statistics ---
round-trip min/avg/max 224.006/229.926/235.867 ms
(venv) PS C:\Users\nashr\CSE 310\hw 3 arp pcap>
```

The local servers such as local host and stonybrook have a minimum RTT of 0 because the root servers for those websites are closer than the ones outside of the U.S. As shown above the non US website have a larger minimum RTT because the location of those root servers are far from here.

## Part A

Go to the terminal and type each of these individually. Press ctrl c to terminate them after 4 results are show to display the min max avg

# python ping.py 127.0.0.1

# python ping.py 8.8.8.8

# python ping.py google.com

# python ping.py cs.stonybrook.edu

# python ping.py yahoo.co.jp

# python ping.py sweden.se

# python ping.py english.customs.gov.cn

## Part B

You can press run for the program to work. You will have to have my files in the same folder for it read my pcap file.

It will display these outputs

```
analysis_pcap_arp <
C:\Users\masim\OneDrive\Documents\arp_pcap\venv\scripts\python.exe C:\Users\masim\OneDrive\Documents\arp_pcap\analysis_pcap_arp.py
ARP Request: Sender IP: 192.168.1.154, Sender MAC: e4:aa:ea:e5:a8:d5, Target IP: 192.168.1.1, Target MAC: 00:00:00:00:00:00
ARP Response: Sender IP: 192.168.1.1, Sender MAC: 4c:22:f3:53:38:4a, Target IP: 192.168.1.154, Target MAC: e4:aa:ea:e5:a8:d5

ARP Request: Sender IP: 0.0.0.0, Sender MAC: e4:aa:ea:e5:a8:d5, Target IP: 192.168.1.154, Target MAC: 00:00:00:00:00:00
ARP Response: Sender IP: 192.168.1.1, Sender MAC: 4c:22:f3:53:38:4a, Target IP: 192.168.1.154, Target MAC: e4:aa:ea:e5:a8:d5

ARP Request: Sender IP: 192.168.1.1, Sender MAC: 4c:22:f3:53:38:4a, Target IP: 192.168.1.154, Target MAC: ff:ff:ff:ff:ff:ff
ARP Response: Sender IP: 192.168.1.154, Sender MAC: e4:aa:ea:e5:a8:d5, Target IP: 192.168.1.1, Target MAC: 4c:22:f3:53:38:4a

ARP Request: Sender IP: 192.168.1.1, Sender MAC: 4c:22:f3:53:38:4a, Target IP: 192.168.1.154, Target MAC: 00:00:00:00:00:00
ARP Response: Sender IP: 192.168.1.154, Sender MAC: e4:aa:ea:e5:a8:d5, Target IP: 192.168.1.1, Target MAC: 4c:22:f3:53:38:4a
```

ii) I used dpkt to read the file, buff to read each of the byte values to check whether it is an ARP packet or not. I used functions of socket and binascii to convert the bytes to strings of the IP addresses and the MAC addresses. My IP address is the 192.168.154 and MAC address of my router. I created a method to format the MAC address with colons. I used Youtube to learn how to use Wireshark and more about ARP byte structure and the bytes of the IP address and MAC addresses

