

Programming Assignment 3, Part A

```
PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py 127.0.0.1
Pinging 127.0.0.1 using Python:
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.968 ms
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.000 ms
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.000 ms
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.000 ms
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.000 ms
36 bytes from 127.0.0.1: icmp_seq=1 ttl=128 time=0.000 ms
--- 127.0.0.1 ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max 0.000/0.161/0.968 ms
PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py stonybrook.edu
Pinging 172.30.32.25 using Python:
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=4.064 ms
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=2.948 ms
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=2.945 ms
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=3.805 ms
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=3.401 ms
36 bytes from 172.30.32.25: icmp_seq=1 ttl=58 time=4.144 ms
--- stonybrook.edu ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max 2.945/3.551/4.144 ms
```

```
PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py 202.12.27.33
```

```
Pinging 202.12.27.33 using Python:
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=76.965 ms
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=77.382 ms
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=76.925 ms
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=77.761 ms
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=77.938 ms
```

```
36 bytes from 202.12.27.33: icmp_seq=1 ttl=246 time=76.713 ms
```

```
--- 202.12.27.33 ping statistics ---
```

```
6 packets transmitted, 6 packets received, 0.0% packet loss
```

```
round-trip min/avg/max 76.713/77.281/77.938 ms
```

```
PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py 193.0.14.129
```

```
Pinging 193.0.14.129 using Python:
```

```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=93.319 ms
```

```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=91.787 ms
```

```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=95.608 ms
```

```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=92.255 ms
```

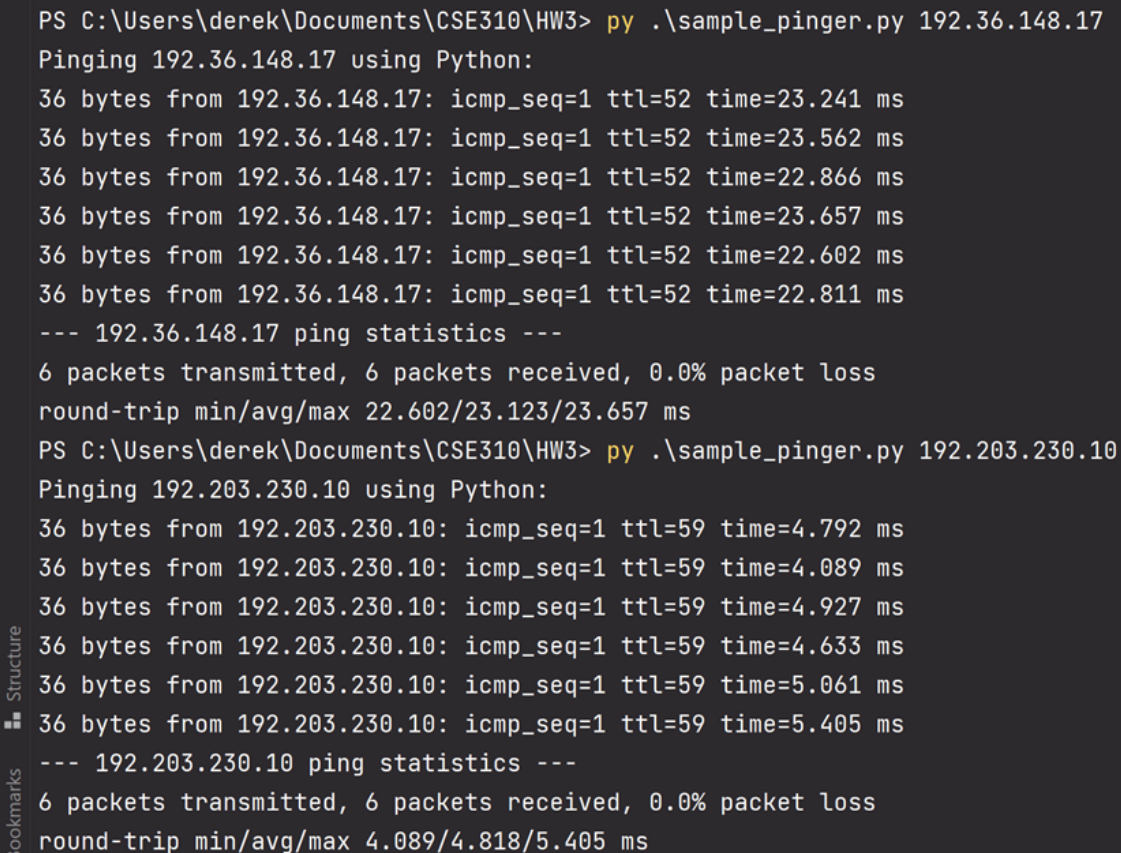
```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=90.971 ms
```

```
36 bytes from 193.0.14.129: icmp_seq=1 ttl=56 time=92.757 ms
```

```
--- 193.0.14.129 ping statistics ---
```

```
6 packets transmitted, 6 packets received, 0.0% packet loss
```

```
round-trip min/avg/max 90.971/92.783/95.608 ms
```



```

PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py 192.36.148.17
Pinging 192.36.148.17 using Python:
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=23.241 ms
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=23.562 ms
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=22.866 ms
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=23.657 ms
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=22.602 ms
36 bytes from 192.36.148.17: icmp_seq=1 ttl=52 time=22.811 ms
--- 192.36.148.17 ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max 22.602/23.123/23.657 ms
PS C:\Users\derek\Documents\CSE310\HW3> py .\sample_pinger.py 192.203.230.10
Pinging 192.203.230.10 using Python:
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=4.792 ms
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=4.089 ms
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=4.927 ms
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=4.633 ms
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=5.061 ms
36 bytes from 192.203.230.10: icmp_seq=1 ttl=59 time=5.405 ms
--- 192.203.230.10 ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max 4.089/4.818/5.405 ms

```

The international root servers used were:

m.root-servers.net	202.12.27.33, 2001:dc3::35	WIDE Project
k.root-servers.net	193.0.14.129, 2001:7fd::1	RIPE NCC
i.root-servers.net	192.36.148.17, 2001:7fe::53	Netnod
e.root-servers.net	192.203.230.10, 2001:500:a8::e	NASA (Ames Research Center)

The differences in minimum round trip time between servers are due to the location of the servers. Of course, pinging the local server 127.0.0.1 yields near-zero RTT, as shown in the screenshot above. Pinging stonybrook.edu takes a minimum of ~3ms, which is still pretty fast. However, as we ping root servers outside of the US, these round trip times become significantly longer. For example, when pinging the RIPE NCC root server, located in the Netherlands, the minimum RTT is >90ms.