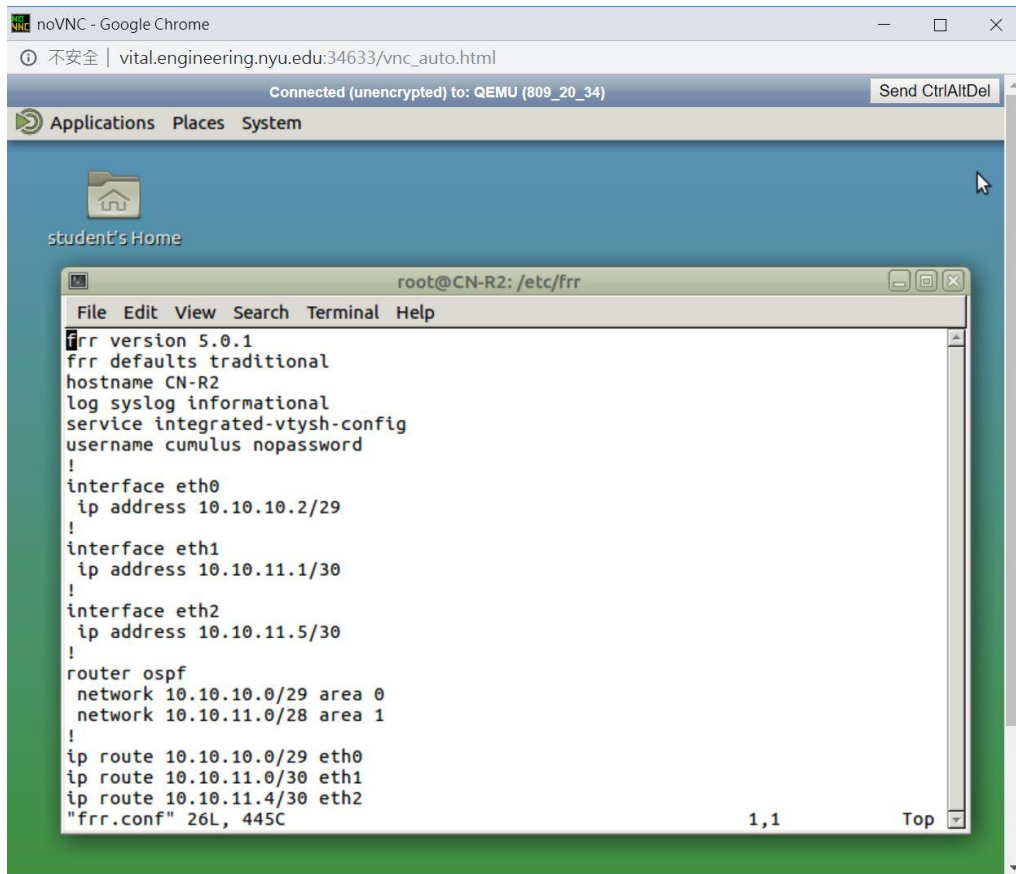
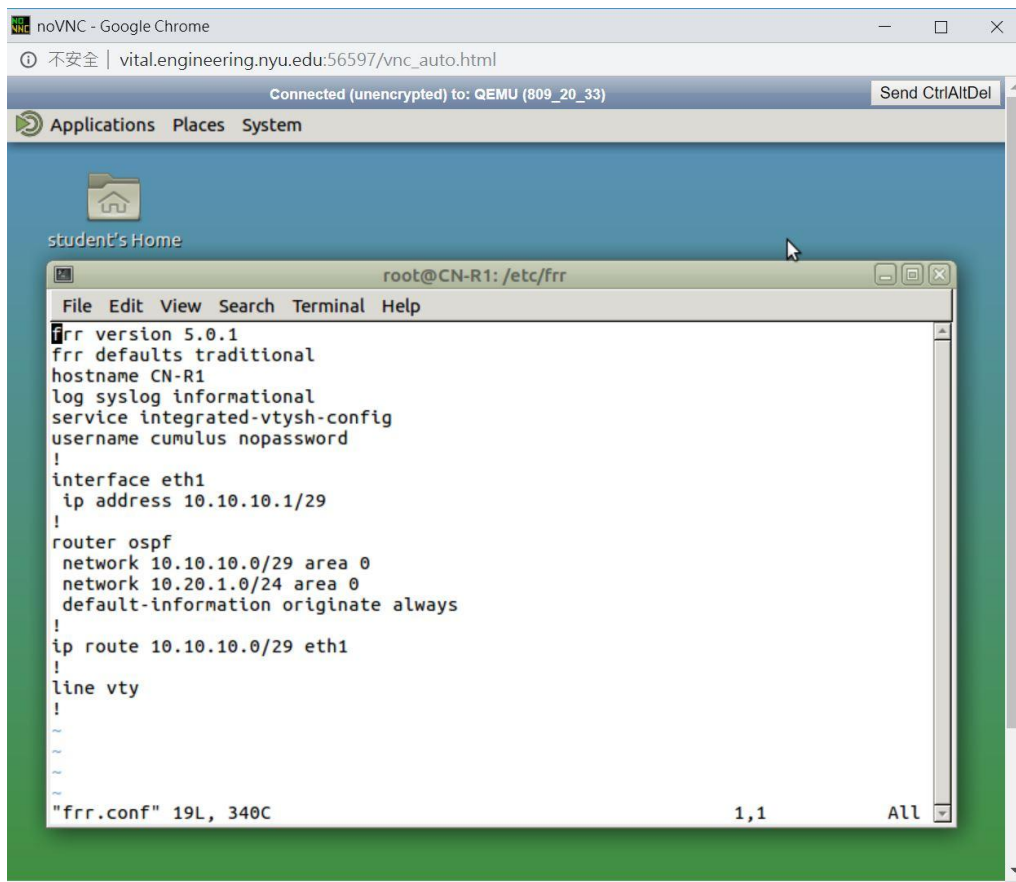
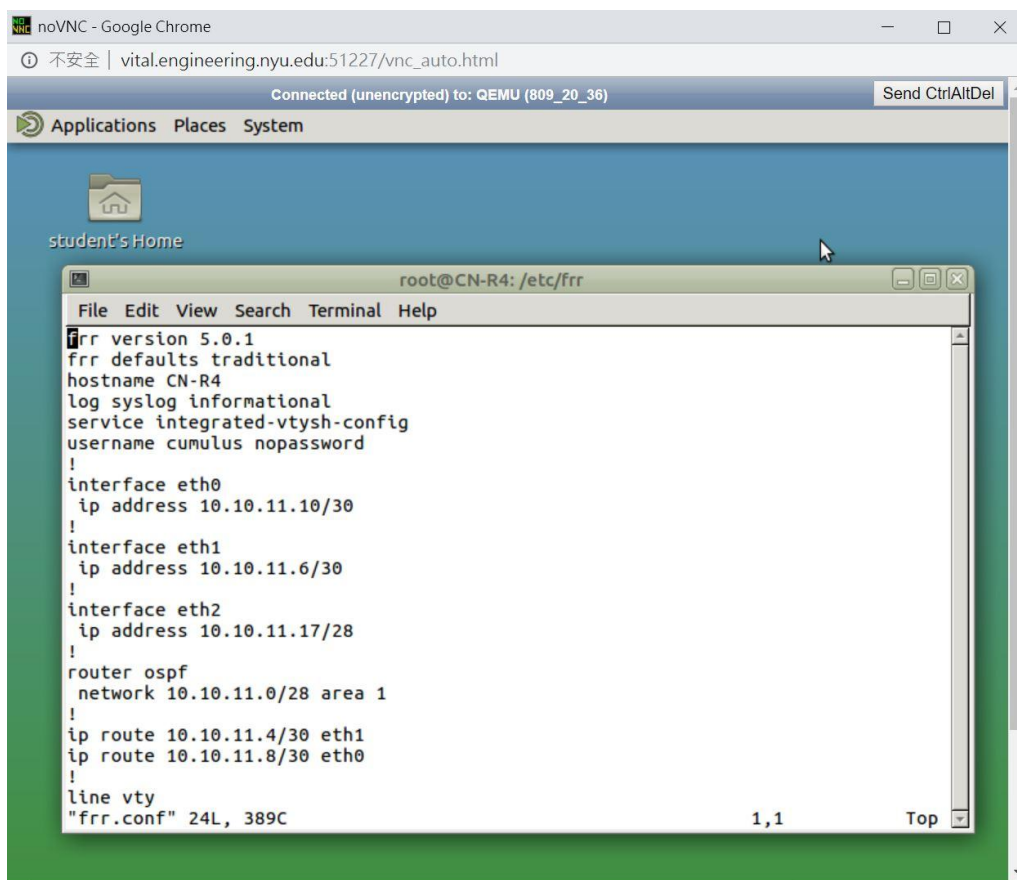
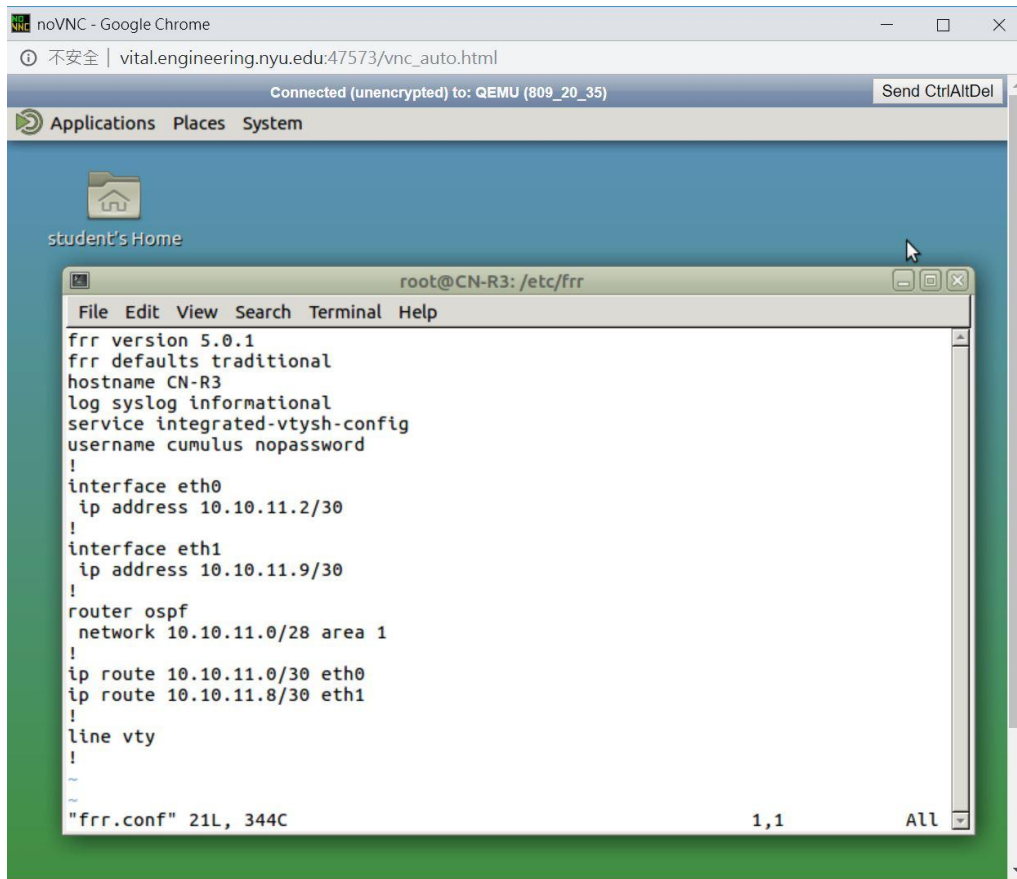
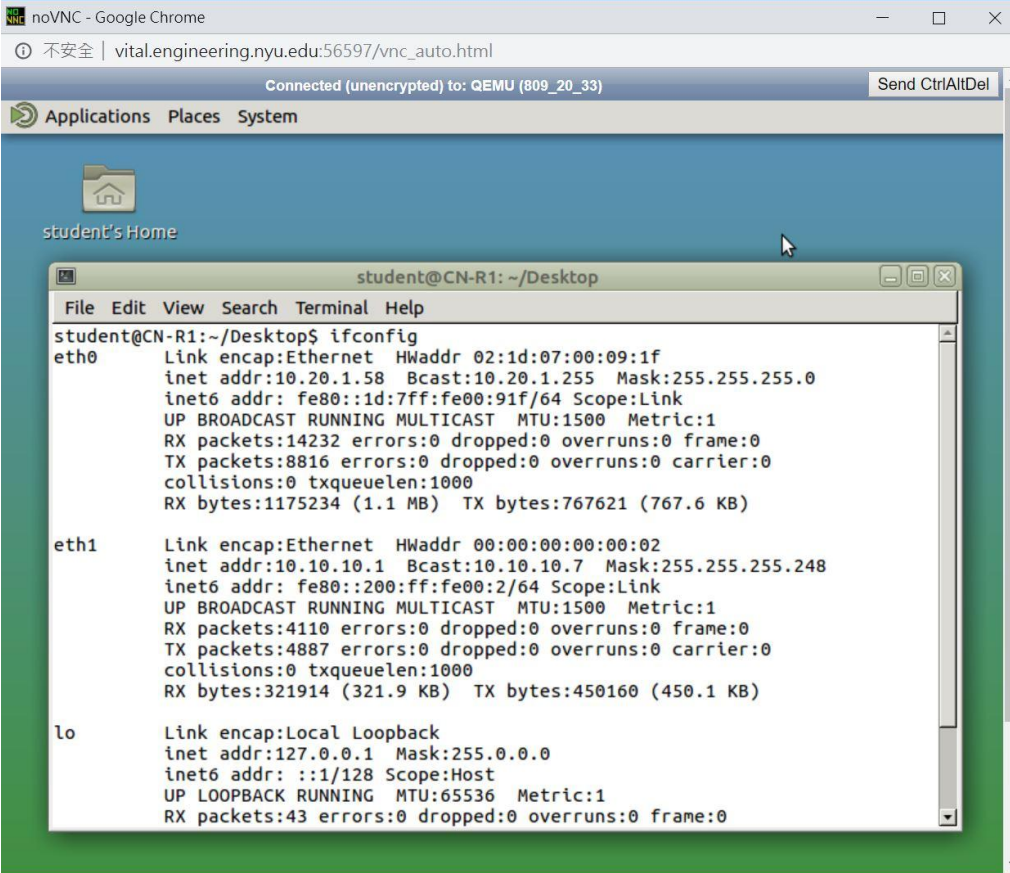


1. Screenshot configurations of R1, R2, R3, and R4.





2. ICMP results from R3 to R1, etc.

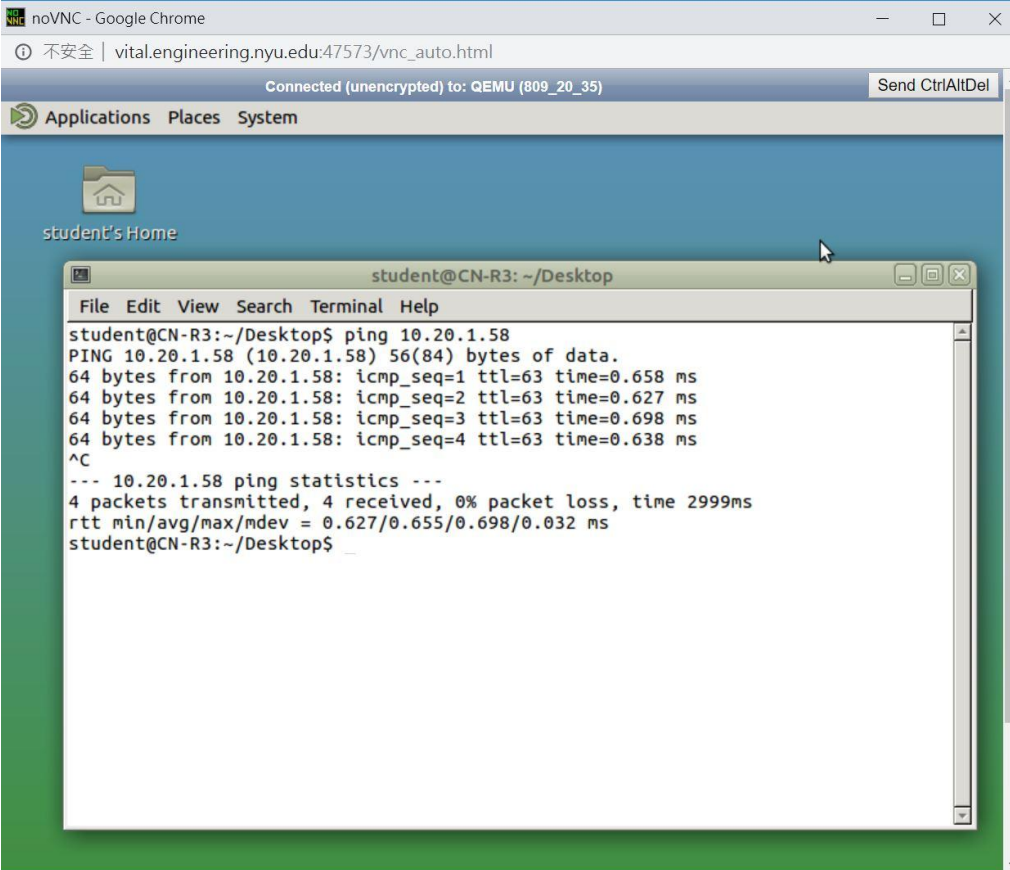


The screenshot shows a noVNC browser window with the address bar displaying 'vital.engineering.nyu.edu:56597/vnc_auto.html'. The browser interface includes a menu bar with 'Applications', 'Places', and 'System'. The desktop background is blue with a green border at the bottom. A terminal window titled 'student@CN-R1: ~/Desktop' is open, showing the output of the 'ifconfig' command. The output lists details for three network interfaces: eth0, eth1, and lo.

```
student@CN-R1:~/Desktop$ ifconfig
eth0      Link encap:Ethernet  HWaddr 02:1d:07:00:09:1f
          inet addr:10.20.1.58  Bcast:10.20.1.255  Mask:255.255.255.0
          inet6 addr: fe80::1d:7ff:fe00:91f/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:14232 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8816 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1175234 (1.1 MB)  TX bytes:767621 (767.6 KB)

eth1      Link encap:Ethernet  HWaddr 00:00:00:00:00:02
          inet addr:10.10.10.1  Bcast:10.10.10.7  Mask:255.255.255.248
          inet6 addr: fe80::200:ff:fe00:2/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:4110 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4887 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:321914 (321.9 KB)  TX bytes:450160 (450.1 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:43 errors:0 dropped:0 overruns:0 frame:0
```



The screenshot shows a noVNC browser window with the address bar displaying 'vital.engineering.nyu.edu:47573/vnc_auto.html'. The browser interface is similar to the first screenshot. The desktop background is blue with a green border at the bottom. A terminal window titled 'student@CN-R3: ~/Desktop' is open, showing the output of the 'ping' command. The output displays four successful ping attempts to 10.20.1.58, followed by a summary of the statistics.

```
student@CN-R3:~/Desktop$ ping 10.20.1.58
PING 10.20.1.58 (10.20.1.58) 56(84) bytes of data.
64 bytes from 10.20.1.58: icmp_seq=1 ttl=63 time=0.658 ms
64 bytes from 10.20.1.58: icmp_seq=2 ttl=63 time=0.627 ms
64 bytes from 10.20.1.58: icmp_seq=3 ttl=63 time=0.698 ms
64 bytes from 10.20.1.58: icmp_seq=4 ttl=63 time=0.638 ms
^C
--- 10.20.1.58 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 0.627/0.655/0.698/0.032 ms
student@CN-R3:~/Desktop$
```

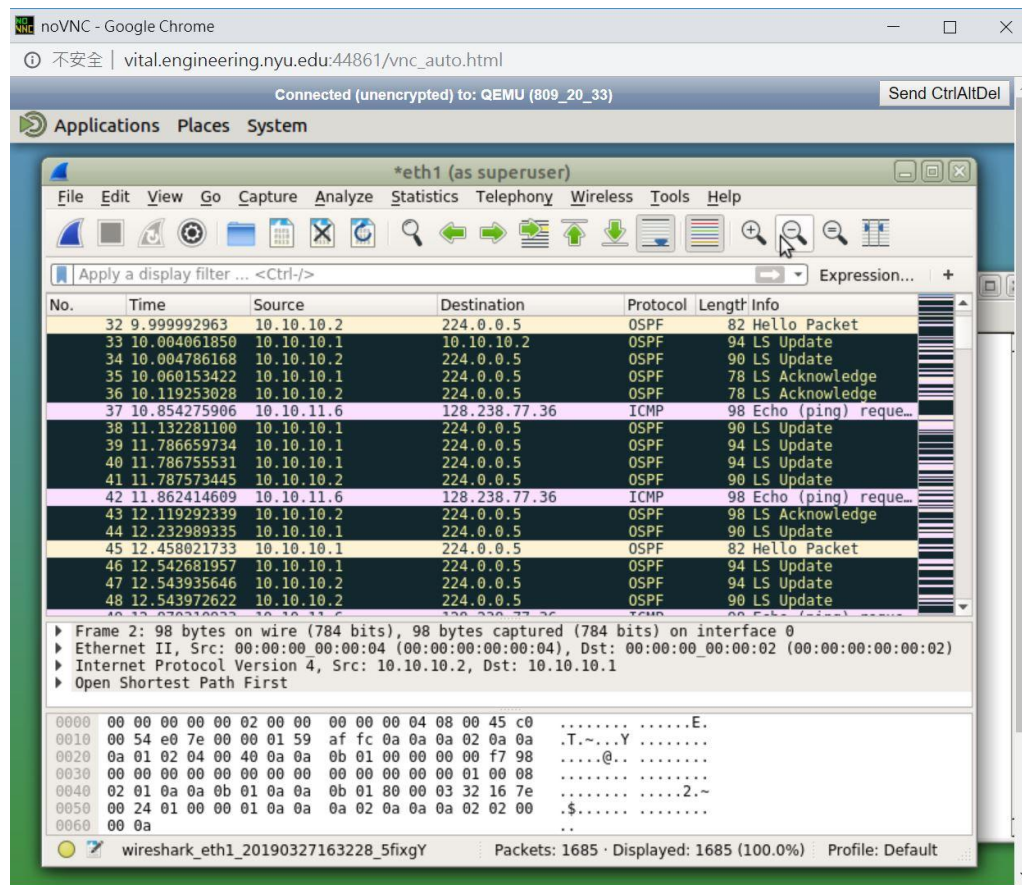
The screenshot shows a noVNC browser window with the address bar displaying `vital.engineering.nyu.edu:47573/vnc_auto.html`. The browser interface includes a top bar with "Applications", "Places", and "System" menus, and a status bar indicating "Connected (unencrypted) to: QEMU (809_20_35)". The main content area shows a desktop environment with a "student's Home" folder icon. A terminal window titled "student@CN-R3: ~/Desktop" is open, displaying the output of a `ping 10.10.10.1` command. The terminal output shows four successful ping requests with round-trip times ranging from 0.580 ms to 0.717 ms, followed by a summary of the statistics.

```
student@CN-R3:~/Desktop$ ping 10.10.10.1
PING 10.10.10.1 (10.10.10.1) 56(84) bytes of data.
64 bytes from 10.10.10.1: icmp_seq=1 ttl=63 time=0.596 ms
64 bytes from 10.10.10.1: icmp_seq=2 ttl=63 time=0.580 ms
64 bytes from 10.10.10.1: icmp_seq=3 ttl=63 time=0.674 ms
64 bytes from 10.10.10.1: icmp_seq=4 ttl=63 time=0.717 ms
^C
--- 10.10.10.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2997ms
rtt min/avg/max/mdev = 0.580/0.641/0.717/0.064 ms
student@CN-R3:~/Desktop$
```

Ping operates by sending ICMP echo request packets to the target host and waiting for an ICMP echo reply. The program reports errors, packet loss, and round-trip times.

3. Wireshark screenshots on R1.

Use sudo wireshark to open Wireshark in order to have permissions. Then choose the interface to see captured network data.



4. Screenshots depicting ping requests to 128.238.77.36 from R1, R2, R3, and R4

