Task1:

```
root@VM:/volumes# ./task1.1.py
SNIFFING PACKETS.........
Source IP: 10.9.0.5
Destination IP: 147.222.4.15
Protocol: 17


Source IP: 10.9.0.5
Destination IP: 147.222.4.15
Protocol: 17


Source IP: 147.222.4.15
Destination IP: 10.9.0.5
Protocol: 17


Source IP: 147.222.4.15
Destination IP: 10.9.0.5
Protocol: 17


Source IP: 10.9.0.5
Destination IP: 142.251.211.238
Protocol: 1


Source IP: 142.251.211.238
Destination IP: 10.9.0.5
Protocol: 1


Source IP: 10.9.0.5
```

Task2:

```
root@860aa6702ca1:/home/seed# cd ..
root@860aa6702ca1:/home# ls
seed
root@860aa6702ca1:/home# cd ..
root@860aa6702ca1:/# l
bash: l: command not found
root@860aa6702ca1:/# ls
bin    dev   home   lib32   libx32   mnt   pro
boot   etc   lib    lib64   media    opt   roo
root@860aa6702ca1:/# nc -lnuv 9090
Bound on 0.0.0.0 9090
Connection received on 1.2.3.4 8888
Hello UDP!
Hello UDP!
```

Task3:


```
root@VM:/volumes# ./task1.3.py 7
SENDING ICMP PACKET........
Begin emission:
Finished sending 1 packets.
.*
Received 2 packets, got 1 answers, remaining 0 packets
Router: 74.125.51.244
root@VM:/volumes# ./task1.3.py 8
SENDING ICMP PACKET........
Begin emission:
Finished sending 1 packets.
.*
Received 2 packets, got 1 answers, remaining 0 packets
Router: 142.251.70.103
root@VM:/volumes# ./task1.3.py 9
SENDING ICMP PACKET........
Begin emission:
Finished sending 1 packets.
.*
Received 2 packets, got 1 answers, remaining 0 packets
Router: 209.85.254.249
root@VM:/volumes# ./task1.3.py 10
SENDING ICMP PACKET........
Begin emission:
Finished sending 1 packets.
.*
Received 2 packets, got 1 answers, remaining 0 packets
Router: 8.8.8.8
root@VM:/volumes#
```


Attacker Machine (74F22C2C...) → First Router (74.125.51.144) → (142.251.70.103) → 209.85.254.249 → 8.8.8.8
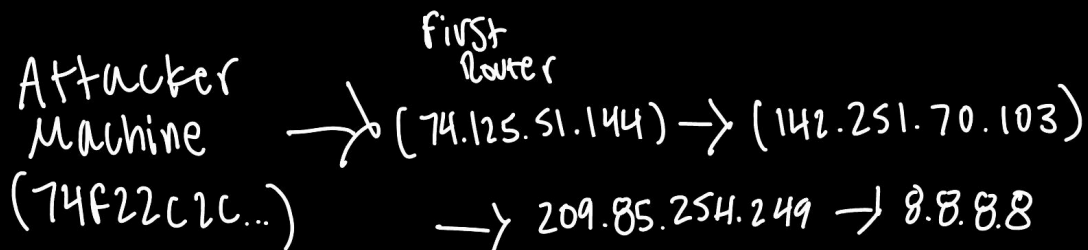
Final response comes from 8.8.8.8

— Network route taken for the ICMP Packets sent in the experiment.

Task4:


```
[01/30/25]seed@VM:~/.../Labsetup$ set-title Victim_Youssef
[01/30/25]seed@VM:~/.../Labsetup$ docksh 74
root@74f22c2cafa4:/# ping 1.1.1.1
PING 1.1.1.1 (1.1.1.1) 56(84) bytes of data.
64 bytes from 1.1.1.1: icmp_seq=1 ttl=55 time=8.37 ms
64 bytes from 1.1.1.1: icmp_seq=2 ttl=55 time=9.24 ms
64 bytes from 1.1.1.1: icmp_seq=3 ttl=55 time=9.11 ms
64 bytes from 1.1.1.1: icmp_seq=4 ttl=55 time=8.92 ms
64 bytes from 1.1.1.1: icmp_seq=5 ttl=55 time=9.15 ms
64 bytes from 1.1.1.1: icmp_seq=6 ttl=55 time=9.27 ms
64 bytes from 1.1.1.1: icmp_seq=7 ttl=55 time=8.71 ms
64 bytes from 1.1.1.1: icmp_seq=8 ttl=55 time=9.62 ms
64 bytes from 1.1.1.1: icmp_seq=9 ttl=55 time=9.49 ms
64 bytes from 1.1.1.1: icmp_seq=10 ttl=55 time=9.99 ms
64 bytes from 1.1.1.1: icmp_seq=11 ttl=55 time=9.68 ms
64 bytes from 1.1.1.1: icmp_seq=12 ttl=55 time=9.20 ms
64 bytes from 1.1.1.1: icmp_seq=13 ttl=55 time=9.29 ms
64 bytes from 1.1.1.1: icmp_seq=14 ttl=55 time=9.13 ms
64 bytes from 1.1.1.1: icmp_seq=15 ttl=55 time=9.33 ms
64 bytes from 1.1.1.1: icmp_seq=16 ttl=55 time=9.77 ms
64 bytes from 1.1.1.1: icmp_seq=17 ttl=55 time=9.08 ms
```

The duplicate responses in the ping output are likely caused by network issues, not my program. Possible reasons include routing loops, misconfigured network devices, or ICMP packet duplication. This can happen if a router forwards the request multiple times, a firewall mistakenly duplicates responses, or if the system is running in a virtualized environment with network bridge artifacts. My program may filter out duplicates, but they still appear at the network layer.

```
root@74f22c2cafa4:/# ping 1.2.3.4
PING 1.2.3.4 (1.2.3.4) 56(84) bytes of data.
^C
--- 1.2.3.4 ping statistics ---
71 packets transmitted, 0 received, 100% packet loss, time 71661ms
```

There is only one response in Experiment 2 because all packets were lost, meaning no replies were received from the destination (1.2.3.4). This could be due to the target being unreachable, a firewall blocking ICMP requests, or a network misconfiguration. Since no responses came from the destination, the single response shown is likely from the local system reporting the statistics of the failed ping attempts.

```
33 packets transmitted, 33 received, 0% packet loss, time 32347ms
rtt min/avg/max/mdev = 8.735/9.363/15.058/1.035 ms
root@74f22c2cafa4:/# ping 1.2.3.4
PING 1.2.3.4 (1.2.3.4) 56(84) bytes of data.
^C
--- 1.2.3.4 ping statistics ---
71 packets transmitted, 0 received, 100% packet loss, time 71661ms

root@74f22c2cafa4:/# ping 10.9.0.88
PING 10.9.0.88 (10.9.0.88) 56(84) bytes of data.
From 10.9.0.5 icmp_seq=1 Destination Host Unreachable
From 10.9.0.5 icmp_seq=2 Destination Host Unreachable
From 10.9.0.5 icmp_seq=3 Destination Host Unreachable
From 10.9.0.5 icmp_seq=4 Destination Host Unreachable
From 10.9.0.5 icmp_seq=5 Destination Host Unreachable
From 10.9.0.5 icmp_seq=6 Destination Host Unreachable
From 10.9.0.5 icmp_seq=7 Destination Host Unreachable
From 10.9.0.5 icmp_seq=8 Destination Host Unreachable
From 10.9.0.5 icmp_seq=9 Destination Host Unreachable
From 10.9.0.5 icmp_seq=10 Destination Host Unreachable
From 10.9.0.5 icmp_seq=11 Destination Host Unreachable
From 10.9.0.5 icmp_seq=12 Destination Host Unreachable
^C
--- 10.9.0.88 ping statistics ---
13 packets transmitted, 0 received, +12 errors, 100% packet loss, time 12295ms
pipe 4
root@74f22c2cafa4:/#
```

The "Destination Host Unreachable" message appears because the network cannot route packets to the target (10.9.0.88). Possible reasons include the host being down, network misconfigurations, missing routing entries, or a firewall blocking traffic. The response is generated either by an intermediate device (such as a router) or the local system, indicating that no valid path to the destination exists.