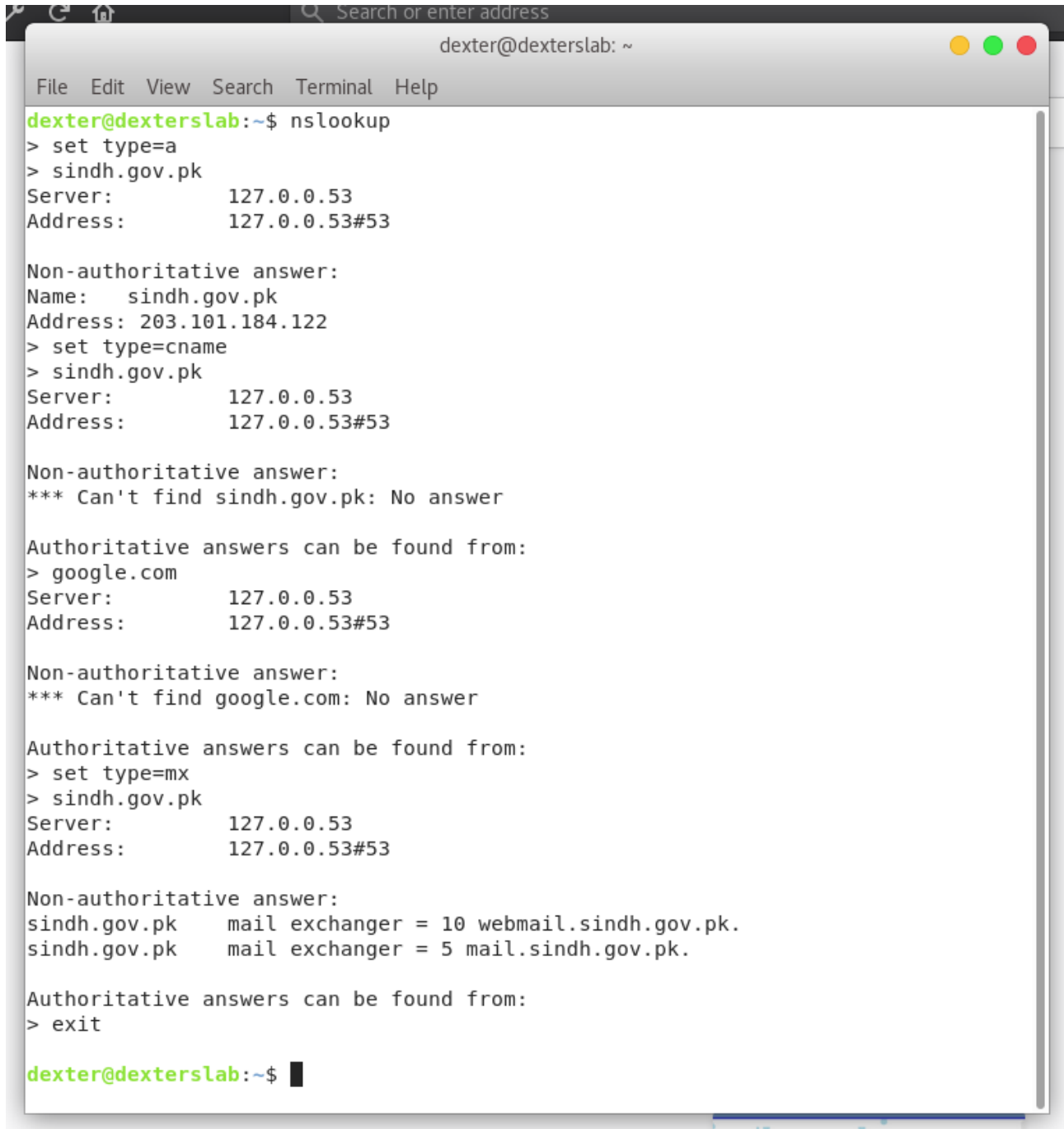


ASSIGNMENT – 4

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1. Exploring “nslookup” command

A screenshot of a terminal window titled "dexter@dexterslab: ~". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal shows the following commands and output:

```
dexter@dexterslab:~$ nslookup
> set type=a
> sindh.gov.pk
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   sindh.gov.pk
Address: 203.101.184.122
> set type=cname
> sindh.gov.pk
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
*** Can't find sindh.gov.pk: No answer

Authoritative answers can be found from:
> google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
*** Can't find google.com: No answer

Authoritative answers can be found from:
> set type=mx
> sindh.gov.pk
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
sindh.gov.pk  mail exchanger = 10 webmail.sindh.gov.pk.
sindh.gov.pk  mail exchanger = 5 mail.sindh.gov.pk.

Authoritative answers can be found from:
> exit

dexter@dexterslab:~$
```

2. Filtering ICMP packets in WireShark

*wlp3s0

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

icmipv6

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	::	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
5	0.204557087	::	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
7	0.307975909	::	ff02::1:ff21:1a6b	ICMPv6	78	Neighbor Solicitation for fe80::9ed3:5bff:fe21:1a6b
9	0.409235881	::	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
45	1.743759012	fe80::2ee6:ccff:fe0...	ff02::2	ICMPv6	70	Router Solicitation from 2c:e6:cc:02:6d:b0
59	1.843190983	fe80::c4cc:d0db:dea...	ff02::1:ffcc:d7ff	ICMPv6	86	Neighbor Solicitation for fe80::9b6:2fe6:66cc:d7ff from 2...
88	2.565061020	fe80::c4cc:d0db:dea...	ff02::1:ffcc:d7ff	ICMPv6	86	Neighbor Solicitation for fe80::9b6:2fe6:66cc:d7ff from 2...
92	2.567315329	::	ff02::1:ffed:ecc4	ICMPv6	78	Neighbor Solicitation for fe80::989a:a123:58ed:ecc4
93	2.567329400	fe80::989a:a123:58e...	ff02::2	ICMPv6	70	Router Solicitation from 44:6d:57:ef:b6:94
97	2.765123298	fe80::8e0c:90ff:fe2...	ff02::2	ICMPv6	70	Router Solicitation from 8c:0c:90:23:93:f3
127	4.640412283	fe80::9ed3:5bff:fe2...	ff02::2	ICMPv6	70	Router Solicitation from 9c:d3:5b:21:1a:6b
141	5.327532244	fe80::9ed3:5bff:fe2...	ff02::2	ICMPv6	70	Router Solicitation from 9c:d3:5b:21:1a:6b
157	5.734956994	fe80::2ee6:ccff:fe0...	ff02::2	ICMPv6	70	Router Solicitation from 2c:e6:cc:02:6d:b0
161	6.855555000	fe80::c4cc:d0db:dea...	ff02::1	ICMPv6	70	Router Solicitation from 44:6d:57:ef:b6:94

▶ Frame 127: 70 bytes on wire (560 bits), 70 bytes captured (560 bits) on interface 0

▼ Ethernet II, Src: SamsungE_21:1a:6b (9c:d3:5b:21:1a:6b), Dst: IPv6mcast_02 (33:33:00:00:00:02)

- ▶ Destination: IPv6mcast_02 (33:33:00:00:00:02)
- ▶ Source: SamsungE_21:1a:6b (9c:d3:5b:21:1a:6b)
- Type: IPv6 (0x86dd)

▶ Internet Protocol Version 6, Src: fe80::9ed3:5bff:fe21:1a6b, Dst: ff02::2

▼ Internet Control Message Protocol v6

- Type: Router Solicitation (133)
- Code: 0
- Checksum: 0x566e [correct]
- [Checksum Status: Good]
- Reserved: 00000000
- ▶ ICMPv6 Option (Source link-layer address : 9c:d3:5b:21:1a:6b)

```
0000 33 33 00 00 00 02 9c d3 5b 21 1a 6b 86 dd 60 00 33..... [!.k..`
0010 00 00 00 10 3a ff fe 80 00 00 00 00 00 00 9e d3 .....
0020 5b ff fe 21 1a 6b ff 02 00 00 00 00 00 00 00 00 [...!.k..
0030 00 00 00 00 00 02 85 00 56 6e 00 00 00 00 01 01 ..... Vn.....
0040 9c d3 5b 21 1a 6b ..[!.k
```

3. Exploring Traceroute / Tracert command

```
dexter@dexterslab:~$ sudo traceroute -d tourism.gov.pk
[sudo] password for dexter:
traceroute to tourism.gov.pk (203.101.184.122), 30 hops max, 60 byte packets
 1 192.168.100.253 (192.168.100.253) 5.322 ms 4.641 ms 4.612 ms
 2 10.10.20.1 (10.10.20.1) 4.566 ms 4.544 ms 4.531 ms
 3 14.139.111.177 (14.139.111.177) 6.574 ms static.ill.117.239.184.217\04724
 4 static.ill.117.239.184.209\04724.bsnl.in (117.239.184.209) 6.503 ms 10.15
 5 10.255.232.197 (10.255.232.197) 9.636 ms 172.24.200.166 (172.24.200.166)
 6 218.248.235.197 (218.248.235.197) 12.090 ms 9.636 ms 10.152.7.38 (10.152
 7 * 115.113.165.61.static-mumbai.vsnl.net.in (115.113.165.61) 8.616 ms 218.
 8 * 115.113.165.93.static-mumbai.vsnl.net.in (115.113.165.93) 24.926 ms 11
 9 ix-ae-4-2.tcore1.CXR-Chennai.as6453.net (180.87.36.9) 36.463 ms 172.17.16
10 ix-ae-4-2.tcore1.CXR-Chennai.as6453.net (180.87.36.9) 37.883 ms if-ae-3-3
11 if-ae-6-2.tcore2.SVW-Singapore.as6453.net (180.87.37.14) 102.294 ms if-ae
12 if-ae-32-2.tcore2.HK2-Hong-Kong.as6453.net (180.87.15.81) 106.847 ms * if
13 if-ae-16-2.tcore2.HK2-Hong-Kong.as6453.net (116.0.93.141) 107.276 ms 116.
14 116.0.93.194 (116.0.93.194) 105.722 ms a72-52-2-178.deploy.static.akamait
15 a72-52-2-181.deploy.static.akamaitechnologies.com (72.52.2.181) 102.620 m
2.2.181) 103.030 ms
16 a72-52-2-181.deploy.static.akamaitechnologies.com (72.52.2.181) 105.842 m
17 93.191.173.91 (93.191.173.91) 262.283 ms * 265.152 ms
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
25 * * *
26 * * *
27 * * *
28 * * *
29 * * *
30 * * *

dexter@dexterslab:~$ traceroute sindh.gov.pk
traceroute to sindh.gov.pk (203.101.184.122), 30 hops max, 60 byte packets
 1 192.168.100.253 (192.168.100.253) 6.772 ms 6.478 ms 6.346 ms
 2 10.10.20.1 (10.10.20.1) 6.177 ms 5.528 ms 5.508 ms
 3 14.139.111.177 (14.139.111.177) 5.516 ms static.ill.117.239.184.217\04
 4 static.ill.117.239.184.209\04724.bsnl.in (117.239.184.209) 8.864 ms 10
 5 10.255.232.197 (10.255.232.197) 10.810 ms 172.24.200.166 (172.24.200.1
 6 10.152.7.38 (10.152.7.38) 17.936 ms 23.205 ms 218.248.235.197 (218.24
 7 115.113.165.61.static-mumbai.vsnl.net.in (115.113.165.61) 20.109 ms *
 8 115.113.165.93.static-mumbai.vsnl.net.in (115.113.165.93) 7.718 ms *
 9 ix-ae-4-2.tcore1.CXR-Chennai.as6453.net (180.87.36.9) 39.033 ms 37.3
10 if-ae-3-3.tcore2.CXR-Chennai.as6453.net (180.87.36.6) 107.003 ms ix-ae
11 if-ae-3-3.tcore2.CXR-Chennai.as6453.net (180.87.36.6) 106.596 ms * if
12 if-ae-10-2.tcore2.SVW-Singapore.as6453.net (180.87.37.65) 105.458 ms :
ms
13 116.0.93.194 (116.0.93.194) 107.058 ms if-ae-32-2.tcore2.HK2-Hong-Kon
14 116.0.93.194 (116.0.93.194) 105.699 ms a72-52-2-186.deploy.static.akar
15 a72-52-2-178.deploy.static.akamaitechnologies.com (72.52.2.178) 104.11
.2.186) 105.939 ms
16 * a72-52-2-189.deploy.static.akamaitechnologies.com (72.52.2.189) 105
17 93.191.173.91 (93.191.173.91) 260.776 ms * 259.913 ms
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
25 * * *
26 * * *
27 * * *
28 * * *
29 * * *
30 * * *

dexter@dexterslab:~$ traceroute s
```