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Network Laboratory

Programming Assignment-3

Commands

A. ifconfig

1. ifconfig -a

Aim: To display all the interfaces available, even if they are down

```
emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ ifconfig -a
enp4s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
        ether b4:45:06:8d:e2:26 txqueuelen 1000 (Ethernet)
          RX packets 0 bytes 0 (0.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 0 bytes 0 (0.0 B)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
      inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
          RX packets 6737 bytes 756676 (756.6 KB)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 6737 bytes 756676 (756.6 KB)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp0s20f3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.9.249 netmask 255.255.240.0 broadcast 10.0.15.255
      inet6 fe80::672c:f0e1:4bbc:f70 prefixlen 64 scopeid 0x20<link>
        ether f0:b6:1e:37:00:f0 txqueuelen 1000 (Ethernet)
          RX packets 218177 bytes 265379206 (265.3 MB)
          RX errors 0 dropped 449 overruns 0 frame 0
          TX packets 49205 bytes 9731208 (9.7 MB)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Conclusion: Listed three interfaces i.e. Ethernet, Wireless Ethernet and Loopback.

2. ifconfig <interface>

Aim: To display all the interfaces available, on selected specific interface.

```
emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ ifconfig enp4s0
enp4s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
        ether b4:45:06:8d:e2:26 txqueuelen 1000 (Ethernet)
          RX packets 0 bytes 0 (0.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 0 bytes 0 (0.0 B)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Conclusion: Listed information regarding enp4s0 interfaces i.e. Ethernet.

3. ifconfig -v

Aim: To display all the interfaces available, while running the command in verbose mode

```
emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ ifconfig -v
enp4s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether b4:45:06:8d:e2:26 txqueuelen 1000  (Ethernet)
      RX packets 0 bytes 0 (0.0 B)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 0 bytes 0 (0.0 B)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
      inet6 ::1 prefixlen 128 scopeid 0x10<host>
      loop txqueuelen 1000 (Local Loopback)
      RX packets 11819 bytes 1356114 (1.3 MB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 11819 bytes 1356114 (1.3 MB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp0s20f3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 10.0.9.249 netmask 255.255.240.0 broadcast 10.0.15.255
      inet6 fe80::672c:f0e1:4bbc:f70 prefixlen 64 scopeid 0x20<link>
      ether f0:b6:1e:37:00:f0 txqueuelen 1000  (Ethernet)
      RX packets 263955 bytes 291159996 (291.1 MB)
      RX errors 0 dropped 680 overruns 0 frame 0
      TX packets 77184 bytes 15890521 (15.8 MB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Conclusion: Listed three interfaces i.e. Ethernet, Wireless Ethernet and Loopback.

4. ifconfig -s

Aim: To display all the interfaces available, in short.

```
emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ ifconfig -s
Iface      MTU     RX-OK RX-ERR RX-DRP RX-OVR      TX-OK TX-ERR TX-DRP TX-OVR Flg
enp4s0    1500        0     0     0 0        0     0     0     0 BMU
lo       65536   11896     0     0 0        11896     0     0     0 LRU
wlp0s20f 1500  265046     0    694 0        77771     0     0     0 BMRU
```

Conclusion: Listed list of three interfaces i.e. Ethernet, Wireless Ethernet and Loopback in short.

5. ifconfig --help

Aim: To display help related to ifconfig command.

```

emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ ifconfig --help
Usage:
ifconfig [-a] [-v] [-s] <interface> [[<AF>] <address>
[add <address>[/<prefixlen>]]
[del <address>[/<prefixlen>]]
[[-]broadcast [<address>] [[-]pointtopoint [<address>]]
[netmask <address>] [dstaddr <address>] [tunnel <address>]
[outfill <NN>] [keepalive <NN>]
[hw <HW> <address>] [mtu <NN>]
[[-]trailers] [[-]arp] [[-]allmulti]
[multicast] [[-]promisc]
[mem_start <NN>] [io_addr <NN>] [irq <NN>] [media <type>]
[txqueuelen <NN>]
[[-]dynamic]
[up|down] ...

<HW>=Hardware Type.
List of possible hardware types:
loop (Local Loopback) slip (Serial Line IP) cslip (VJ Serial Line IP)
slip6 (6-bit Serial Line IP) cslip6 (VJ 6-bit Serial Line IP) adaptive (Adaptive Serial Line IP)
ash (Ash) ether (Ethernet) ax25 (AMPR AX.25)
netrom (AMPR NET/ROM) rose (AMPR ROSE) tunnel (IPIP Tunnel)
ppp (Point-to-Point Protocol) hdlc ((Cisco)-HDLC) lapb (LAPB)
arcnet (ARCnet) dlci (Frame Relay DLCI) frad (Frame Relay Access Device)
sit (IPv6-in-IPv4) fddi (Fiber Distributed Data Interface) hippi (HIPPI)
irda (IrLAP) ec (Econet) x25 (generic X.25)
eui64 (Generic EUI-64)

<AF>=Address family. Default: inet
List of possible address families:
unix (UNIX Domain) inet (DARPA Internet) inet6 (IPv6)
ax25 (AMPR AX.25) netrom (AMPR NET/ROM) rose (AMPR ROSE)
ipx (Novell IPX) ddp (Appletalk DDP) ec (Econet)
ash (Ash) x25 (CCITT X.25)

```

Conclusion: Displayed help related to ifconfig command.

6. curl ifconfig.me

Aim: To display the public IP address of your computer.

```

/ Too much is just enough. \
|                                |
\-- Mark Twain, on whiskey /
-----
      \  ^__^
       \  (oo)\_____
         (__)\       )\/\
            ||----w |
            ||     ||

emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ curl ifconfig.me
122.252.228.30emperor-kautilya@pop-os:~/nETLab/nET_Prog/Lab-3$ 

```

Conclusion: Displayed the public IP address of my computer.

B. Ping

1. ping -c

Aim: Command is used to check the network connectivity with defined number of packets between host and server/host.

```
< Many pages make a thick book. >
-----
 \ ^__^
  \  (oo)\_____
    (__)\ )\/\
     ||----w |
     ||     |

emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -c 10 iiitt.ac.in
PING iiitt.ac.in (122.252.228.28) 56(84) bytes of data.
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63 time=1.19 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63 time=3.28 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63 time=2.83 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63 time=3.61 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63 time=1.62 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=6 ttl=63 time=58.5 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=7 ttl=63 time=3.25 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=8 ttl=63 time=2.44 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=9 ttl=63 time=1.24 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=10 ttl=63 time=3.24 ms

--- iiitt.ac.in ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9013ms
rtt min/avg/max/mdev = 1.191/8.122/58.521/16.820 ms
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ 
```

Conclusion: 10 packets transmitted, 10 packets received hence the network is working good.

2. ping -w

Aim: Command is used to check the network connectivity between host and server/host for a specified time interval.

```
/ Your lucky number is 3552664958674928. \
\ Watch for it everywhere. /

-----
 \ ^__^
  \  (oo)\_____
    (__)\ )\/\
     ||----w |
     ||     |

emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -w 5 iiitt.ac.in
PING iiitt.ac.in (122.252.228.28) 56(84) bytes of data.
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63 time=1.07 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63 time=14.6 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63 time=3.32 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63 time=2.35 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63 time=3.28 ms

--- iiitt.ac.in ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 1.073/4.920/14.577/4.897 ms
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ 
```

Conclusion: 5 packets transmitted, 5 packets received in 5 seconds as specified in command hence the network is working good.

3. ping -s

Aim: Command is used to check the network connectivity between host and specified domain by setting a size of the buffer packets.

```
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -s 1 iiitt.ac.in
PING iiitt.ac.in (122.252.228.28) 1(29) bytes of data.
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=6 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=7 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=8 ttl=63
9 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=9 ttl=63
```

Conclusion: Packets transmitted, and packets received of size 1 byte as specified in command hence the network is working good.

4. ping -t

Aim: Command is used to check the network connectivity between host and specified domain by setting maximum hop a packet can travel before getting discarded.

```
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ source ~/.bashrc
/ Q: Why did the chicken cross the road? \
\ A: He was giving it last rites. /
-----
      \   ^__^
       \  (oo)\_____
          (__)\       )\/\
            ||----w |
            ||     ||

emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -t 1 10.0.12.217
PING 10.0.12.217 (10.0.12.217) 56(84) bytes of data.
64 bytes from 10.0.12.217: icmp_seq=1 ttl=64 time=819 ms
64 bytes from 10.0.12.217: icmp_seq=2 ttl=64 time=363 ms
64 bytes from 10.0.12.217: icmp_seq=3 ttl=64 time=307 ms
64 bytes from 10.0.12.217: icmp_seq=4 ttl=64 time=280 ms
64 bytes from 10.0.12.217: icmp_seq=5 ttl=64 time=230 ms
64 bytes from 10.0.12.217: icmp_seq=6 ttl=64 time=241 ms
^C
--- 10.0.12.217 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 229.883/373.458/819.291/204.172 ms
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -t 0 10.0.12.217
ping: cannot set unicast time-to-live: Invalid argument
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$
```

Conclusion: Packets transmitted, and packets received to an IP address of a friends machine who sitting next to me and since we were connected to same Access point hence 1 Hop was enough. A value 0 restricted packet to same host.

5. ping -i

Aim: Command is used to check the network connectivity between host and specified domain by setting ping wait to send next packet which by default is 1 sec using -i flag.

```
/ Man is the only animal that blushes -- \
| or needs to.
|
\ -- Mark Twain
-----
 \ ^ ^
  \ (oo)\_____
   (_)\ )\/\
    ||----w |
    ||   ||
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -i 3 iiitt.ac.in
PING iiitt.ac.in (122.252.228.28) 56(84) bytes of data.
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63 time=1.80 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63 time=4.21 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63 time=3.02 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63 time=3.82 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63 time=3.26 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=6 ttl=63 time=3.08 ms
^C
--- iiitt.ac.in ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 15019ms
rtt min/avg/max/mdev = 1.803/3.198/4.207/0.752 ms
```

Conclusion: Packets transmitted, and packets received to an IP address with a wait of 3 second between them which you can see by looking at total time taken for communication (3 sec wait X 5 wait interval = approx. 15019ms).

6. ping -W

Aim: Command is used to check the network connectivity between host and specified domain by setting time to wait for a response.

```
/ Clothes make the man. Naked people have \
| little or no influence on society. |
|
\-- Mark Twain
-----
\ ^ ^
 \ (oo)\_____
 (_)\ )\ )\/\
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -W 3 iiitt.ac.in
PING iiitt.ac.in (122.252.228.28) 56(84) bytes of data.
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63 time=3.38 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63 time=7.47 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63 time=2.68 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63 time=2.59 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63 time=1.20 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=6 ttl=63 time=3.02 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=7 ttl=63 time=3.22 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=8 ttl=63 time=3.35 ms
^C
--- iiitt.ac.in ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7011ms
rtt min/avg/max/mdev = 1.199/3.363/7.470/1.686 ms
```

Conclusion: Packets transmitted, and packets received to college domain without crossing wait time limit.

7. ping -p

Aim: Command is used to check the network connectivity between host and specified domain by setting data in packet using -p option.

```
/ Your love life will be happy and \
\ harmonious.
-----
\ ^ ^
 \ (oo)\_____
 (_)\ )\ )\/\
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ ping -p ff iiitt.ac.in
PATTERN: 0xff
PING iiitt.ac.in (122.252.228.28) 56(84) bytes of data.
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=1 ttl=63 time=50.6 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=2 ttl=63 time=22.4 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=3 ttl=63 time=12.3 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=4 ttl=63 time=22.1 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=5 ttl=63 time=41.9 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=6 ttl=63 time=36.5 ms
64 bytes from ws28-228-252-122.rcil.gov.in (122.252.228.28): icmp_seq=7 ttl=63 time=32.5 ms
^C
--- iiitt.ac.in ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6008ms
rtt min/avg/max/mdev = 12.260/31.175/50.593/12.188 ms
emperor-kautilya@pop-os:~/nETLab/nET Prog/Lab-3$ 
```

Conclusion: Packets transmitted, and packets received to college domain with custom data.

C. nslookup

1. nslookup

Aim: Command is used to display the IP address of the domain.

```
/ The better part of valor is discretion. \
| \
\ -- William Shakespeare, "Henry IV" /
-----
 \ ^ ^
 \ (oo)\_____
 (__) \____ )\/\\
    ||----w |
    ||     ||
emperor-kautilya@pop-os:~$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.182.46
Name:   google.com
Address: 2404:6800:4007:822::200e
```

Conclusion: Display the IPv4 and IPv6 address of the domain google.com .

2. nslookup -type=soa

Aim: Command is used to display the authoritative information about the domain

```
/ Let me take you a button-hole lower. \
| \
| -- William Shakespeare, "Love's
\ Labour's Lost"
-----
 \ ^ ^
 \ (oo)\_-
 (--) \ )\/
    ||----w |
    ||     ||
emperor-kautilya@pop-os:~$ nslookup -type=soa google.com
Server:      127.0.0.53
Address:      127.0.0.53#53

Non-authoritative answer:
google.com
    origin = ns1.google.com
    mail addr = dns-admin.google.com
    serial = 508324892
    refresh = 900
    retry = 900
    expire = 1800
    minimum = 60

Authoritative answers can be found from:
```

Conclusion: Display the authoritative information of the domain google.com

3. nslookup -type=port

Aim: Command is used to display the port number of the domain.

```
/-----\  
| If you pick up a starving dog and make \  
| him prosperous, he will not bite you. |  
| This is the principal difference |  
| between a dog and a man. |  
|  
| -- Mark Twain, "Pudd'nhead Wilson's |  
| Calendar" |  
|-----\  
 \  ^__^  
  \  (oo)\----  
   (__)\       )\/\  
     ||----w |  
     ||     ||  
emperor-kautilya@pop-os:~$ nslookup -type=port google.com  
unknown query type: port  
Server:          127.0.0.53  
Address:         127.0.0.53#53  
  
Non-authoritative answer:  
Name:  google.com  
Address: 142.250.195.46  
Name:  google.com  
Address: 2404:6800:4007:822::200e
```

Conclusion: Display the IPv4 and IPv6 address and port of the domain google.com

4. nslookup -type=mx

Aim: Command is used to display the mail exchange server of the domain.

```
/ Grief can take care of itself; but to \
| get the full value of a joy you must |
| have somebody to divide it with. |
|
\ -- Mark Twain
-----
 \ ^ ^
 (oo)\_____
 (__) \ )\/\
    ||----w |
    ||   ||
emperor-kautilya@pop-os:~$ nslookup -type=mx gmail.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
gmail.com      mail exchanger = 40 alt4.gmail-smtp-in.l.google.com.
gmail.com      mail exchanger = 5 gmail-smtp-in.l.google.com.
gmail.com      mail exchanger = 20 alt2.gmail-smtp-in.l.google.com.
gmail.com      mail exchanger = 10 alt1.gmail-smtp-in.l.google.com.
gmail.com      mail exchanger = 30 alt3.gmail-smtp-in.l.google.com.

Authoritative answers can be found from:
```

Conclusion: Display the mail exchange server of the domain gmail.com

5. nslookup -type=ns

Aim: Command shows the name servers which are associated with the given domain.

```
/ There's small choice in rotten apples. \
| -- William Shakespeare, "The Taming of |
\ the Shrew"                                /  
-----  
 \ ^ ^  
  \ (oo)\-----  
   (__)\       )\/\  
     ||----w |  
     ||     ||  
emperor-kautilya@pop-os:~$ nslookup -type=ns gmail.com  
Server:      127.0.0.53  
Address:    127.0.0.53#53  
  
Non-authoritative answer:  
gmail.com      nameserver = ns3.google.com.  
gmail.com      nameserver = ns2.google.com.  
gmail.com      nameserver = ns4.google.com.  
gmail.com      nameserver = ns1.google.com.  
  
Authoritative answers can be found from:  
emperor-kautilya@pop-os:~$ 
```

Conclusion: Display the name servers which are associated with the given domain gmail.com

6. nslookup -type=a

Aim: Command shows the available DNS records for a given domain.

```
/ Habit is habit, and not to be flung out \
| of the window by any man, but coaxed   |
| down-stairs a step at a time.          |
|
| -- Mark Twain, "Pudd'nhead Wilson's   |
\ Calendar                                |

\   ^ ^
 \ (oo)\-----
  (_)\----- )\/
    ||----w |
    ||     ||
emperor-kautilya@pop-os:~$ nslookup -type=a gmail.com
Server:      127.0.0.53
Address:      127.0.0.53#53

Non-authoritative answer:
Name:  gmail.com
Address: 142.250.195.229

emperor-kautilya@pop-os:~$ █
```

Conclusion: Display the available DNS records for the given domain gmail.com

7. nslookup -type=txt

Aim: Command view all records configured for a given domain.

```
/ There's small choice in rotten apples. \
|                                |
| -- William Shakespeare, "The Taming of      |
\ the Shrew"                                /  
-----  
 \  ^  ^  
  \ (oo)\-----  
   (--)\\        )\/\  
     ||----w |  
     ||    ||  
emperor-kautilya@pop-os:~$ nslookup -type=ns gmail.com  
Server:      127.0.0.53  
Address:      127.0.0.53#53  
  
Non-authoritative answer:  
gmail.com      nameserver = ns3.google.com.  
gmail.com      nameserver = ns2.google.com.  
gmail.com      nameserver = ns4.google.com.  
gmail.com      nameserver = ns1.google.com.  
  
Authoritative answers can be found from:  
emperor-kautilya@pop-os:~$ 
```

Conclusion: Display the all records configured for a given domain gmail.com

8. nslookup

Aim: Command does reverse DNS-lookup by providing the IP address

```
< You enjoy the company of other people. >
-----
 \ ^ ^
 \ (oo)\-----
 (__) \|/\ \
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~$ nslookup 8.8.8.8
8.8.8.8.in-addr.arpa      name = dns.google.

Authoritative answers can be found from:

emperor-kautilya@pop-os:~$ █
```

Conclusion: Display the name servers which are associated with the given IP 8.8.8.8