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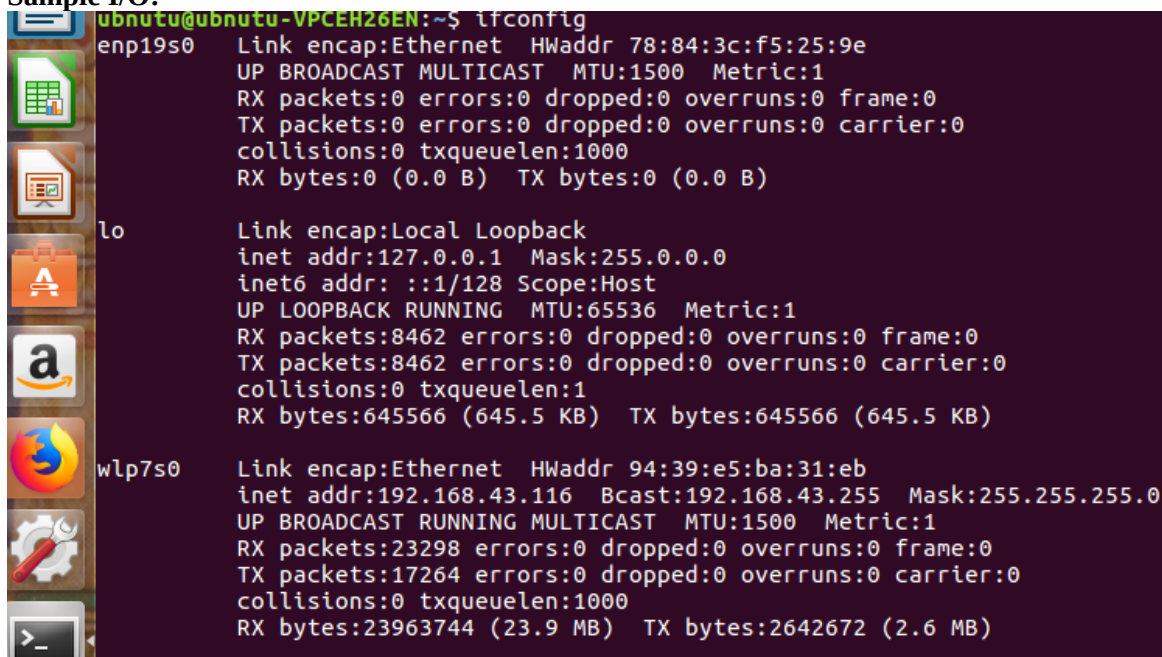CS S4
Roll No : 59
Date : 21/02/2019

AIM
   Set up the complete network interface by configuring services such as gateway, DNS, IP tables etc. using ifconfig

NETWORK CONFIGURATION & IFCONFIG:

Command 1 :
Purpose:View All Network Setting
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0   Link encap:Ethernet   HWaddr 78:84:3c:f5:25:9e
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:8462 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8462 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:645566 (645.5 KB)  TX bytes:645566 (645.5 KB)

wlp7s0    Link encap:Ethernet   HWaddr 94:39:e5:ba:31:eb
          inet addr:192.168.43.116  Bcast:192.168.43.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23298 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17264 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23963744 (23.9 MB)  TX bytes:2642672 (2.6 MB)
```
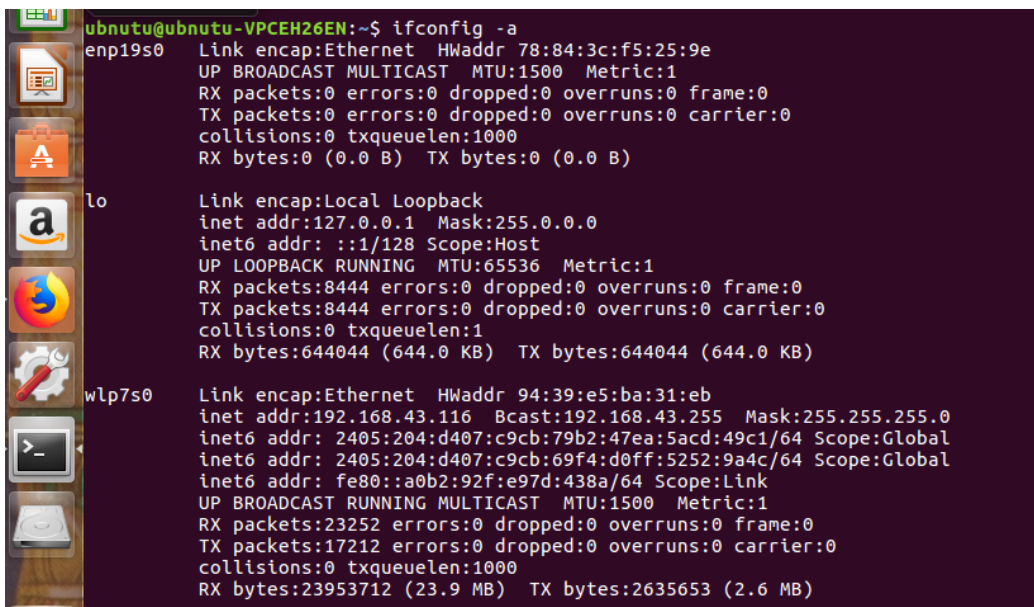
Command 2 :
Purpose:Display Information of All Network Interfaces
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig -a
enp19s0   Link encap:Ethernet   HWaddr 78:84:3c:f5:25:9e
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:8444 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8444 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:644044 (644.0 KB)  TX bytes:644044 (644.0 KB)

wlp7s0    Link encap:Ethernet   HWaddr 94:39:e5:ba:31:eb
          inet addr:192.168.43.116  Bcast:192.168.43.255  Mask:255.255.255.0
          inet6 addr: 2405:204:d407:c9cb:79b2:47ea:5acd:49c1/64 Scope:Global
          inet6 addr: 2405:204:d407:c9cb:69f4:d0ff:5252:9a4c/64 Scope:Global
          inet6 addr: fe80::a0b2:92f:e97d:438a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23252 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17212 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23953712 (23.9 MB)  TX bytes:2635653 (2.6 MB)
```

Command 3 :
Purpose:View Network Settings of Specific Interface
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig wlp7s0
wlp7s0    Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
          inet addr:192.168.43.116  Bcast:192.168.43.255  Mask:255.255.255.0
          inet6 addr: 2405:204:d407:c9cb:79b2:47ea:5acd:49c1/64 Scope:Global
          inet6 addr: 2405:204:d407:c9cb:69f4:d0ff:5252:9a4c/64 Scope:Global
          inet6 addr: fe80::a0b2:92f:e97d:438a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23271 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17235 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23955448 (23.9 MB)  TX bytes:2638296 (2.6 MB)
```

Command 4 :
Purpose:How to Enable an Network Interface
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo ifconfig wlp7s0 up
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0   Link encap:Ethernet  HWaddr 78:84:3c:f5:25:9e
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:8462 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8462 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:645566 (645.5 KB)  TX bytes:645566 (645.5 KB)

wlp7s0    Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
          inet addr:192.168.43.116  Bcast:192.168.43.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23298 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17264 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23963744 (23.9 MB)  TX bytes:2642672 (2.6 MB)
```

Command 5 :
Purpose:How to Disable an Network Interface
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo ifconfig wlp7s0 down
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0   Link encap:Ethernet  HWaddr 78:84:3c:f5:25:9e
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:8462 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8462 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:645566 (645.5 KB)  TX bytes:645566 (645.5 KB)
```

Command 6 :
Purpose:How to Assign a IP, Netmask and Broadcast to Network Interface
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo ifconfig wlp7s0 192.168.99.6 netmask 255.255.255.255 broadcast 172.16.25.79
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0    Link encap:Ethernet  HWaddr 78:84:3c:f5:25:9e
           UP BROADCAST MULTICAST  MTU:1500  Metric:1
           RX packets:0 errors:0 dropped:0 overruns:0 frame:0
           TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:13970 errors:0 dropped:0 overruns:0 frame:0
           TX packets:13970 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1
           RX bytes:1109977 (1.1 MB)  TX bytes:1109977 (1.1 MB)

wlp7s0     Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
           inet addr:192.168.99.6  Bcast:172.16.25.79  Mask:255.255.255.255
           inet6 addr: 2405:204:d407:c9cb:69f4:d0ff:5252:9a4c/64 Scope:Global
           inet6 addr: 2405:204:d407:c9cb:549d:6210:7281:9309/64 Scope:Global
           inet6 addr: fe80::a0b2:92f:e97d:438a/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1280  Metric:1
           RX packets:44105 errors:0 dropped:0 overruns:0 frame:0
           TX packets:37868 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:35933228 (35.9 MB)  TX bytes:6068718 (6.0 MB)
```

Command 7 :
Purpose:How to Add New Alias to Network Interface
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo ifconfig wlp7s0:0 172.16.25.100
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0    Link encap:Ethernet  HWaddr 78:84:3c:f5:25:9e
           UP BROADCAST MULTICAST  MTU:1500  Metric:1
           RX packets:0 errors:0 dropped:0 overruns:0 frame:0
           TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:10361 errors:0 dropped:0 overruns:0 frame:0
           TX packets:10361 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1
           RX bytes:801195 (801.1 KB)  TX bytes:801195 (801.1 KB)

wlp7s0     Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
           inet addr:192.168.99.6  Bcast:172.16.25.79  Mask:255.255.255.255
           UP BROADCAST RUNNING MULTICAST  MTU:900  Metric:1
           RX packets:26278 errors:0 dropped:0 overruns:0 frame:0
           TX packets:20585 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:25589179 (25.5 MB)  TX bytes:3175027 (3.1 MB)

wlp7s0:0   Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
           inet addr:172.16.25.100  Bcast:172.16.255.255  Mask:255.255.0.0
           UP BROADCAST RUNNING MULTICAST  MTU:900  Metric:1
```
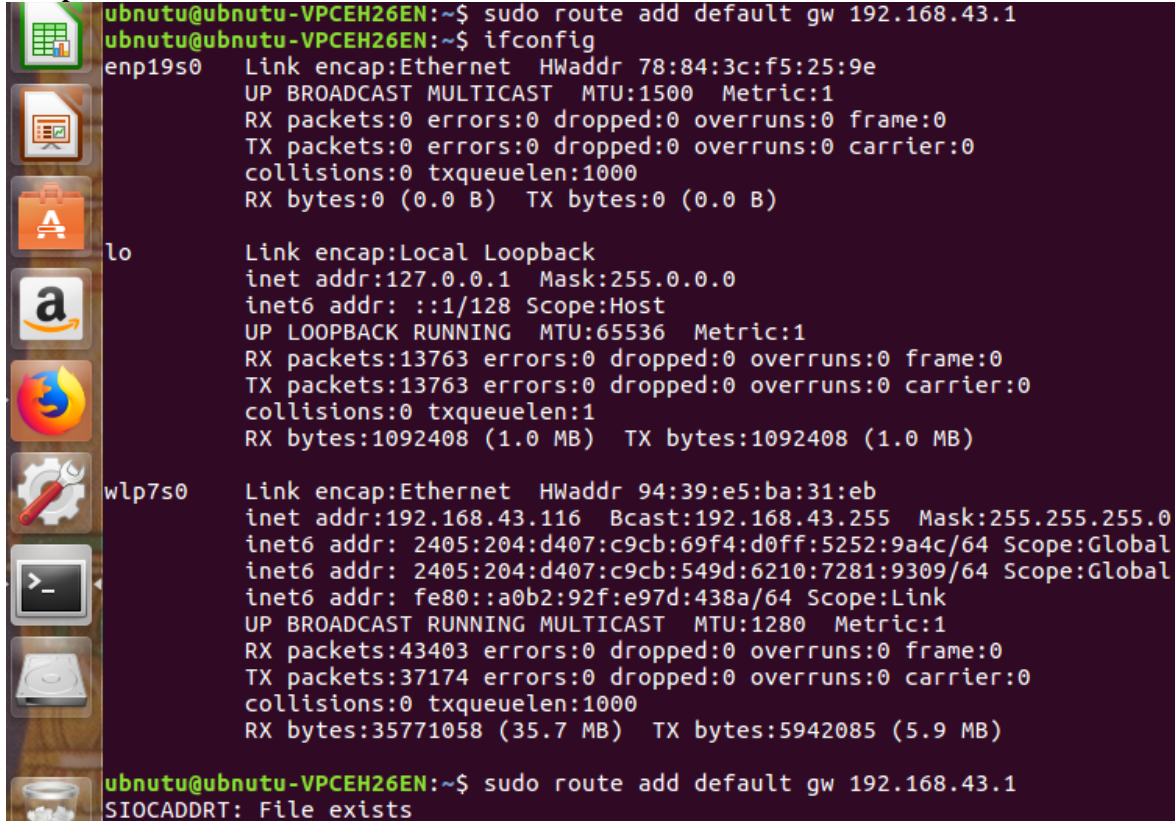
GATEWAY CONFIGURATION :

Command 8 :
Purpose:To setup and show gateway configuration
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo route add default gw 192.168.43.1
ubnutu@ubnutu-VPCEH26EN:~$ ifconfig
enp19s0    Link encap:Ethernet  HWaddr 78:84:3c:f5:25:9e
           UP BROADCAST MULTICAST  MTU:1500  Metric:1
           RX packets:0 errors:0 dropped:0 overruns:0 frame:0
           TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

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:13763 errors:0 dropped:0 overruns:0 frame:0
           TX packets:13763 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1
           RX bytes:1092408 (1.0 MB)  TX bytes:1092408 (1.0 MB)

wlp7s0     Link encap:Ethernet  HWaddr 94:39:e5:ba:31:eb
           inet addr:192.168.43.116  Bcast:192.168.43.255  Mask:255.255.255.0
           inet6 addr: 2405:204:d407:c9cb:69f4:d0ff:5252:9a4c/64 Scope:Global
           inet6 addr: 2405:204:d407:c9cb:549d:6210:7281:9309/64 Scope:Global
           inet6 addr: fe80::a0b2:92f:e97d:438a/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1280  Metric:1
           RX packets:43403 errors:0 dropped:0 overruns:0 frame:0
           TX packets:37174 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:35771058 (35.7 MB)  TX bytes:5942085 (5.9 MB)

ubnutu@ubnutu-VPCEH26EN:~$ sudo route add default gw 192.168.43.1
SIOCADDRT: File exists
```
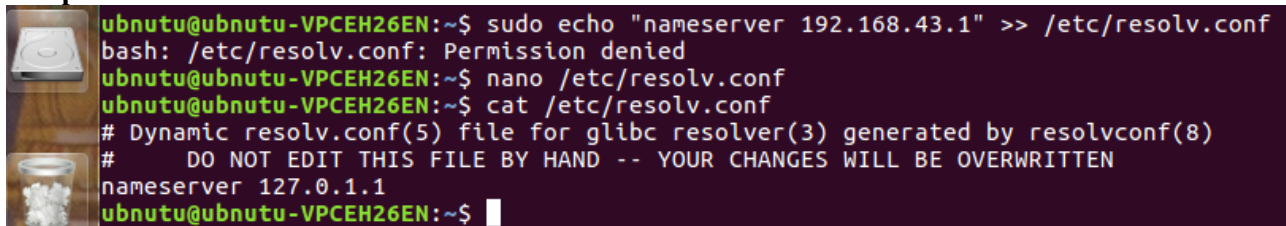
DNS CONFIGURATION :

Command 9 :
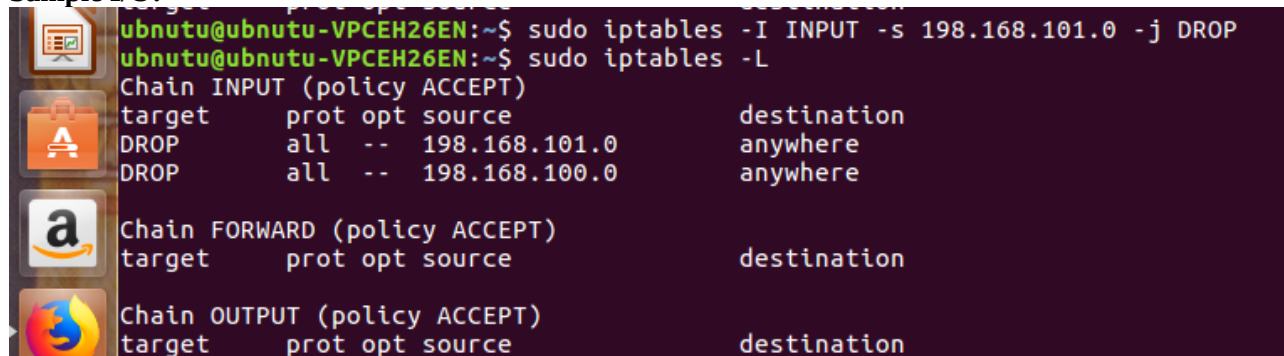**Purpose:To configure DNS**
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo echo "nameserver 192.168.43.1" >> /etc/resolv.conf
bash: /etc/resolv.conf: Permission denied
ubnutu@ubnutu-VPCEH26EN:~$ nano /etc/resolv.conf
ubnutu@ubnutu-VPCEH26EN:~$ cat /etc/resolv.conf
# Dynamic resolv.conf(5) file for glibc resolver(3) generated by resolvconf(8)
#     DO NOT EDIT THIS FILE BY HAND -- YOUR CHANGES WILL BE OVERWRITTEN
nameserver 127.0.1.1
ubnutu@ubnutu-VPCEH26EN:~$
```

IP TABLES :

Command 10 :
Purpose:To create & show iptables
Sample I/O:


```
ubnutu@ubnutu-VPCEH26EN:~$ sudo iptables -I INPUT -s 198.168.101.0 -j DROP
ubnutu@ubnutu-VPCEH26EN:~$ sudo iptables -L
Chain INPUT (policy ACCEPT)
target     prot opt source               destination
DROP       all  --  198.168.101.0        anywhere
DROP       all  --  198.168.100.0        anywhere

Chain FORWARD (policy ACCEPT)
target     prot opt source               destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination
```
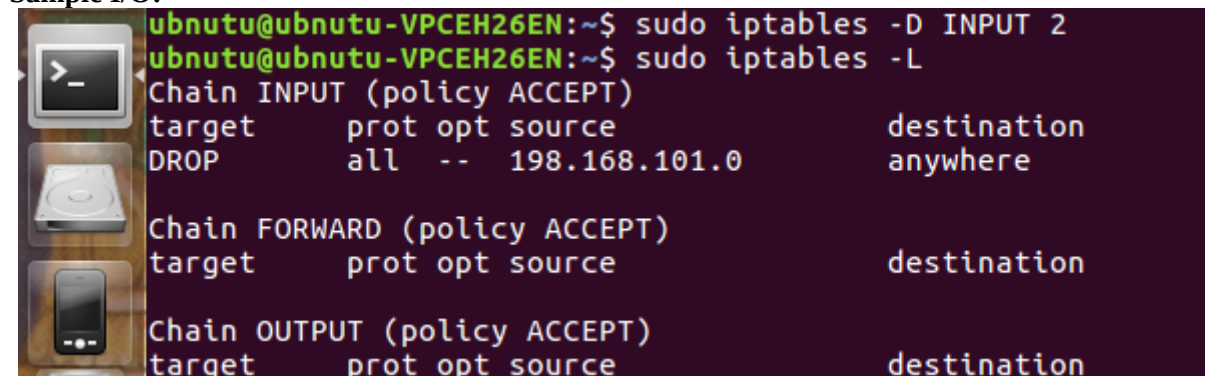
Command 11 :
Purpose:To delete & show iptables
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo iptables -D INPUT 2
ubnutu@ubnutu-VPCEH26EN:~$ sudo iptables -L
Chain INPUT (policy ACCEPT)
target     prot opt source               destination
DROP       all  --  198.168.101.0        anywhere

Chain FORWARD (policy ACCEPT)
target     prot opt source               destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination
```
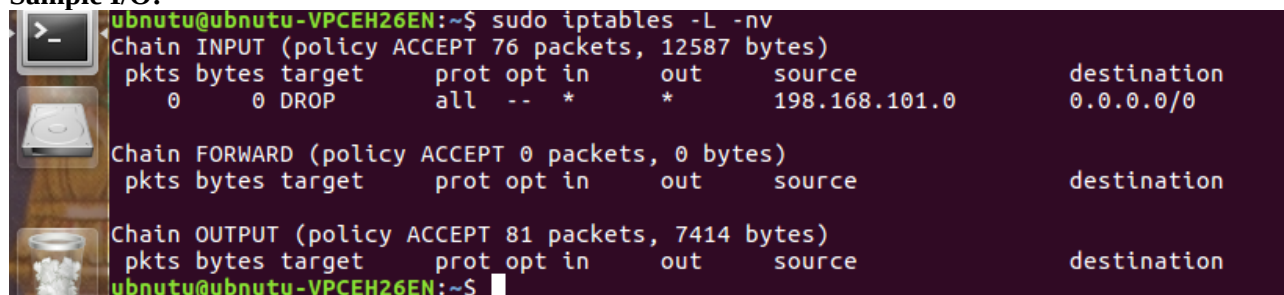
Command 12 :
Purpose:To list iptable
Sample I/O:

```
ubnutu@ubnutu-VPCEH26EN:~$ sudo iptables -L -nv
Chain INPUT (policy ACCEPT 76 packets, 12587 bytes)
 pkts bytes target     prot opt in     out     source               destination
    0     0 DROP       all  --  *      *       198.168.101.0        0.0.0.0/0

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
 pkts bytes target     prot opt in     out     source               destination

Chain OUTPUT (policy ACCEPT 81 packets, 7414 bytes)
 pkts bytes target     prot opt in     out     source               destination
ubnutu@ubnutu-VPCEH26EN:~$
```

Conclusion :

Setting up the complete network interface by configuring services such as gateway, DNS, IP tables etc. using ifconfig is done and results obtained using Ubuntu 16.04.