

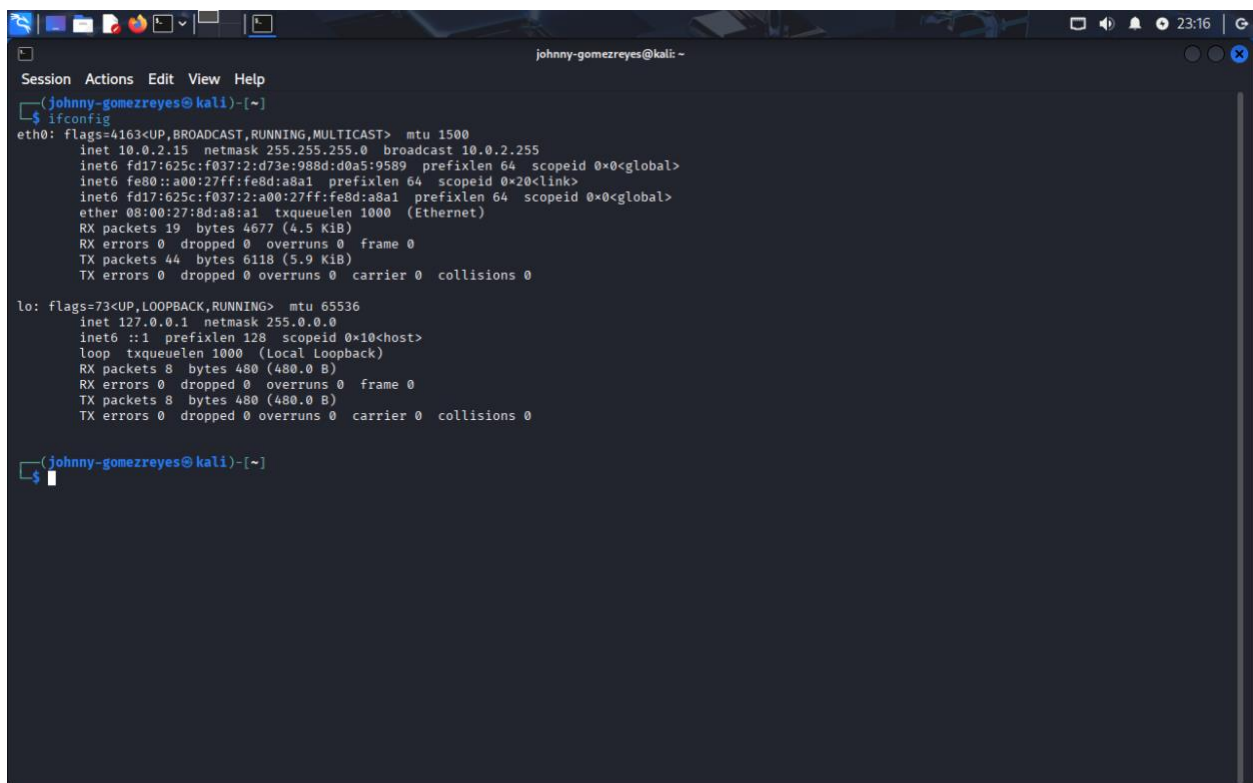
Johnny Gomez-Reyes

CYSE 270: Linux System for Cybersecurity

Assignment: Lab 11: Basic Networking Configuration

Task A:

Step 1



```
johnny-gomezreyes@kali: ~  
Session Actions Edit View Help  
(johnny-gomezreyes@kali)~  
$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255  
    inet6 fd17:625c:f037:2:d73e:988d:d0a5:9589 prefixlen 64 scopeid 0<*0<global>  
    inet6 fe80::a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<*20<link>  
    inet6 fd17:625c:f037:2:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<*0<global>  
    ether 08:00:27:8d:a8:a1 txqueuelen 1000 (Ethernet)  
    RX packets 19 bytes 4677 (4.5 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 44 bytes 6118 (5.9 KiB)  
    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 0<10<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 8 bytes 480 (480.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 8 bytes 480 (480.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
(johnny-gomezreyes@kali)~  
$
```

Could not get my highlight feature to work but it is the top portion and mid-section portion.

Step 2

```
johnny-gomezreyes@kali: ~  
Session Actions Edit View Help  
(johnny-gomezreyes@kali)-[~]  
└─$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255  
    inet6 fd17:625c:f037:2:d73e:988d:d0a5:9589 prefixlen 64 scopeid 0<global>  
    inet6 fe80::a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<link>  
    inet6 fd17:625c:f037:2:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<global>  
    ether 08:00:27:8d:a8:a1 txqueuelen 1000 (Ethernet)  
    RX packets 19 bytes 4677 (4.5 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 44 bytes 6118 (5.9 KiB)  
    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 0<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 8 bytes 480 (480.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 8 bytes 480 (480.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
(johnny-gomezreyes@kali)-[~]  
└─$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 10.0.2.2 0.0.0.0 UG 100 0 0 eth0  
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
(johnny-gomezreyes@kali)-[~]  
└─$
```

Step 3

```
johnny-gomezreyes@kali: ~  
Session Actions Edit View Help  
(johnny-gomezreyes@kali)-[~]  
└─$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255  
    inet6 fd17:625c:f037:2:d73e:988d:d0a5:9589 prefixlen 64 scopeid 0<global>  
    inet6 fe80::a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<link>  
    inet6 fd17:625c:f037:2:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<global>  
    ether 08:00:27:8d:a8:a1 txqueuelen 1000 (Ethernet)  
    RX packets 19 bytes 4677 (4.5 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 44 bytes 6118 (5.9 KiB)  
    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 0<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 8 bytes 480 (480.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 8 bytes 480 (480.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
(johnny-gomezreyes@kali)-[~]  
└─$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 10.0.2.2 0.0.0.0 UG 100 0 0 eth0  
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
(johnny-gomezreyes@kali)-[~]  
└─$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State  
  
(johnny-gomezreyes@kali)-[~]  
└─$
```

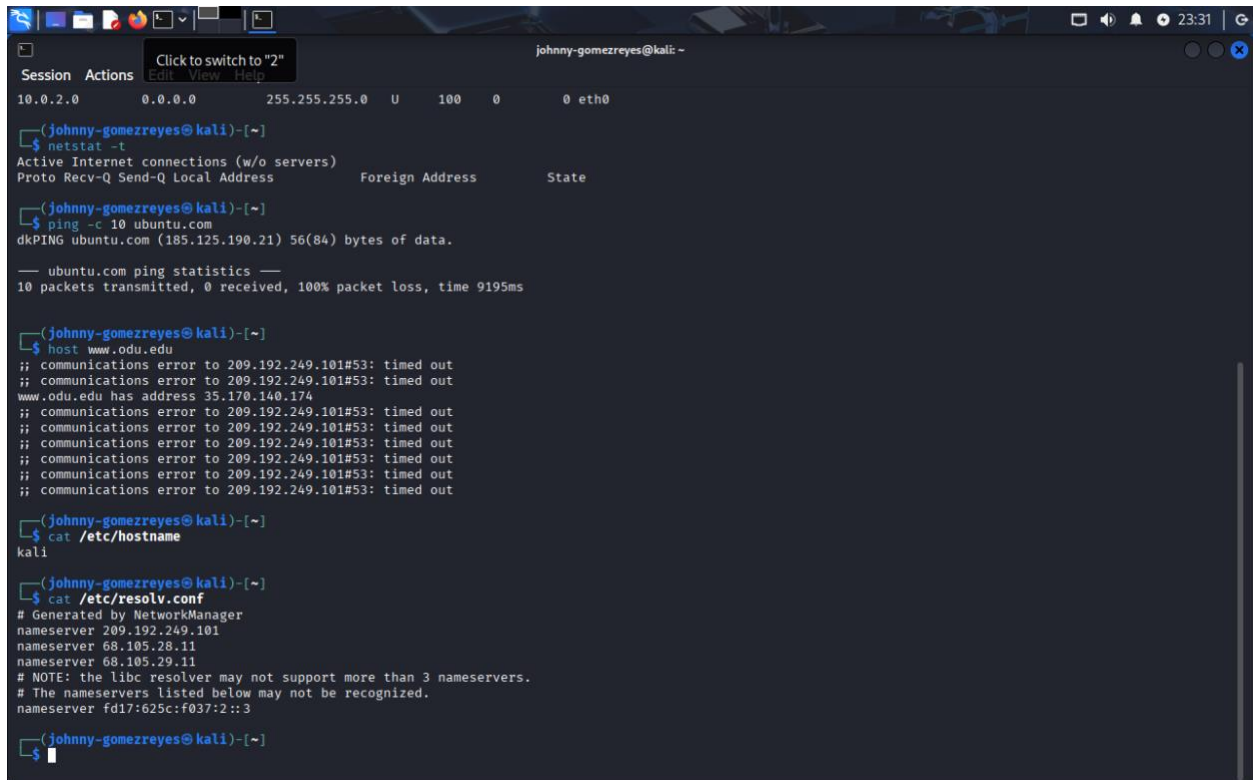
Step 4

```
johnny-gomezreyes@kali: ~  
Session Actions Edit View Help  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255  
inet6 fd17:625c:f037:2:d73e:988d:d0a5:9589 prefixlen 64 scopeid 0<global>  
inet6 fe80::a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<link>  
inet6 fd17:625c:f037:2:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<global>  
ether 08:00:27:8d:a8:a1 txqueuelen 1000 (Ethernet)  
RX packets 19 bytes 4677 (4.5 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 44 bytes 6118 (5.9 KiB)  
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 0<host>  
loop txqueuelen 1000 (Local Loopback)  
RX packets 8 bytes 480 (480.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 8 bytes 480 (480.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
johnny-gomezreyes@kali)-[~]  
└─$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 10.0.2.2 0.0.0.0 UG 100 0 0 eth0  
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
johnny-gomezreyes@kali)-[~]  
└─$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State  
  
johnny-gomezreyes@kali)-[~]  
└─$ ping -c 10 ubuntu.com  
dkPING ubuntu.com (185.125.190.21) 56(84) bytes of data.  
  
— ubuntu.com ping statistics —  
10 packets transmitted, 0 received, 100% packet loss, time 9195ms  
  
johnny-gomezreyes@kali)-[~]  
└─$
```


Step 6

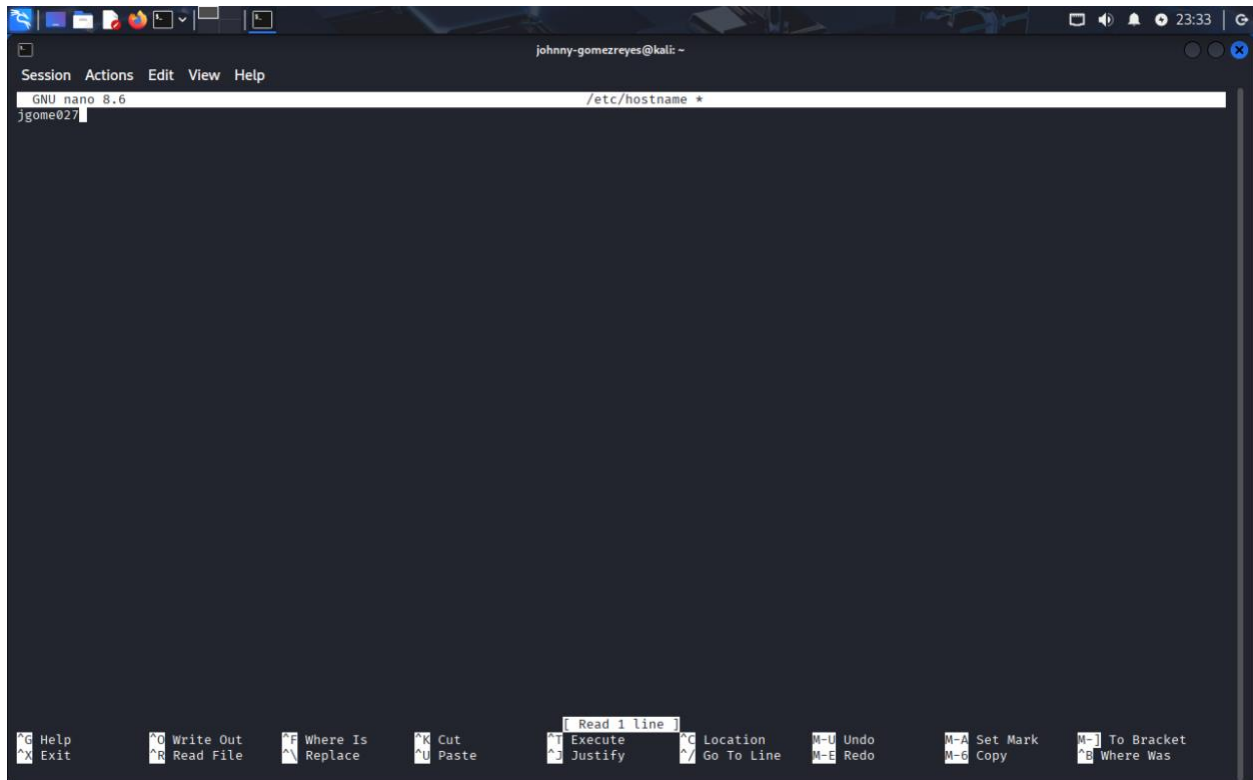
```
johnny-gomezreyes@kali: ~  
Session Actions Edit View Help  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 8 bytes 480 (480.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
johnny-gomezreyes@kali)~  
$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 10.0.2.2 0.0.0.0 UG 100 0 0 eth0  
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
johnny-gomezreyes@kali)~  
$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State  
  
johnny-gomezreyes@kali)~  
$ ping -c 10 ubuntu.com  
dkPING ubuntu.com (185.125.190.21) 56(84) bytes of data.  
  
— ubuntu.com ping statistics —  
10 packets transmitted, 0 received, 100% packet loss, time 9195ms  
  
johnny-gomezreyes@kali)~  
$ host www.odu.edu  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
www.odu.edu has address 35.170.140.174  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
  
johnny-gomezreyes@kali)~  
$ cat /etc/hostname  
kali  
  
johnny-gomezreyes@kali)~  
$
```

Step 7

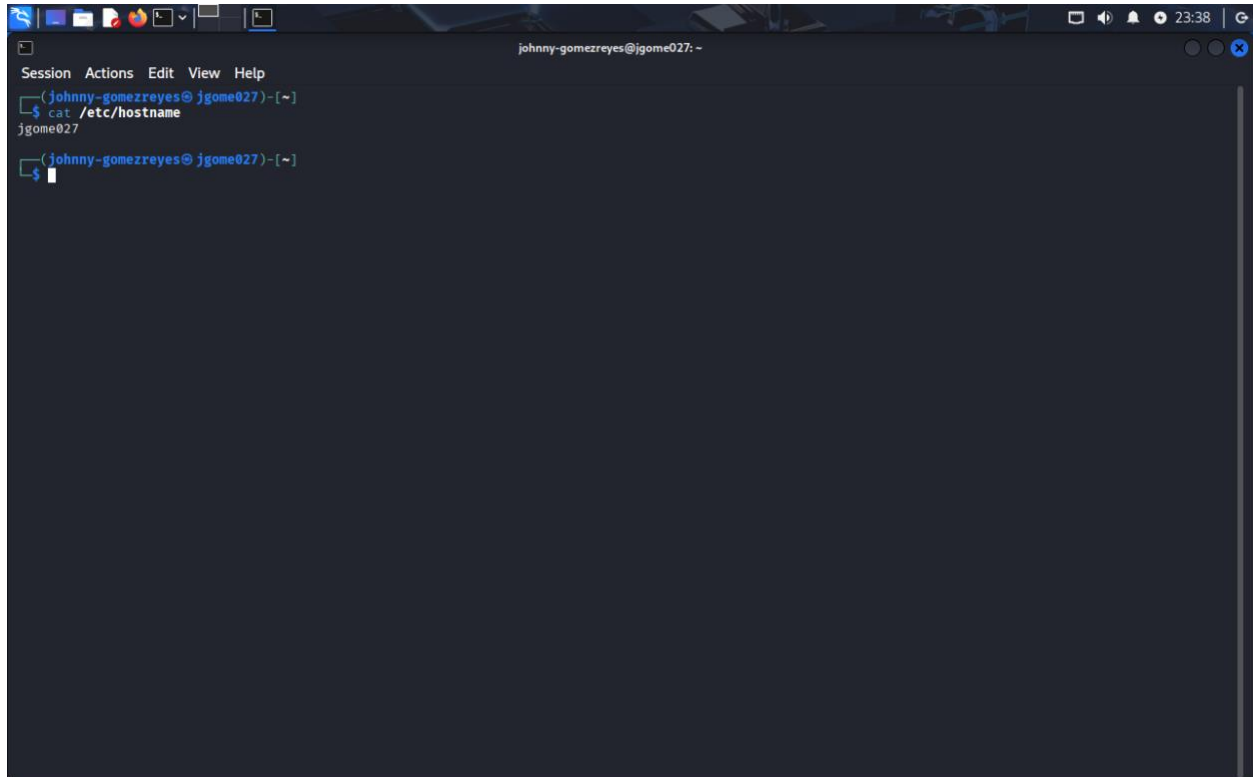


```
johnny-gomezreyes@kali: ~  
Session Actions Click to switch to "2"  
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
(johnny-gomezreyes@kali)-[~]  
└─$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address           Foreign Address         State  
  
(johnny-gomezreyes@kali)-[~]  
└─$ ping -c 10 ubuntu.com  
dkPING ubuntu.com (185.125.190.21) 56(84) bytes of data.  
— ubuntu.com ping statistics —  
10 packets transmitted, 0 received, 100% packet loss, time 9195ms  
  
(johnny-gomezreyes@kali)-[~]  
└─$ host www.odu.edu  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
www.odu.edu has address 35.170.140.174  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
;; communications error to 209.192.249.101#53: timed out  
  
(johnny-gomezreyes@kali)-[~]  
└─$ cat /etc/hostname  
kali  
  
(johnny-gomezreyes@kali)-[~]  
└─$ cat /etc/resolv.conf  
# Generated by NetworkManager  
nameserver 209.192.249.101  
nameserver 68.105.28.11  
nameserver 68.105.29.11  
# NOTE: the libc resolver may not support more than 3 nameservers.  
# The nameservers listed below may not be recognized.  
nameserver fd17:625c:f037:2::3  
  
(johnny-gomezreyes@kali)-[~]  
└─$
```

Step 8



The screenshot shows a terminal window titled "johnny-gomezreyes@kali: ~". The nano text editor is open, editing the file "/etc/hostname". The editor's status bar at the top indicates "GNU nano 8.6 /etc/hostname *". The prompt "jgome027" is visible. The bottom status bar displays various keyboard shortcuts: Help (H), Exit (X), Write Out (O), Read File (R), Where Is (W), Replace (R), Cut (K), Paste (U), Read 1 line (L), Execute (E), Justify (J), Location (C), Go To Line (G), Undo (U), Redo (E), Set Mark (A), Copy (C), To Bracket (I), and Where Was (B).



The screenshot shows a terminal window titled "johnny-gomezreyes@jgome027: ~". The prompt is "(johnny-gomezreyes@jgome027)-[~]". The user has entered the command "cat /etc/hostname" and the output "jgome027" is displayed. The prompt is now "(johnny-gomezreyes@jgome027)-[~]" with a cursor on the next line.

Task B:

Step 1-3

```
johnny-gomezreyes@jgome027: ~  
$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.0.13 netmask 255.255.255.0 broadcast 192.168.0.255  
    inet6 2600:8805:929:e300::88b1 prefixlen 128 scopeid 0<global>  
    inet6 fd53:16c2:4b6c:c946:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<global>  
    inet6 fe80::a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<link>  
    inet6 fd53:16c2:4b6c:c946:ff84:652:8d96:76b6 prefixlen 64 scopeid 0<global>  
    inet6 2600:8805:929:e300:a00:27ff:fe8d:a8a1 prefixlen 64 scopeid 0<global>  
    inet6 2600:8805:929:e300:c095:3071:b074:1ef1 prefixlen 64 scopeid 0<global>  
    ether 08:00:27:8d:a8:a1 txqueuelen 1000 (Ethernet)  
    RX packets 30 bytes 4919 (4.8 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 69 bytes 12611 (12.3 KiB)  
    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 0<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 8 bytes 480 (480.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 8 bytes 480 (480.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
johnny-gomezreyes@jgome027: ~  
$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 192.168.0.1 0.0.0.0 UG 100 0 0 eth0  
192.168.0.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
johnny-gomezreyes@jgome027: ~  
$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State
```

1. NAT mode gives a private IP from VirtualBox/VMware
Bridge mode gives an IP directly from your home network
192.168.0.13

2. NAT mode: Gateway is VirtualBox/VMware internal router
Bridge mode: Gateway is my real router

3. The VM now shows connections from the bridged IP instead of the NAT IP.

Step 4-7

```
johnny-gomezreyes@jgome027: ~  
Session Actions Edit View Help  
johnny-gomezreyes@jgome027)~  
$ netstat -t  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address           Foreign Address         State  
  
johnny-gomezreyes@jgome027)~  
$ ping -c 10 ubuntu.com  
PING ubuntu.com (2620:2d:4000:1::26) 56 data bytes  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=1 ttl=51 time=103 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=2 ttl=51 time=110 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=3 ttl=51 time=112 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=4 ttl=51 time=108 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=5 ttl=51 time=104 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=6 ttl=51 time=106 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=7 ttl=51 time=106 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=8 ttl=51 time=106 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=9 ttl=51 time=110 ms  
64 bytes from website-content-cache-1.canonical.com (2620:2d:4000:1::26): icmp_seq=10 ttl=51 time=111 ms  
  
--- ubuntu.com ping statistics ---  
10 packets transmitted, 10 received, 0% packet loss, time 9014ms  
rtt min/avg/max/mdev = 102.757/107.539/111.664/2.875 ms  
  
johnny-gomezreyes@jgome027)~  
$ host www.odu.edu  
www.odu.edu has address 35.170.140.174  
  
johnny-gomezreyes@jgome027)~  
$ cat /etc/hostname  
jgome027  
  
johnny-gomezreyes@jgome027)~  
$ cat /etc/resolv.conf  
# Generated by NetworkManager  
nameserver 68.105.28.11  
nameserver 68.105.29.11  
nameserver 2001:578:3f::30  
# NOTE: the libc resolver may not support more than 3 nameservers.  
# The nameservers listed below may not be recognized.  
nameserver 2001:578:3f:1::30  
  
johnny-gomezreyes@jgome027)~  
$
```

4. The ping requests now originate from the bridged IP meaning the VM behaves like a normal device on my network.

5. DNS comes from my home router/ISP

7. DNS servers are assigned differently depending on network mode.