jta

CYSE 270: Linux System for Cybersecurity

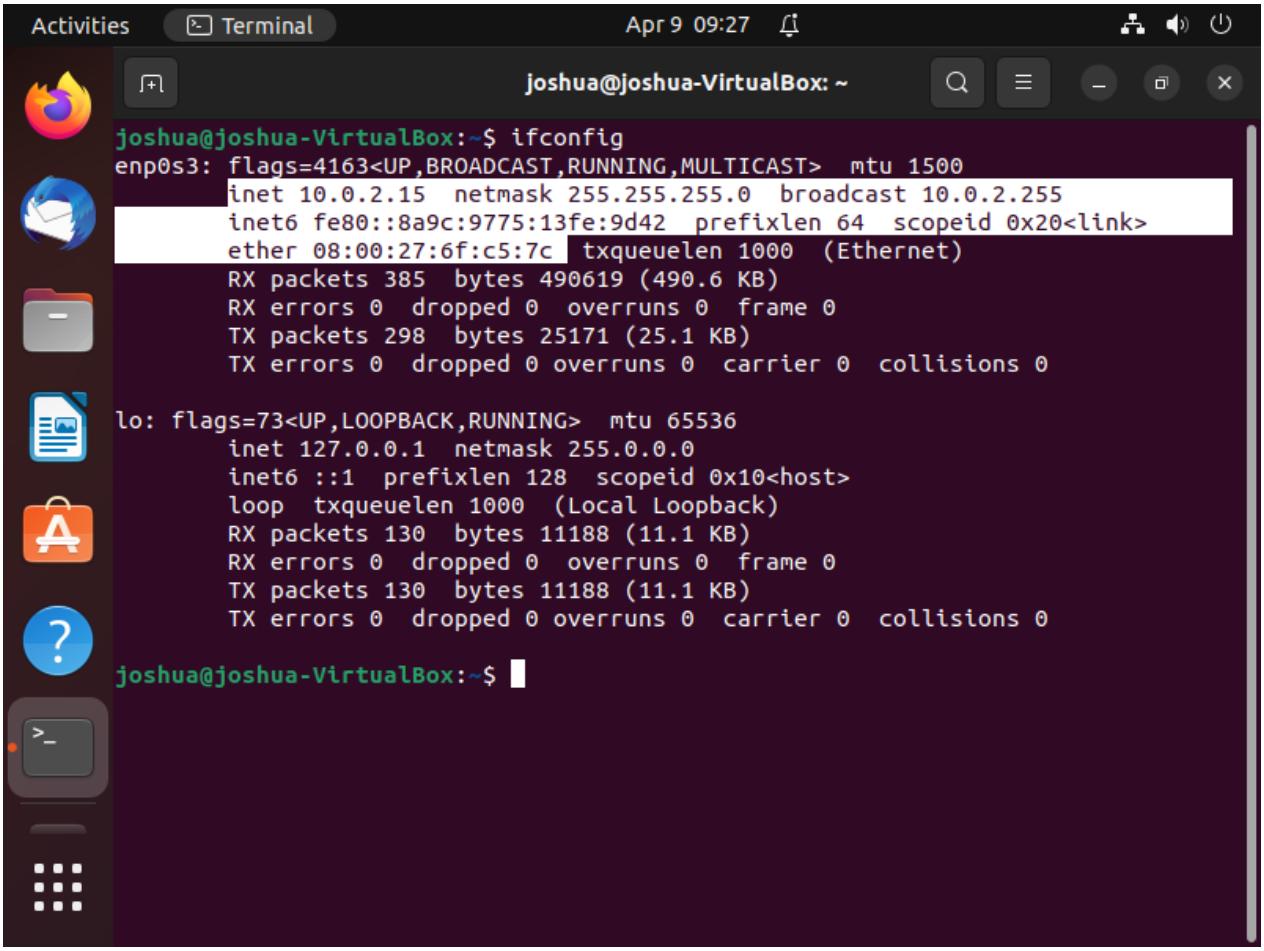
Lab 11 – Basic Network Configurations

You can use either Ubuntu VM or Kali Linux VM to complete the following tasks.

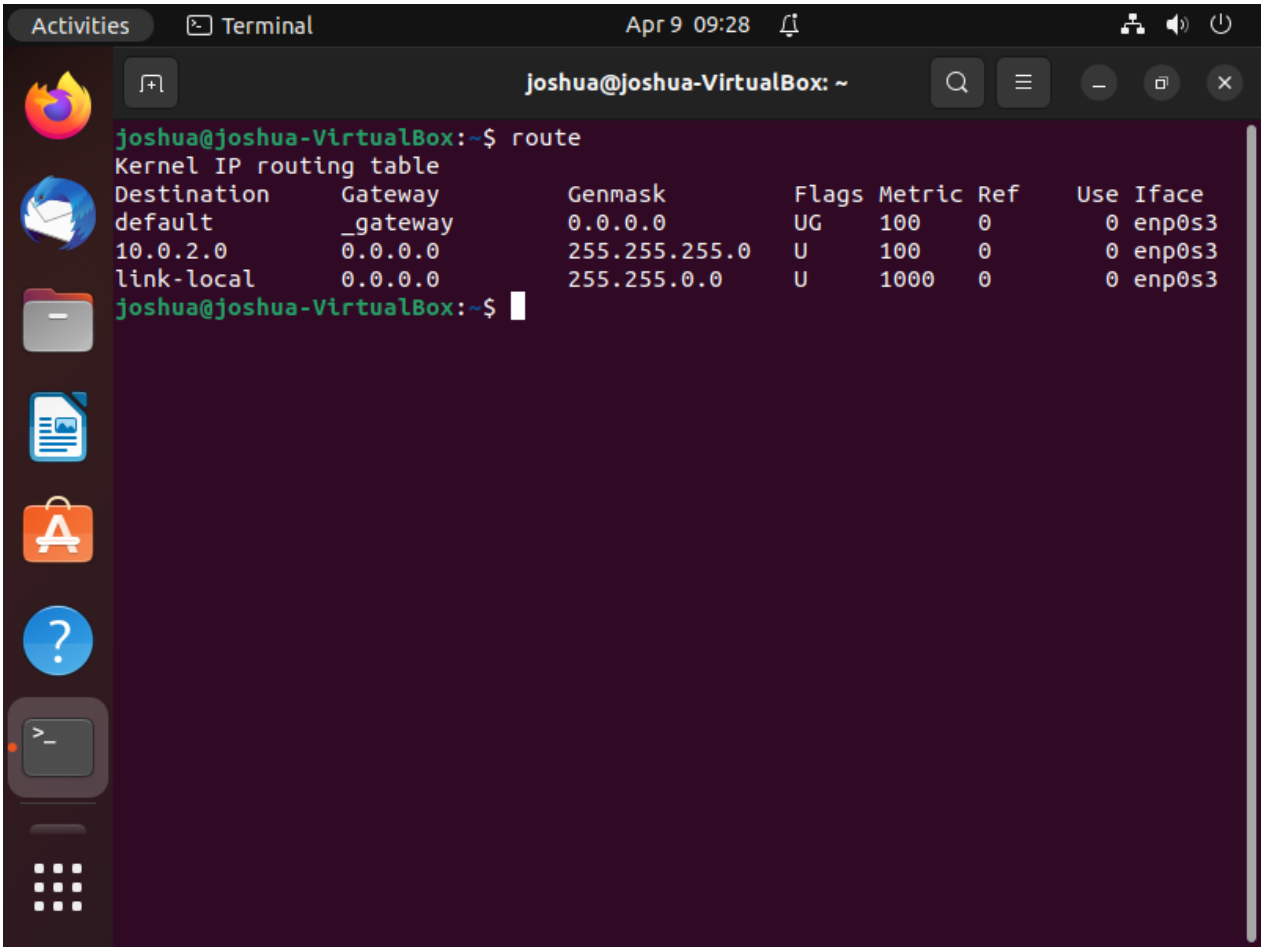
Task A – Explore Network Configurations (8 * 5 = 40 Points)

{{{{{{{{{Connect your VM in the NAT mode}}}}}}}}}

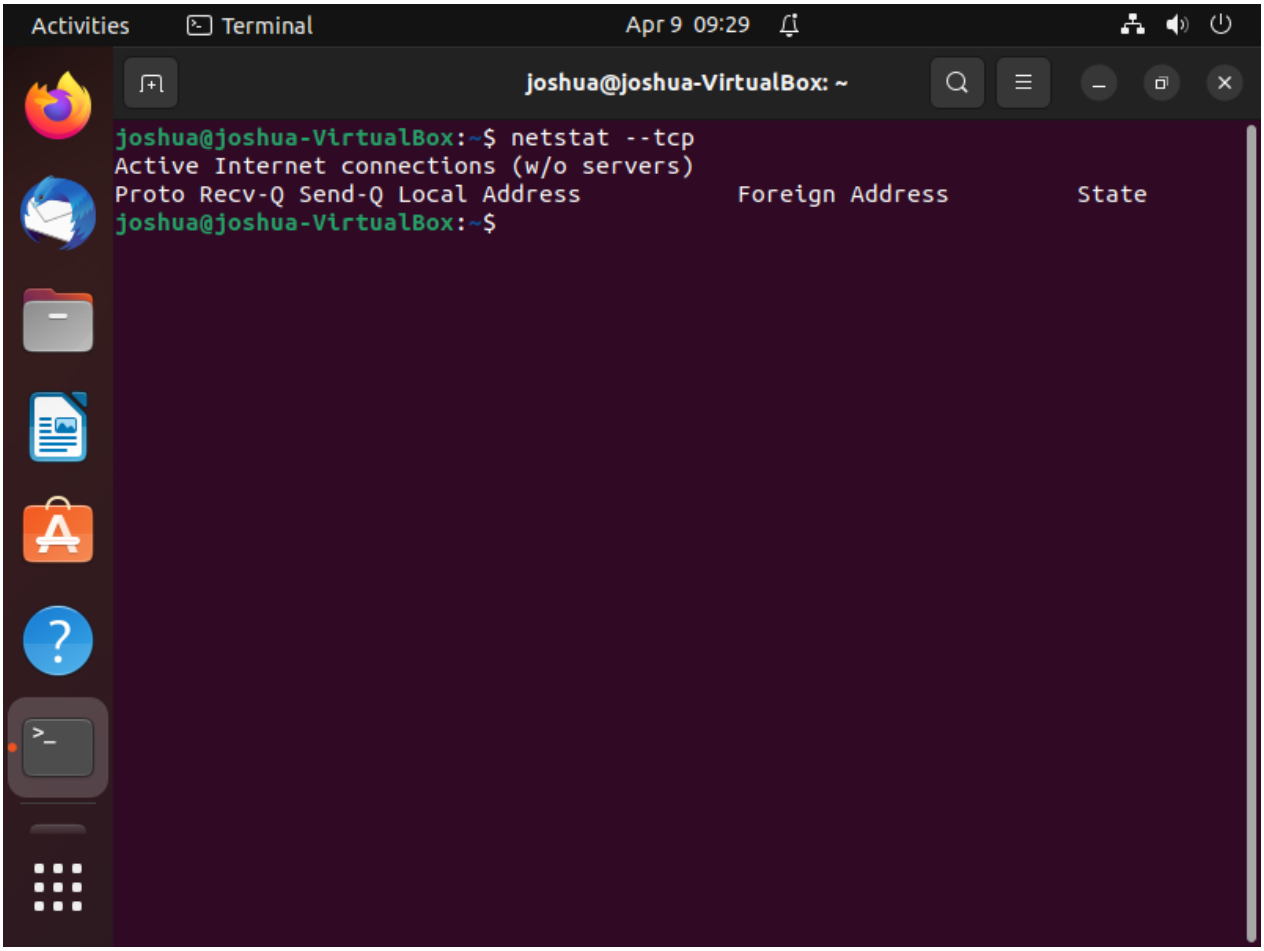
1. Use the correct **ifconfig** command to display the current network configuration. **Highlight your IP address, MAC address, and the network mask**.



2. Use the correct **route** command to display the current routing table.

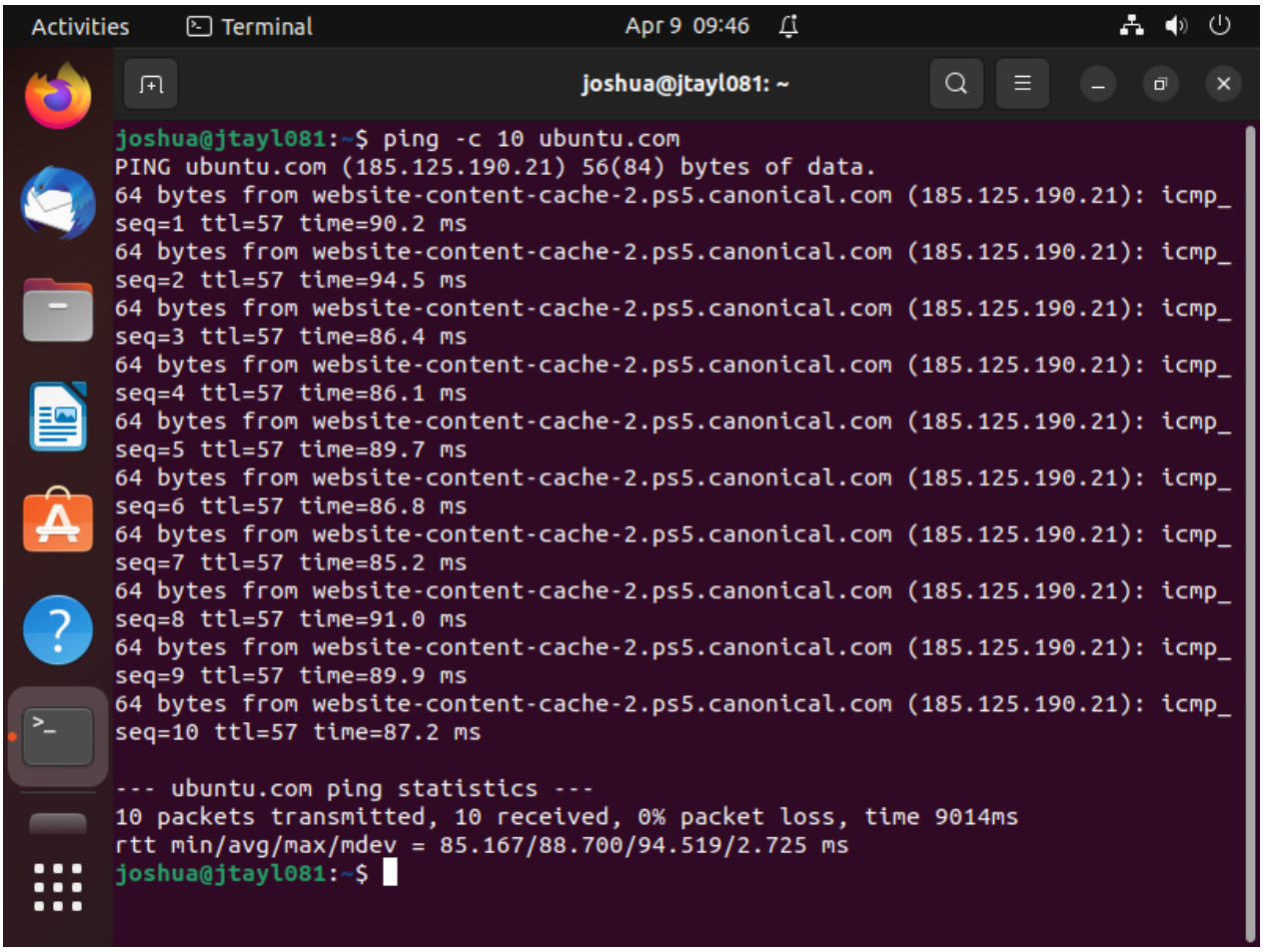


3. Use the **netstat** command to list current TCP connections.

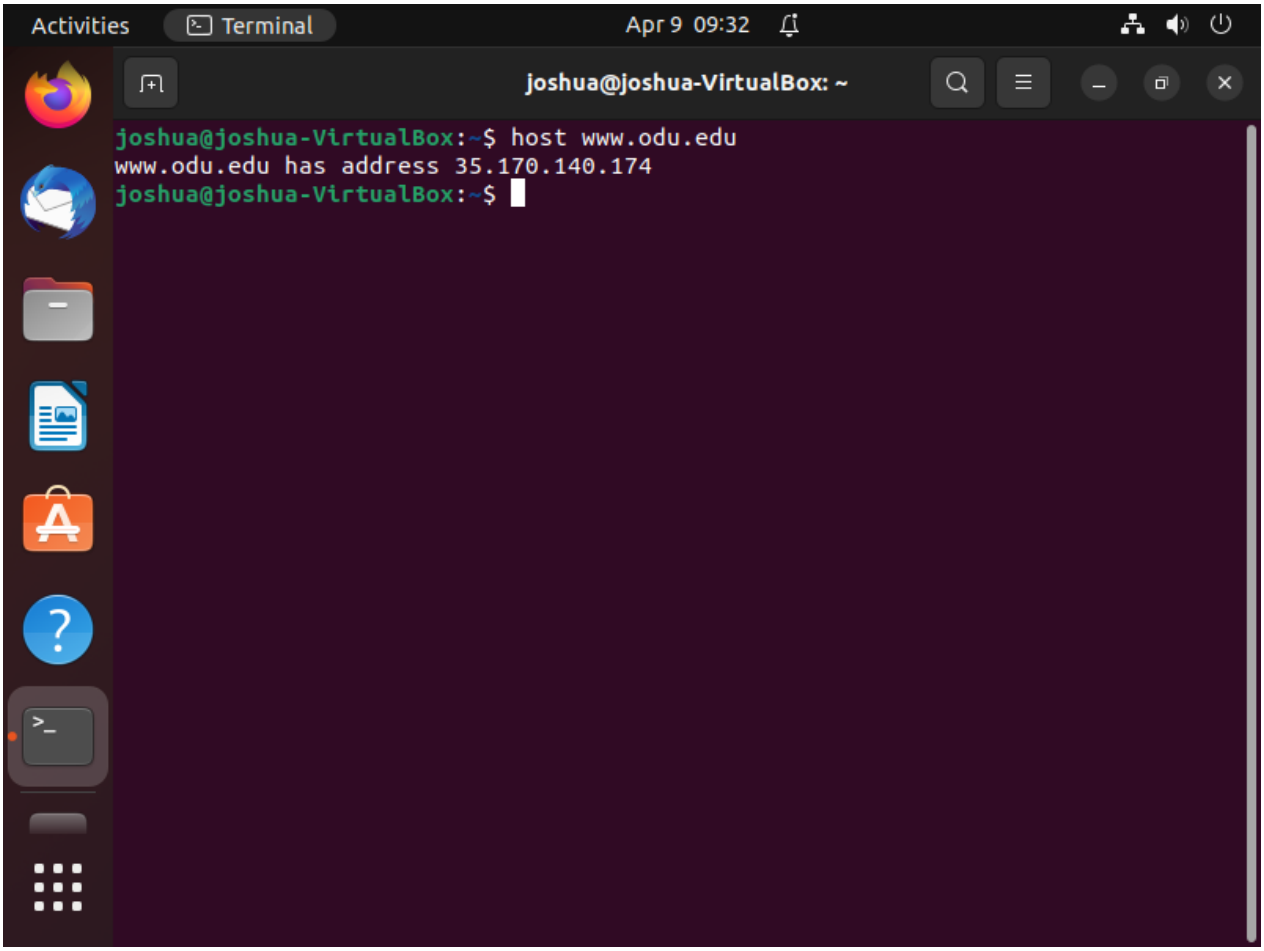


4. Use the **ping** command to determine if the ubuntu.com system is accessible via the network.

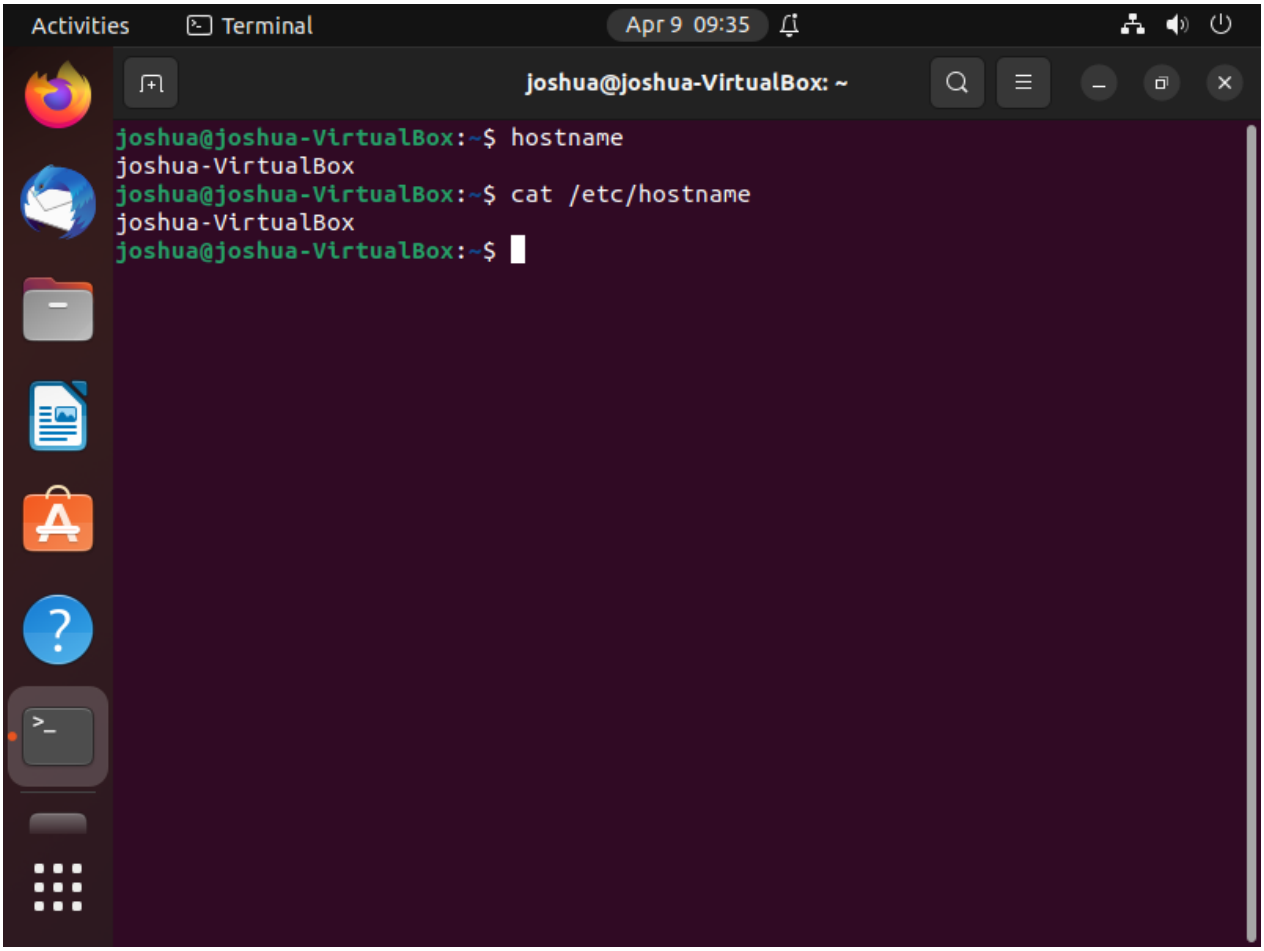
(Use the correct option to send 10 ping requests only.)



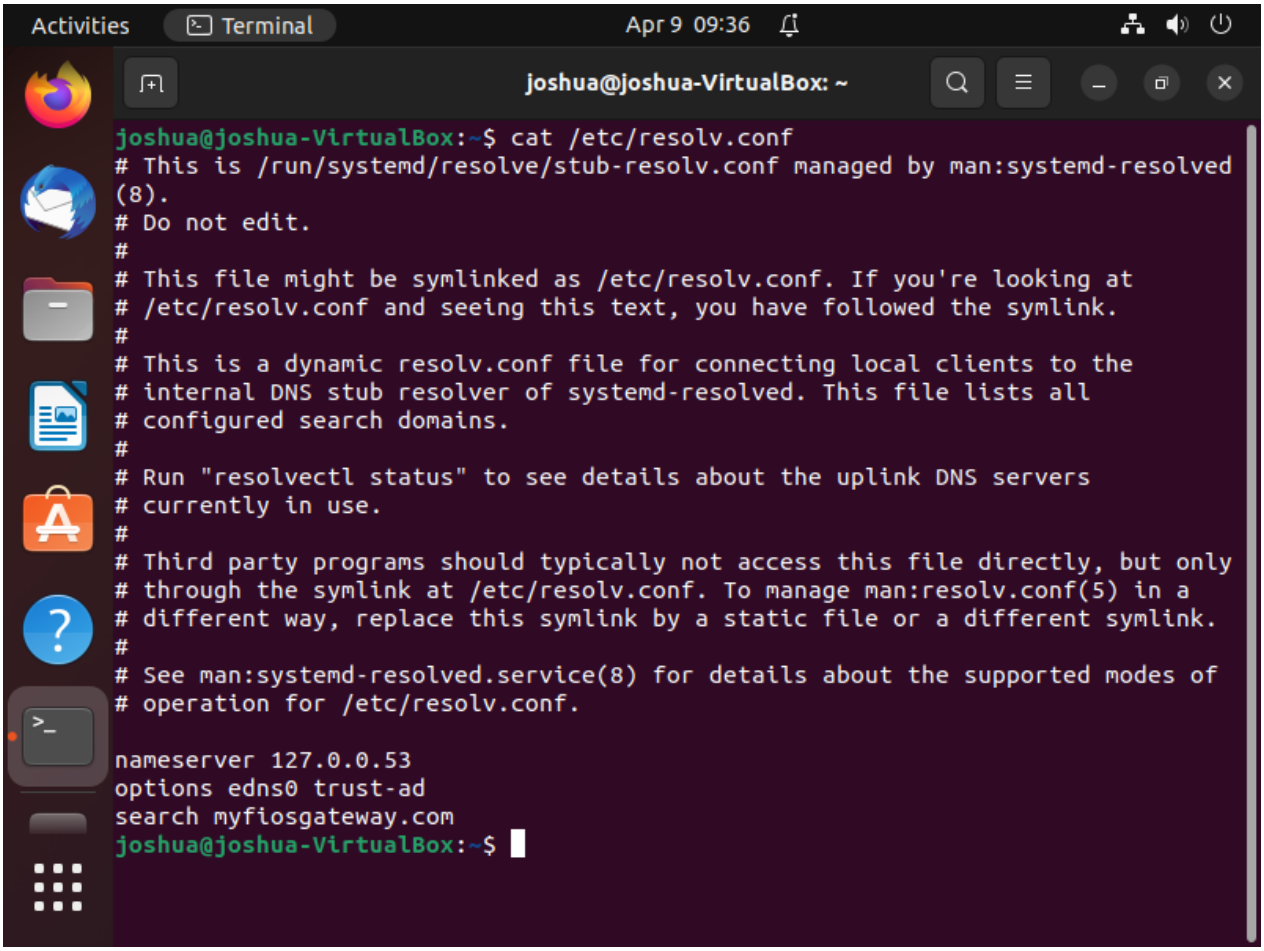
5. Use the **host** command to perform a DNS query on www.odu.edu



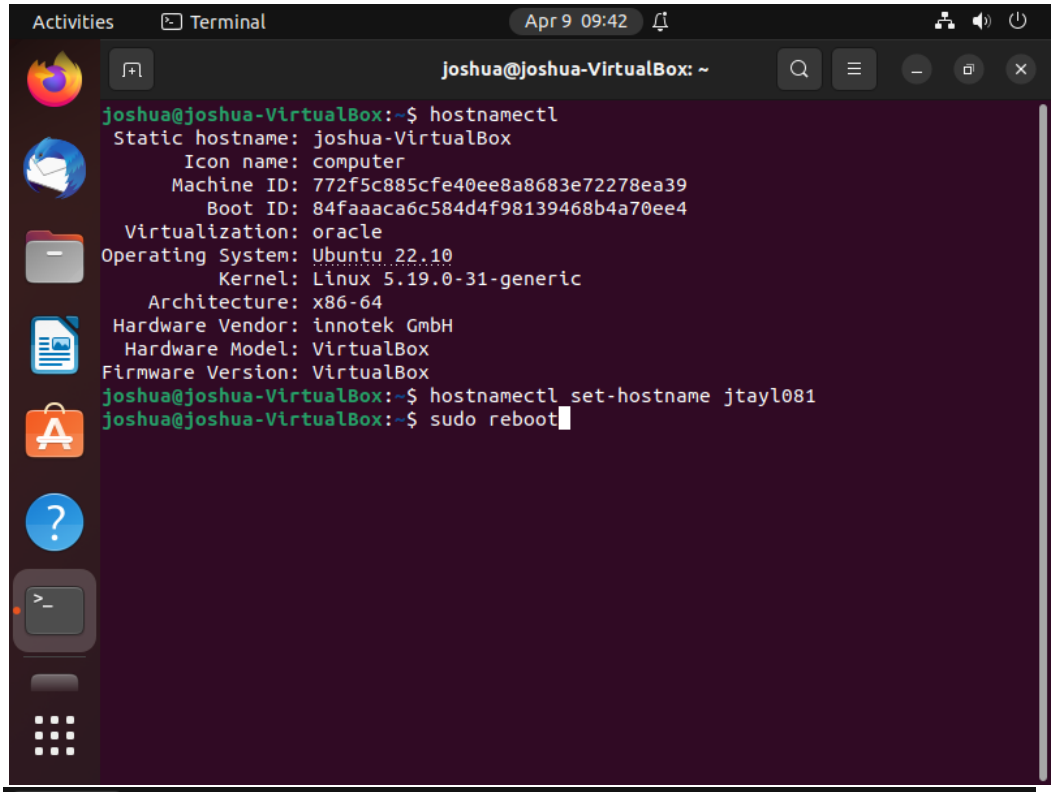
6. Use the **cat** command to display the contents of the file that contains the system's hostname.

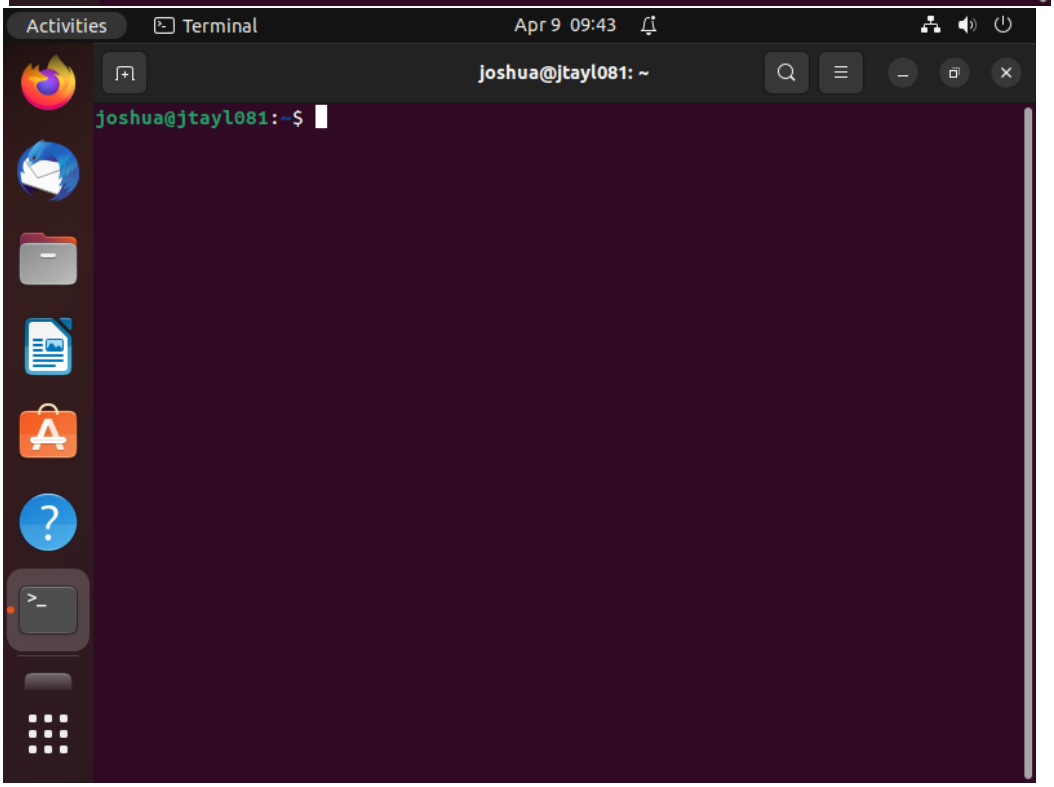


7. Use the **cat** command to display the contents of the file that contains the DNS servers for this system.



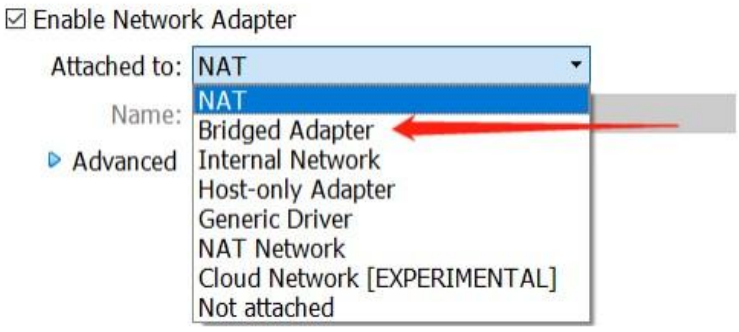
8. Edit the same file you display in the previous step, set the system's hostname to your MIDAS ID permanently. Reboot system and **repeat step 6**.

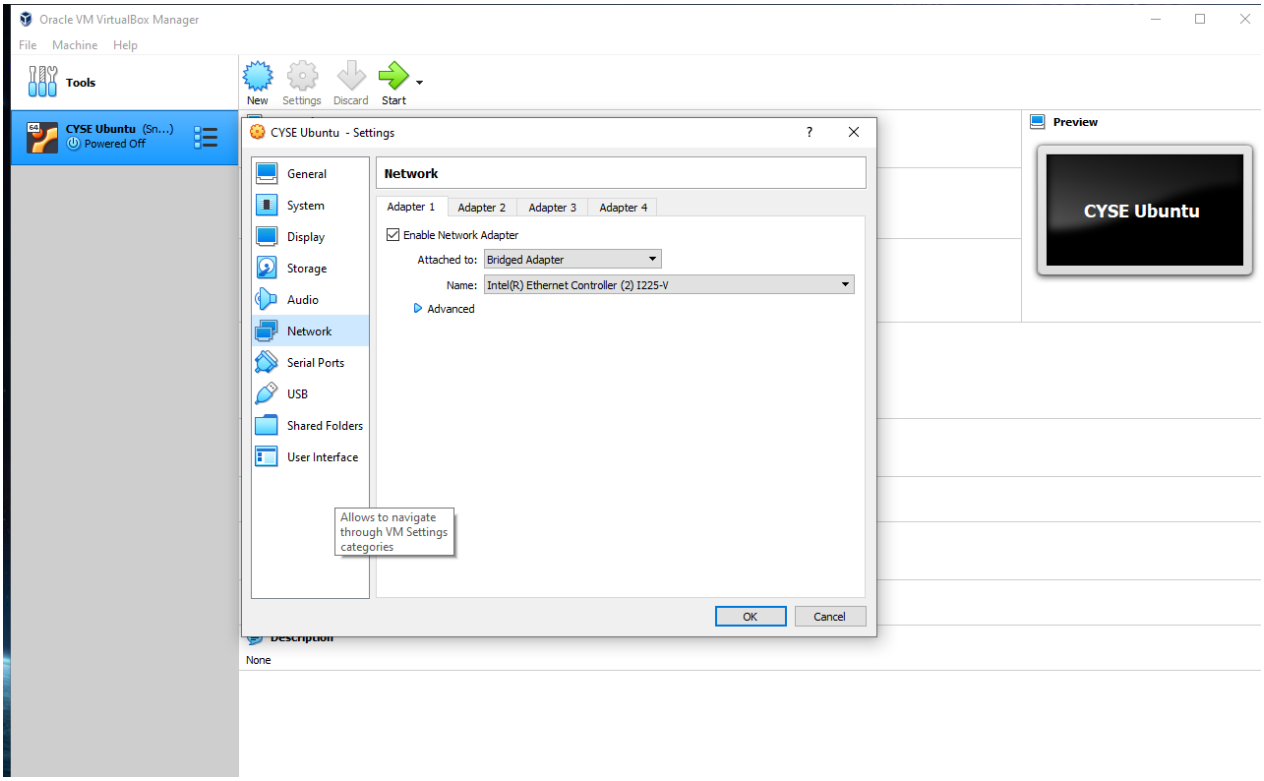

Activities
Terminal
Apr 9 09:42
joshua@joshua-VirtualBox: ~
joshua@joshua-VirtualBox:~$ hostnamectl
Static hostname: joshua-VirtualBox
Icon name: computer
Machine ID: 772f5c885cfe40ee8a8683e72278ea39
Boot ID: 84faaaca6c584d4f98139468b4a70ee4
Virtualization: oracle
Operating System: Ubuntu 22.10
Kernel: Linux 5.19.0-31-generic
Architecture: x86-64
Hardware Vendor: innotek GmbH
Hardware Model: VirtualBox
Firmware Version: VirtualBox
joshua@joshua-VirtualBox:~$ hostnamectl set-hostname jtayl081
joshua@joshua-VirtualBox:~$ sudo reboot

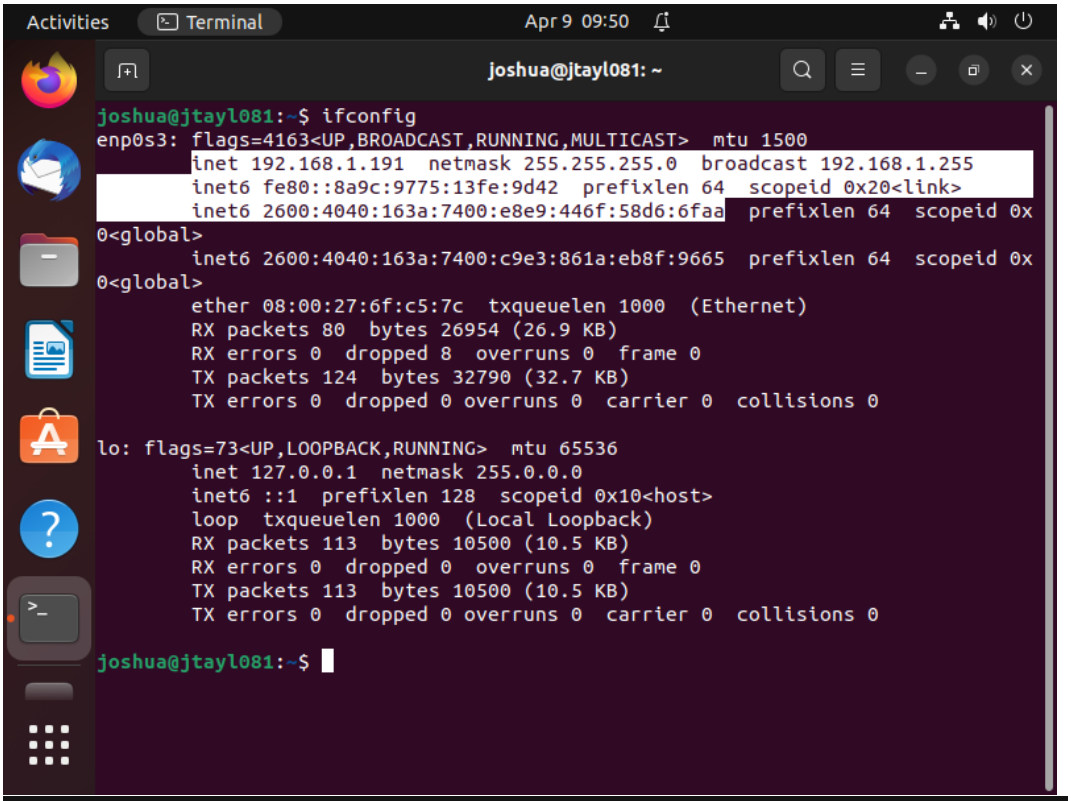

Activities
Terminal
Apr 9 09:43
joshua@jtayl081: ~
joshua@jtayl081:~$

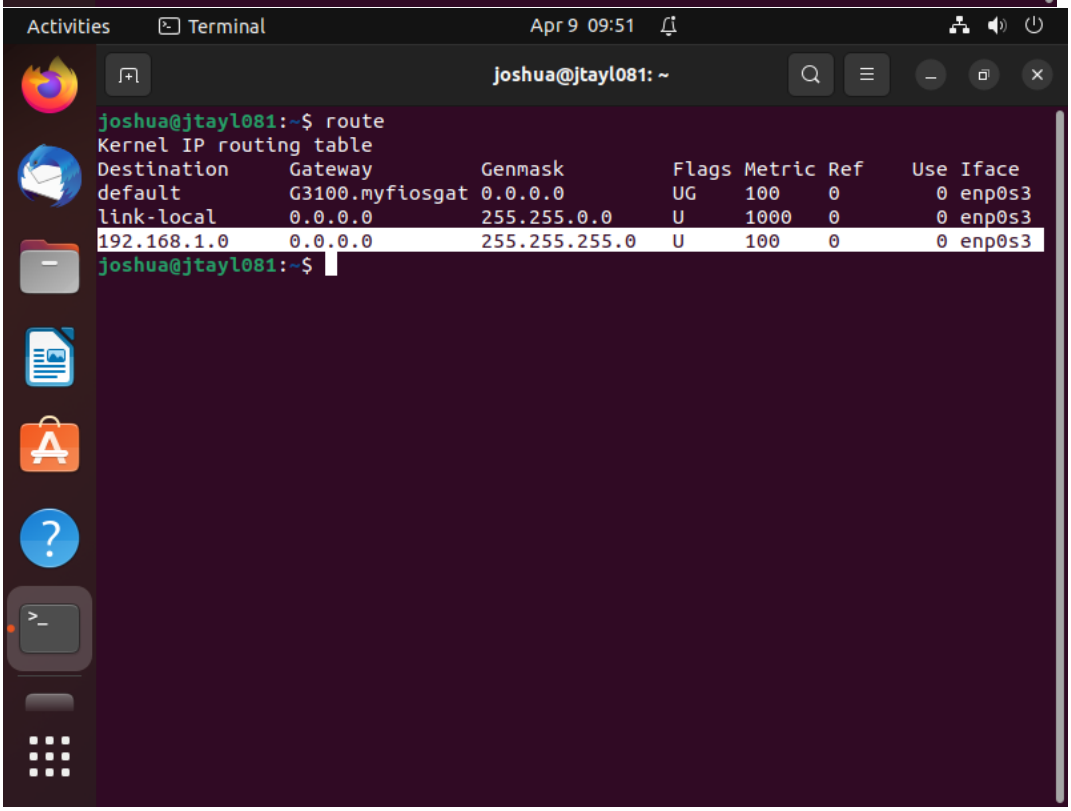
Task B – A Different Network Setting (3 * 20 = 60 Points)

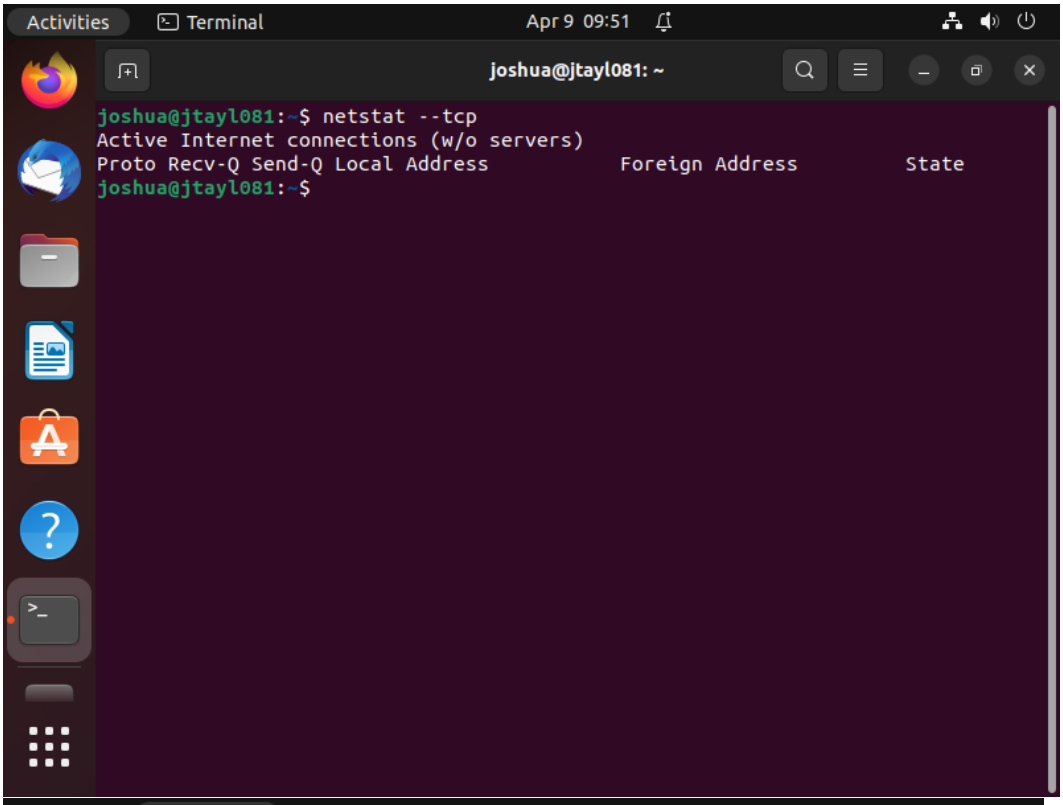
1. Change the VM network connection from NAT to the bridge mode (you will lose your Internet connection if you are connected to the ODU campus Wi-Fi network, but it is okay).
2. Reboot your system, then repeat Steps 1 – 7 in Task A.
3. Highlight the differences at the end of each step and discuss what do you find.

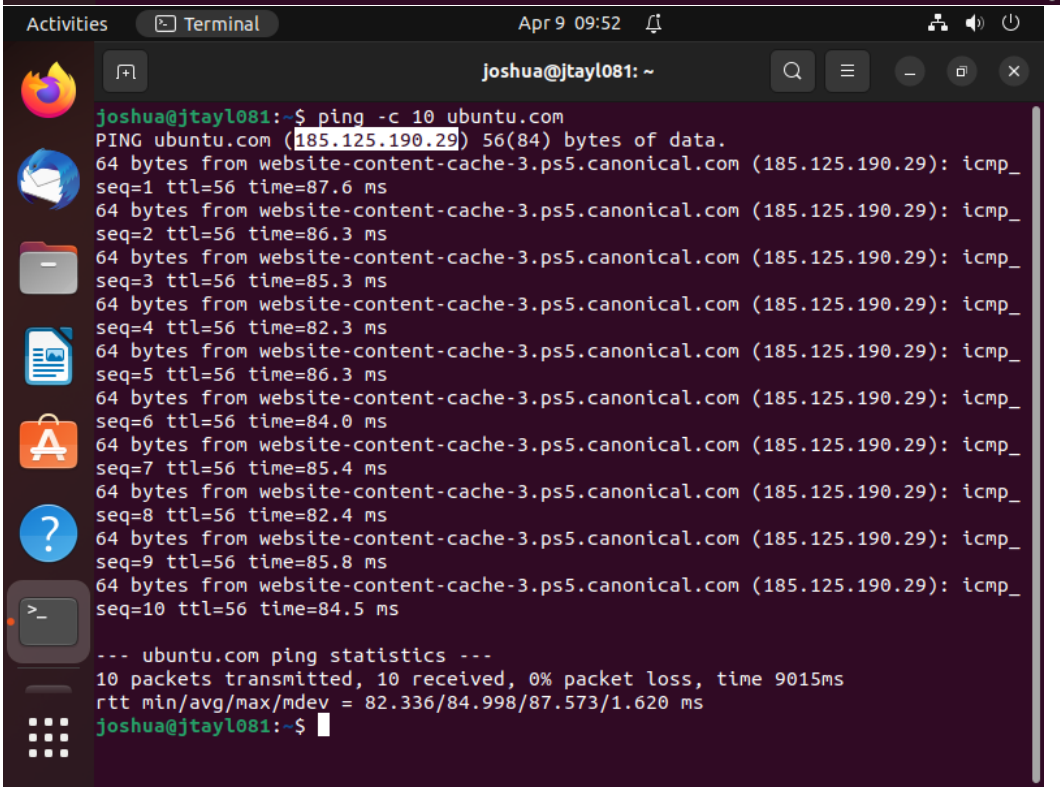


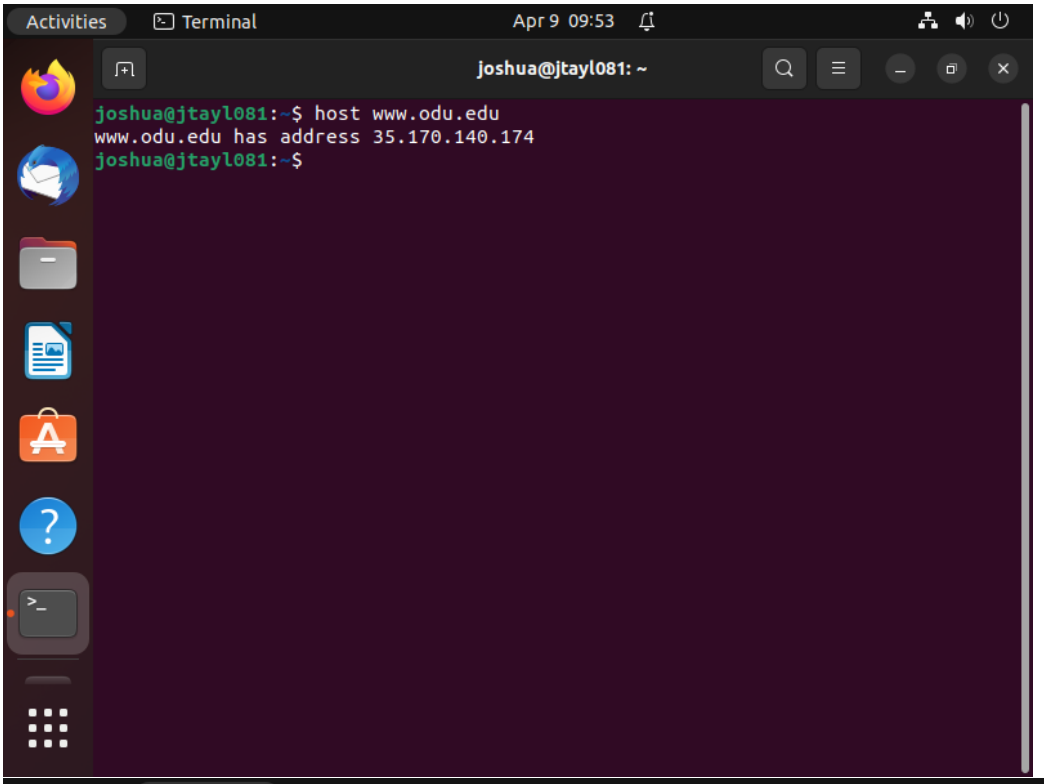


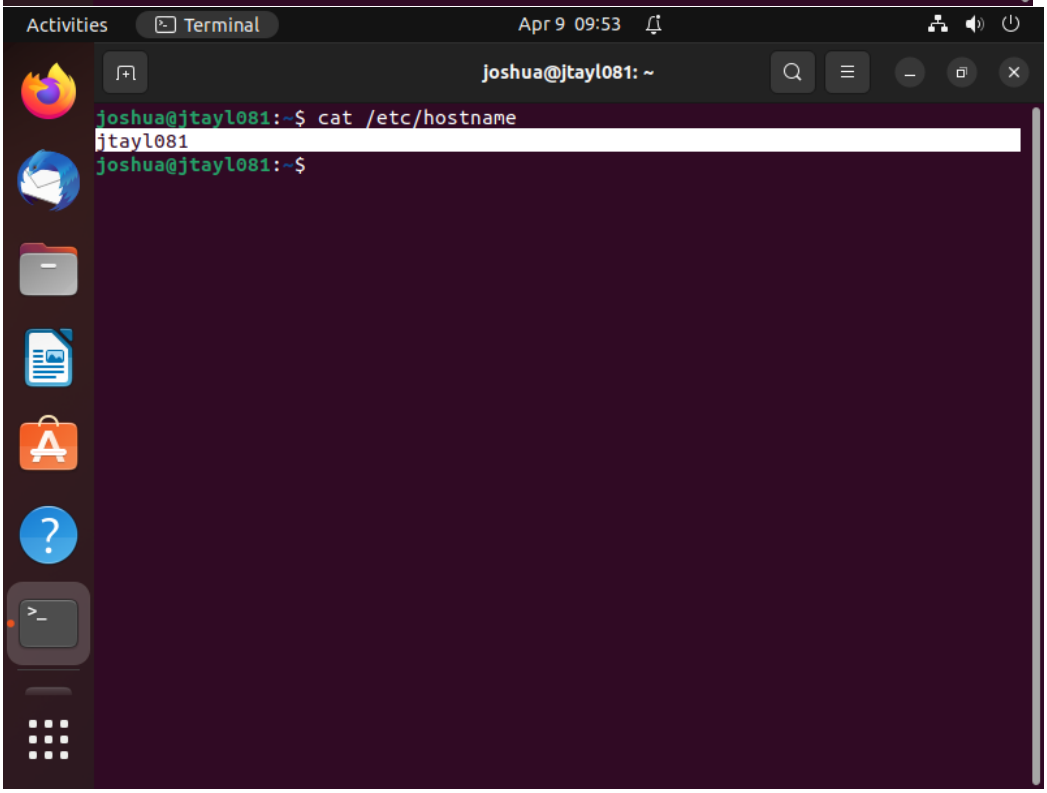

Activities
Terminal
Apr 9 09:50
joshua@jtayl081: ~
joshua@jtayl081:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.1.191 netmask 255.255.255.0 broadcast 192.168.1.255
inet6 fe80::8a9c:9775:13fe:9d42 prefixlen 64 scopeid 0x20<link>
inet6 2600:4040:163a:7400:e8e9:446f:58d6:6faa prefixlen 64 scopeid 0x0<global>
inet6 2600:4040:163a:7400:c9e3:861a:eb8f:9665 prefixlen 64 scopeid 0x0<global>
ether 08:00:27:6f:c5:7c txqueuelen 1000 (Ethernet)
RX packets 80 bytes 26954 (26.9 KB)
RX errors 0 dropped 8 overruns 0 frame 0
TX packets 124 bytes 32790 (32.7 KB)
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 113 bytes 10500 (10.5 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 113 bytes 10500 (10.5 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
joshua@jtayl081:~$

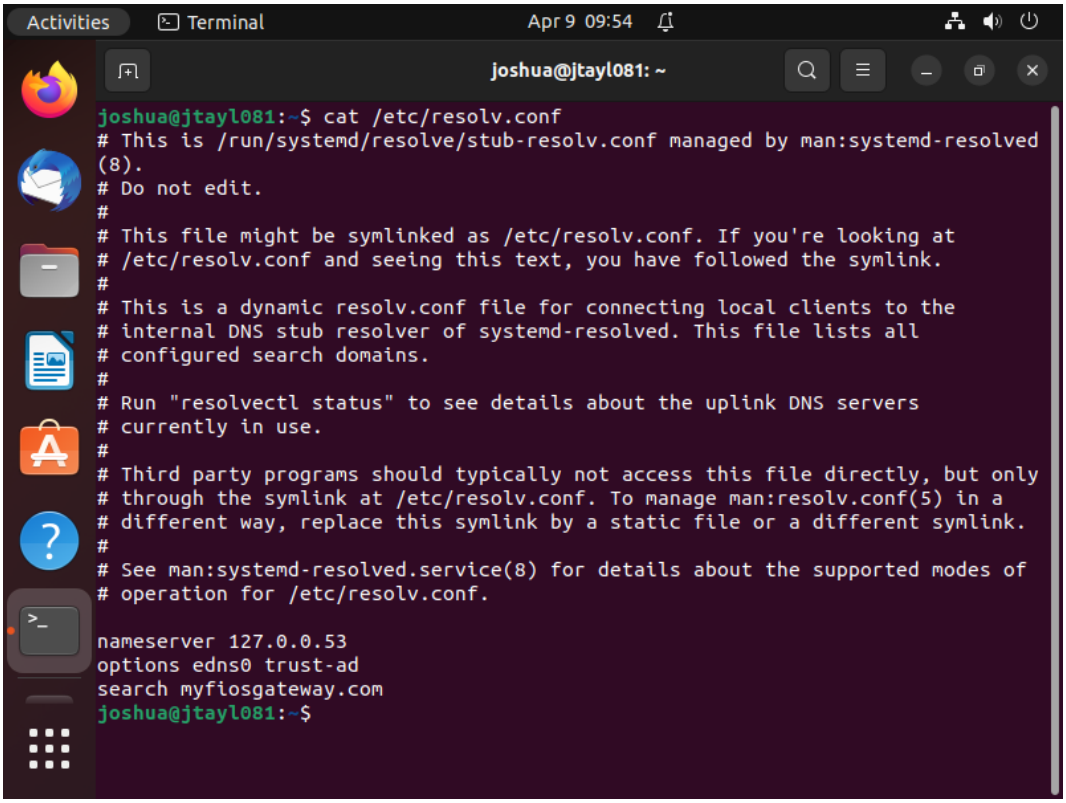

Activities
Terminal
Apr 9 09:51
joshua@jtayl081: ~
joshua@jtayl081:~$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default G3100.myfiosgat 0.0.0.0 UG 100 0 0 enp0s3
link-local 0.0.0.0 255.255.0.0 U 1000 0 0 enp0s3
192.168.1.0 0.0.0.0 255.255.255.0 U 100 0 0 enp0s3
joshua@jtayl081:~$


Activities
Terminal
Apr 9 09:51
joshua@jtayl081: ~
joshua@jtayl081:~$ netstat --tcp
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State
joshua@jtayl081:~$


Activities
Terminal
Apr 9 09:52
joshua@jtayl081: ~
joshua@jtayl081:~$ ping -c 10 ubuntu.com
PING ubuntu.com (185.125.190.29) 56(84) bytes of data.
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=1 ttl=56 time=87.6 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=2 ttl=56 time=86.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=3 ttl=56 time=85.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=4 ttl=56 time=82.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=5 ttl=56 time=86.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=6 ttl=56 time=84.0 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=7 ttl=56 time=85.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=8 ttl=56 time=82.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=9 ttl=56 time=85.8 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_
seq=10 ttl=56 time=84.5 ms
--- ubuntu.com ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9015ms
rtt min/avg/max/mdev = 82.336/84.998/87.573/1.620 ms
joshua@jtayl081:~$


Activities
Terminal
Apr 9 09:53
joshua@jtayl081: ~
joshua@jtayl081:~$ host www.odu.edu
www.odu.edu has address 35.170.140.174
joshua@jtayl081:~$


Activities
Terminal
Apr 9 09:53
joshua@jtayl081: ~
joshua@jtayl081:~$ cat /etc/hostname
jtayl081
joshua@jtayl081:~$


Activities
Terminal
Apr 9 09:54
joshua@jtayl081: ~
joshua@jtayl081:~$ cat /etc/resolv.conf
This is /run/systemd/resolve/stub-resolv.conf managed by man:systemd-resolved
(8).
Do not edit.
#
This file might be symlinked as /etc/resolv.conf. If you're looking at
/etc/resolv.conf and seeing this text, you have followed the symlink.
#
This is a dynamic resolv.conf file for connecting local clients to the
internal DNS stub resolver of systemd-resolved. This file lists all
configured search domains.
#
Run "resolvectl status" to see details about the uplink DNS servers
currently in use.
#
Third party programs should typically not access this file directly, but only
through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
different way, replace this symlink by a static file or a different symlink.
#
See man:systemd-resolved.service(8) for details about the supported modes of
operation for /etc/resolv.conf.
nameserver 127.0.0.53
options edns0 trust-ad
search myfiosgateway.com
joshua@jtayl081:~$