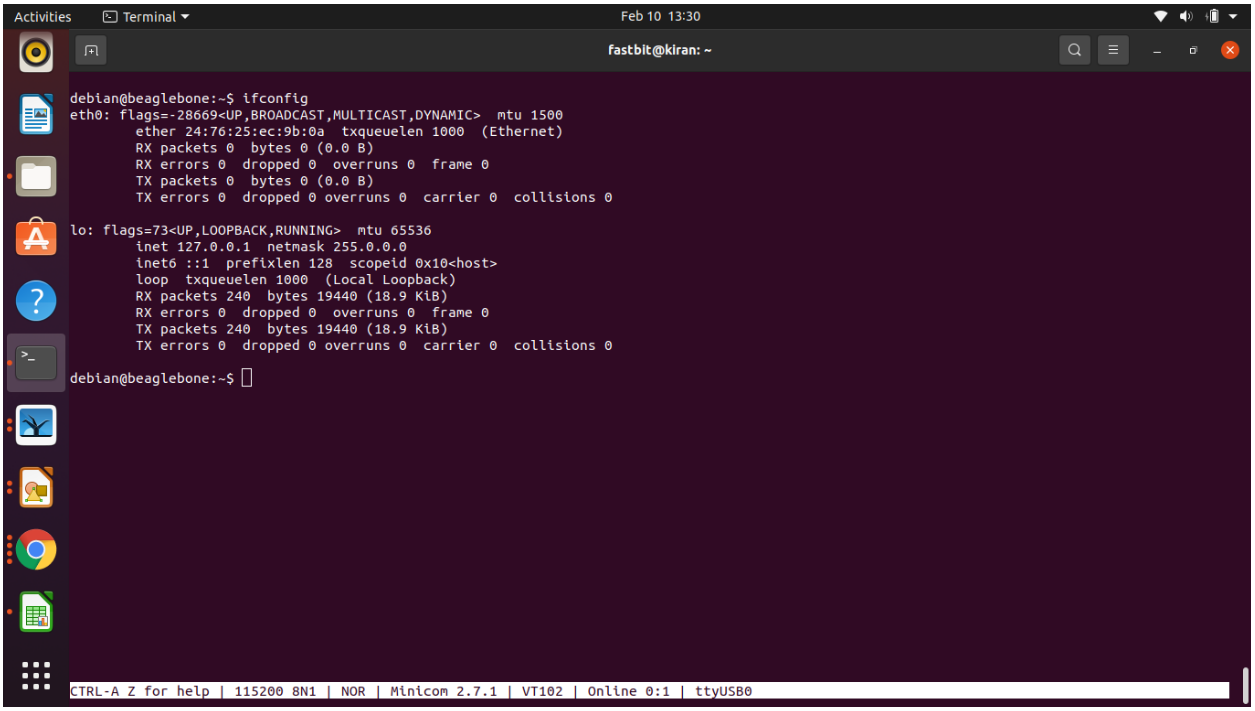
Procedure to enable internet over when the USB interface is not showing up.

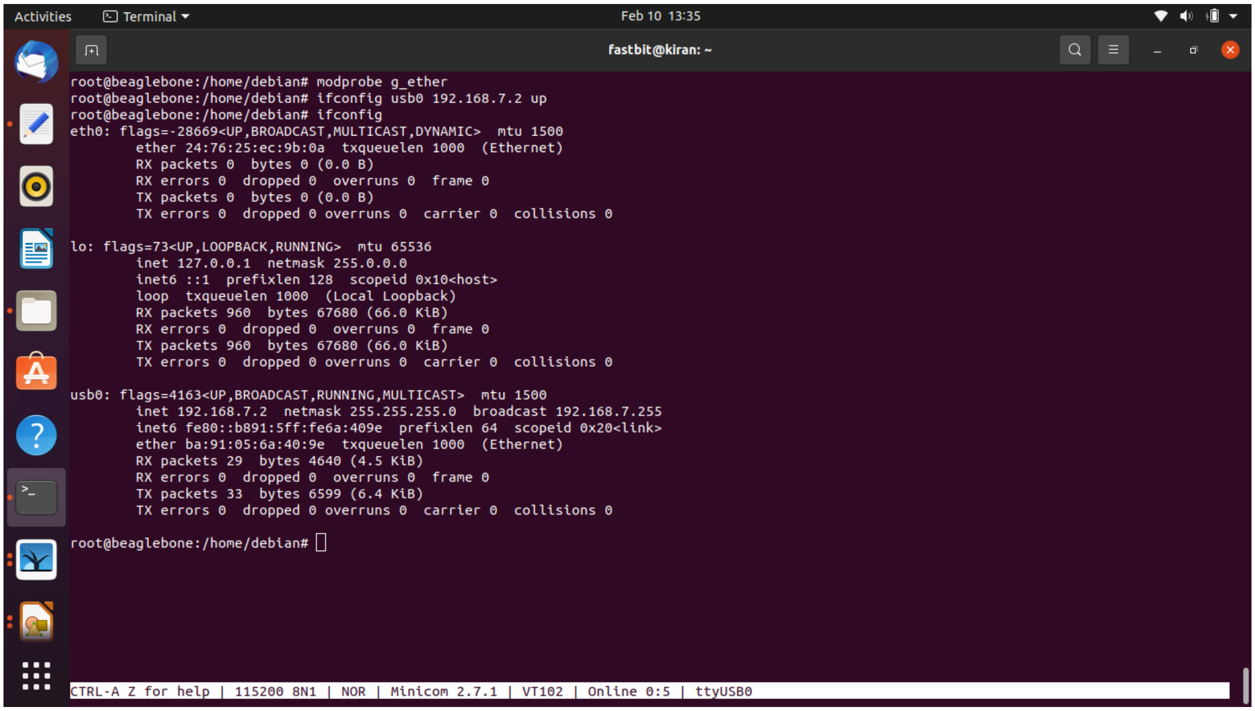
Login into the target using username:debian Pwd:temppwd, then execute ifconfig (as shown in the Figure 1).



```
debian@beaglebone:~$ ifconfig
eth0: flags=-28669<UP,BROADCAST,MULTICAST,DYNAMIC>  mtu 1500
        ether 24:76:25:ec:9b:0a  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 240  bytes 19440 (18.9 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 240  bytes 19440 (18.9 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

debian@beaglebone:~$ 
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7.1 | VT102 | Online 0:1 | ttyUSB0
```

Figure 1. ifconfig

1. You are not able to see the usb0 interface. That's why you have to execute the commands below to see the usb0 interface, as shown in Figure 2.
    - □ sudo -s
    - □ modprobe g_ether
    - □ ifconfig usb0 192.168.7.2 up
    - □ ifconfig



```
root@beaglebone:/home/debian# modprobe g_ether
root@beaglebone:/home/debian# ifconfig usb0 192.168.7.2 up
root@beaglebone:/home/debian# ifconfig
eth0: flags=-28669<UP,BROADCAST,MULTICAST,DYNAMIC>  mtu 1500
        ether 24:76:25:ec:9b:0a  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 960  bytes 67680 (66.0 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 960  bytes 67680 (66.0 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

usb0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.7.2  netmask 255.255.255.0  broadcast 192.168.7.255
        inet6 fe80::b891:5ff:fe6a:409e  prefixlen 64  scopeid 0x20<link>
        ether ba:91:05:6a:40:9e  txqueuelen 1000  (Ethernet)
        RX packets 29  bytes 4640 (4.5 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33  bytes 6599 (6.4 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

root@beaglebone:/home/debian# 

CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7.1 | VT102 | Online 0:5 | ttyUSB0
```

Figure 2. usb0 interface enumeration

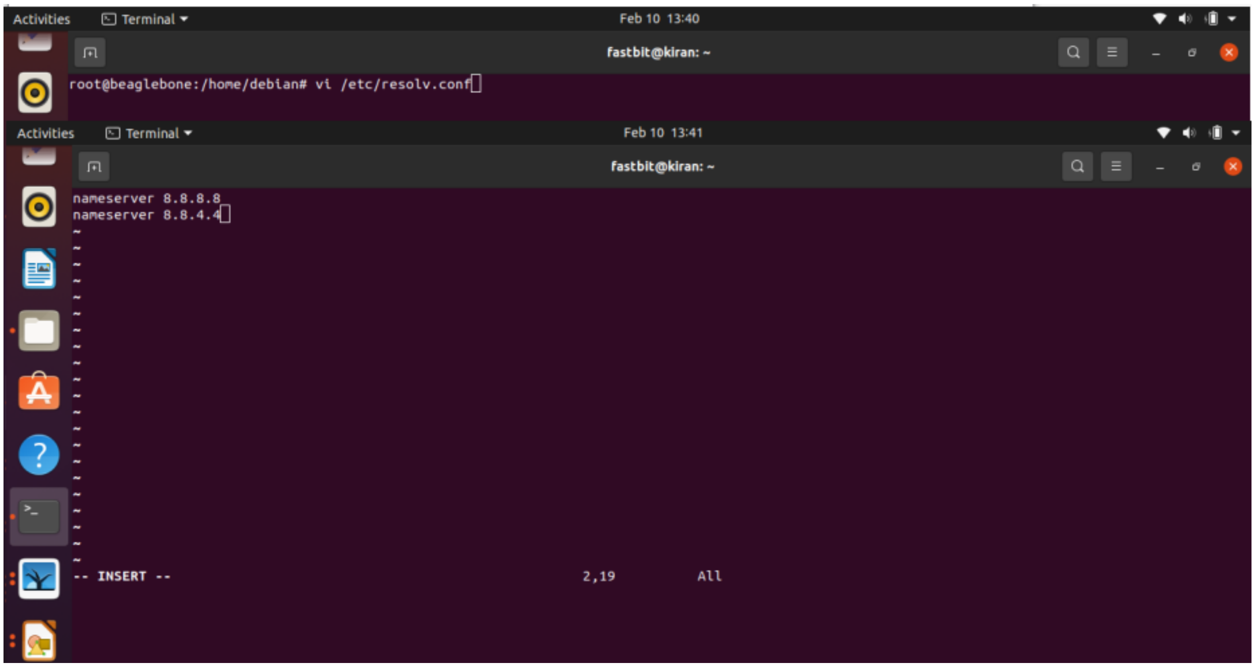
3. Edit your vi /etc/resolv.conf as shown in Figure 3.

Text:

Add nameserver 8.8.8.8

Add nameserver 8.8.4.4

save and exit.



```
root@beaglebone:/home/debian# vi /etc/resolv.conf
```

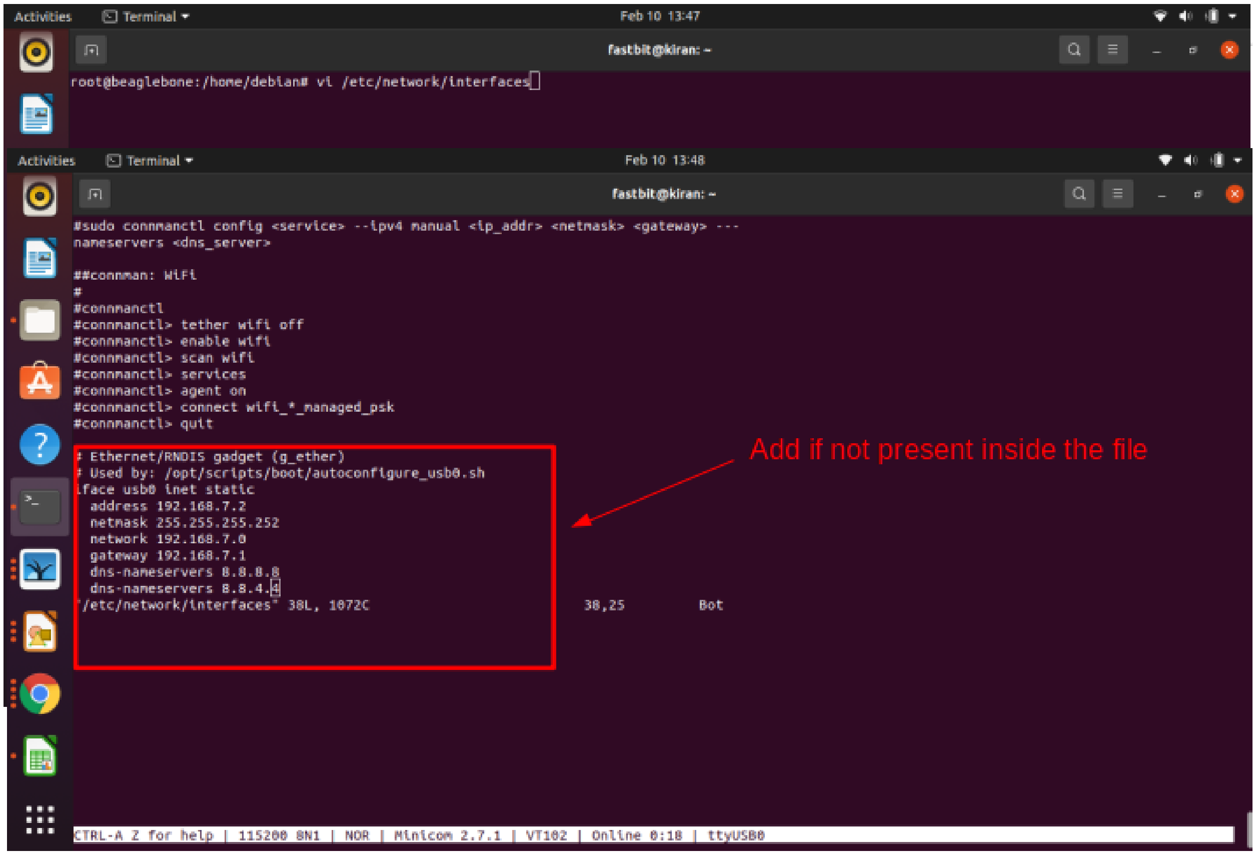
```
nameserver 8.8.8.8
nameserver 8.8.4.4
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
-- INSERT --                                                  2,19          All
```

Figure 3. resolv.conf entry

4. Edit vi /etc/network/interfaces file and add as shown in the Figure 4, save and exit

Text:

```
# Ethernet/RNDIS gadget (g_ether)
# Used by: /opt/scripts/boot/autoconfigure_usb0.sh
iface usb0 inet static
  address 192.168.7.2
  netmask 255.255.255.252
  network 192.168.7.0
  gateway 192.168.7.1
  dns-nameservers 8.8.8.8
  dns-nameservers 8.8.4.4
```



```
root@beaglebone:/home/debian# vi /etc/network/interfaces
```

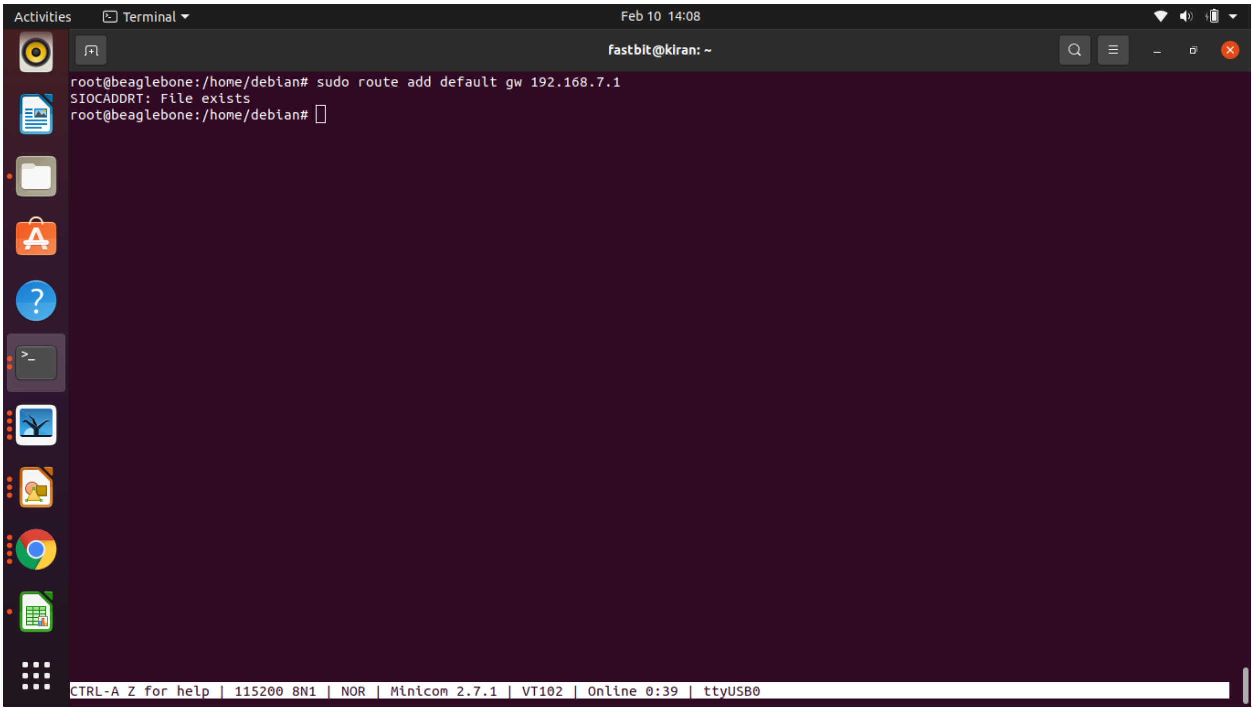
```
#sudo connmanctl config <service> --ipv4 manual <ip_addr> <netmask> <gateway> ---
nameservers <dns_server>

##connman: WiFi
#
#connmanctl
#connmanctl> tether wifi off
#connmanctl> enable wifi
#connmanctl> scan wifi
#connmanctl> services
#connmanctl> agent on
#connmanctl> connect wifi_*_managed_psk
#connmanctl> quit

# Ethernet/RNDIS gadget (g_ether)
# Used by: /opt/scripts/boot/autoconfigure_usb0.sh
iface usb0 inet static
  address 192.168.7.2
  netmask 255.255.255.252
  network 192.168.7.0
  gateway 192.168.7.1
  dns-nameservers 8.8.8.8
  dns-nameservers 8.8.4.4
"/etc/network/interfaces" 38L, 1072C                    38,25         Bot
```

```
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7.1 | VT102 | Online 0:18 | ttyUSB0
```

Add if not present inside the file

Figure 4. Adding contents inside /etc/network/interfaces

5. Add default gateway address by running the command as shown in Figure 5.
route add default gw 192.168.7.1(Using PC as default gateway).



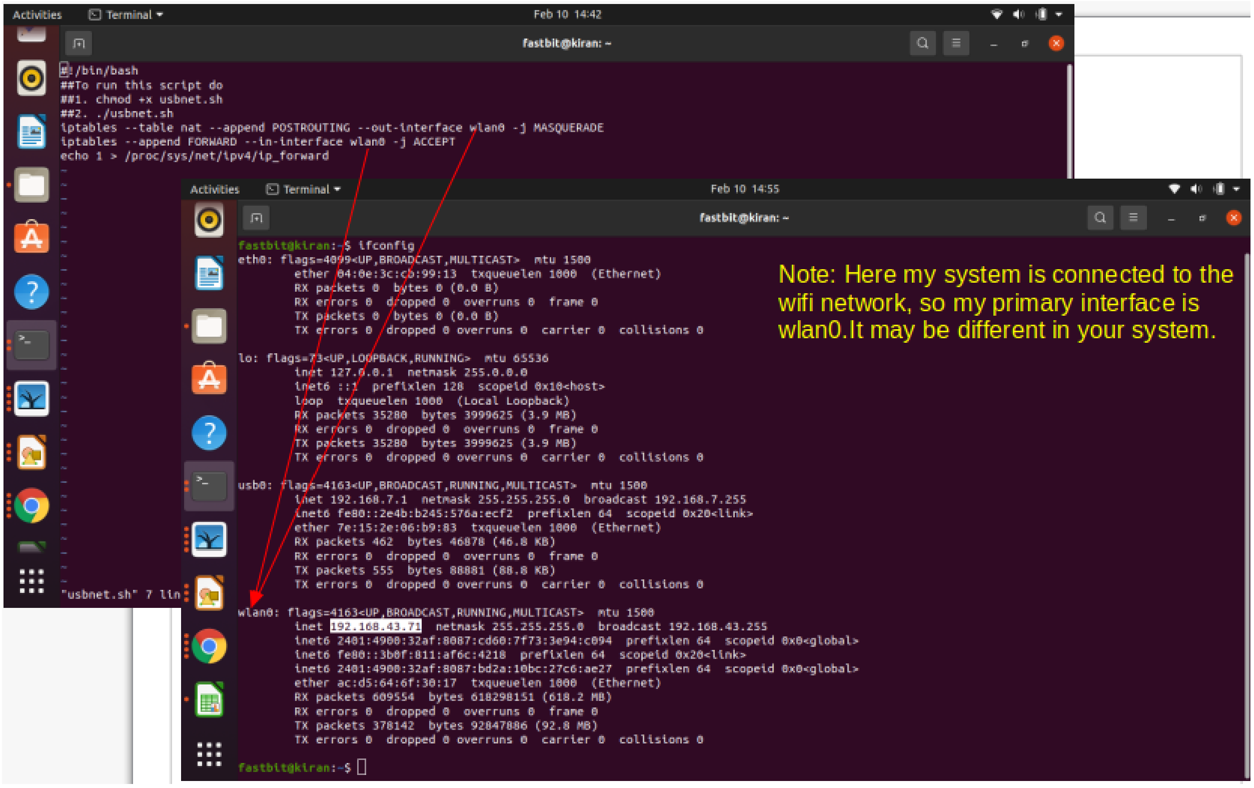
```
root@beaglebone:/home/debian# sudo route add default gw 192.168.7.1
SIOCADDRT: File exists
root@beaglebone:/home/debian# 
```

```
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7.1 | VT102 | Online 0:39 | ttyUSB0
```

Figure 5. Adding the default gateway address

Host Settings

1. Run below commands.
   sudo iptables --table nat --append POSTROUTING --out-interface wlan0 -j MASQUERADE
   sudo iptables --append FORWARD --in-interface wlan0 -j ACCEPT
   sudo echo 1 > /proc/sys/net/ipv4/ip_forward
   If you reboot your machine, again you must run these commands
   So, it's better if you create a small script and execute when your machine reboots.



```
#!/bin/bash
##To run this script do
##1. chmod +x usbnet.sh
##2. ./usbnet.sh
iptables --table nat --append POSTROUTING --out-interface wlan0 -j MASQUERADE
iptables --append FORWARD --in-interface wlan0 -j ACCEPT
echo 1 > /proc/sys/net/ipv4/ip_forward
"usbnet.sh" 7 lin
```

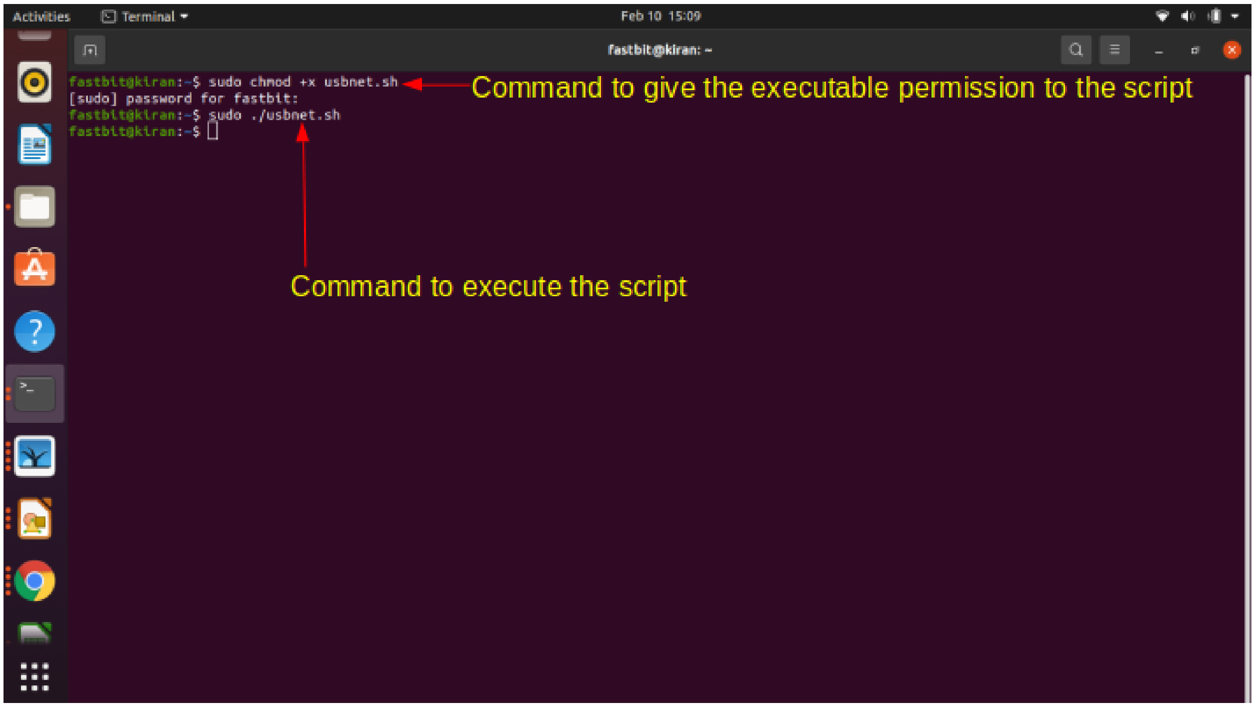
```
fastbit@kiran:~$ ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 04:0e:3c:cb:99:13  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 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 35280  bytes 3999625 (3.9 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 35280  bytes 3999625 (3.9 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

usb0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.7.1  netmask 255.255.255.0  broadcast 192.168.7.255
        inet6 fe80::2e4b:b245:576a:ecf2  prefixlen 64  scopeid 0x20<link>
        ether 7e:15:2e:06:b9:83  txqueuelen 1000  (Ethernet)
        RX packets 462  bytes 46878 (46.8 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 555  bytes 88881 (88.8 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.43.71  netmask 255.255.255.0  broadcast 192.168.43.255
        inet6 2401:4900:32af:8087:cd60:7f73:3e94:c094  prefixlen 64  scopeid 0x0<global>
        inet6 fe80::3b0f:811:af6c:4218  prefixlen 64  scopeid 0x20<link>
        inet6 2401:4900:32af:8087:bd2a:10bc:27c6:ae27  prefixlen 64  scopeid 0x0<global>
        ether ac:d5:64:6f:30:17  txqueuelen 1000  (Ethernet)
        RX packets 609554  bytes 618298151 (618.2 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 378142  bytes 92847886 (92.8 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

fastbit@kiran:~$
```

Note: Here my system is connected to the wifi network, so my primary interface is wlan0.It may be different in your system.

Figure 6. usbnet.sh

Download Script from this link:
https://drive.google.com/file/d/1dsdw2nxKUWLWSpIwpvMh_054odBXmq40/view?usp=sharing

2. Give executable permission and run the script as shown in Figure 7.



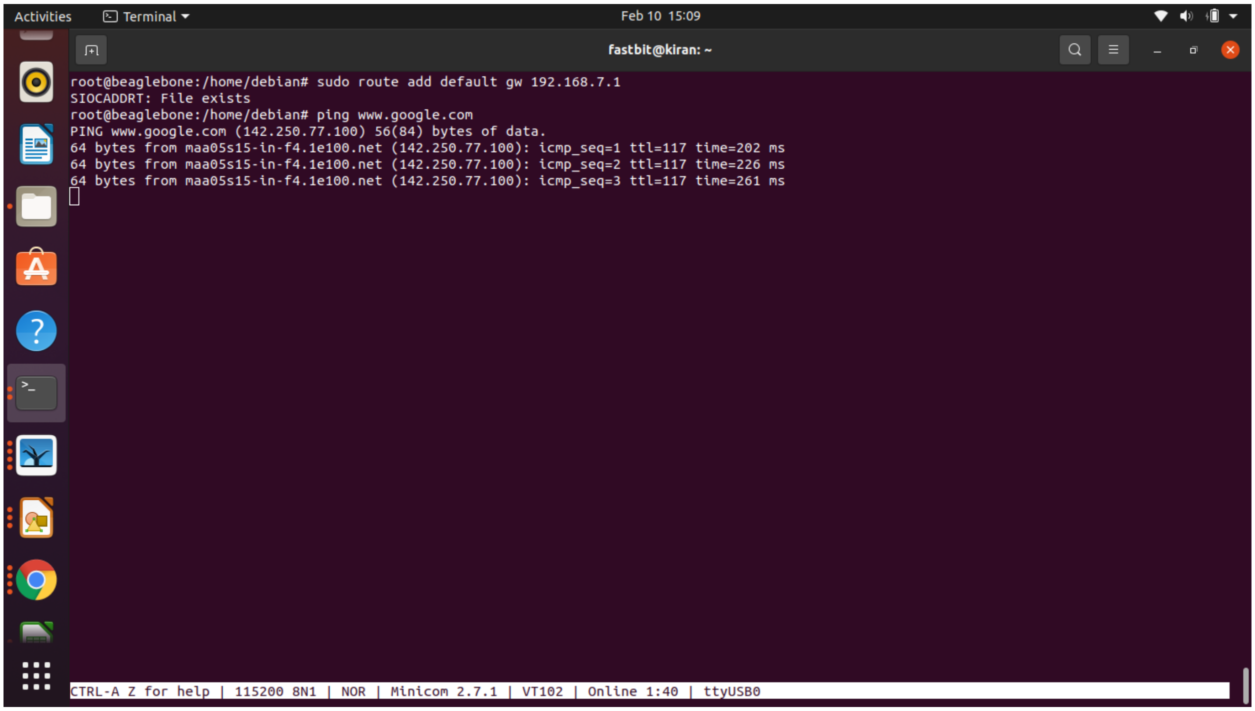
```
fastbit@kiran:~$ sudo chmod +x usbnet.sh
[sudo] password for fastbit:
fastbit@kiran:~$ sudo ./usbnet.sh
fastbit@kiran:~$ 
```

Command to give the executable permission to the script

Command to execute the script

Figure 7. Giving executable permission and running the script

3. Goto the target and ping www.google.com as shown in the Figure 8.



```
root@beaglebone:/home/debian# sudo route add default gw 192.168.7.1
SIOCADDRT: File exists
root@beaglebone:/home/debian# ping www.google.com
PING www.google.com (142.250.77.100) 56(84) bytes of data.
64 bytes from maa05s15-in-f4.1e100.net (142.250.77.100): icmp_seq=1 ttl=117 time=202 ms
64 bytes from maa05s15-in-f4.1e100.net (142.250.77.100): icmp_seq=2 ttl=117 time=226 ms
64 bytes from maa05s15-in-f4.1e100.net (142.250.77.100): icmp_seq=3 ttl=117 time=261 ms

CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.7.1 | VT102 | Online 1:40 | ttyUSB0
```

Figure 8. Ping to www.google.com