Mawlana Bhashani Science and Technology University

Lab-Report

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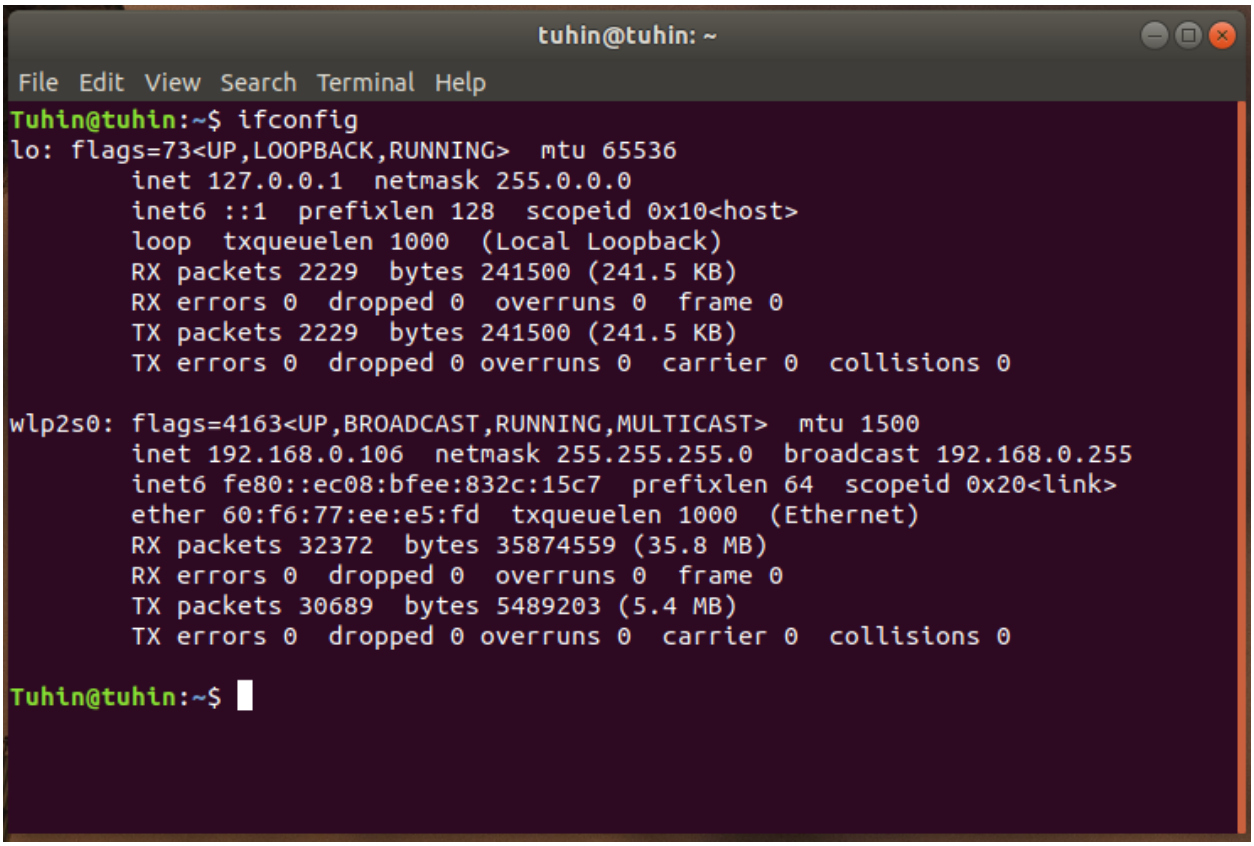
1. **Introduction: If you have a network that ranges from 192.168.1.0 to 192.168.1.255 explain why Individual devices in the network can only be assigned IP addresses in the range of 192.168.1.1 to 192.168.1.254.**

Answer: If your IP address ranges from 192.168.1.0 to 192.168.1.255 then you are connected to a private network. Home routers have their local address set to a default, private IP address number. It's usually the same address for the other models from that manufacturer, and it can be seen in the manufacturer's documentation. Here's a look at the default private (also called "local") IP addresses for popular brands of routers: Linksys routers use 192.168.1.1 ,D-Link and NETGEAR routers are set to 192.168.0.1 ,Cisco routers use either 192.168.1.1, 192.168.1.254 or 192.168.10.2 Belkin and SMC routers often use 192.168.2.1

192.168.1.254 is a Private IP address, one of the addresses for private networks. This means that a device in this private network cannot be accessed directly from the internet using a Private IP, but by any other device on the local network. While the router itself has a Private IP of 192.168.1.254, it assigns any device in the network a different private IP address. All IP addresses on the network must have a unique address on that network to avoid IP address conflicts. Ipv4addresses are internally 32 bits, they're often divided into 4 groups of 8 bits. An octet can only be variety from 0 – 255, so as that leaves 256 possibilities for that last number. All addresses within the range of 192.168.1.0 to 192.168.1.255 are within an equivalent network. There are only 254 possibilities for variety. The addresses 192.168.1.0 and 192.168.1.255 are reserved for the network. 192.168.1.0, is reserved for the "network address".192.168.1.255, is that the "broadcast address".

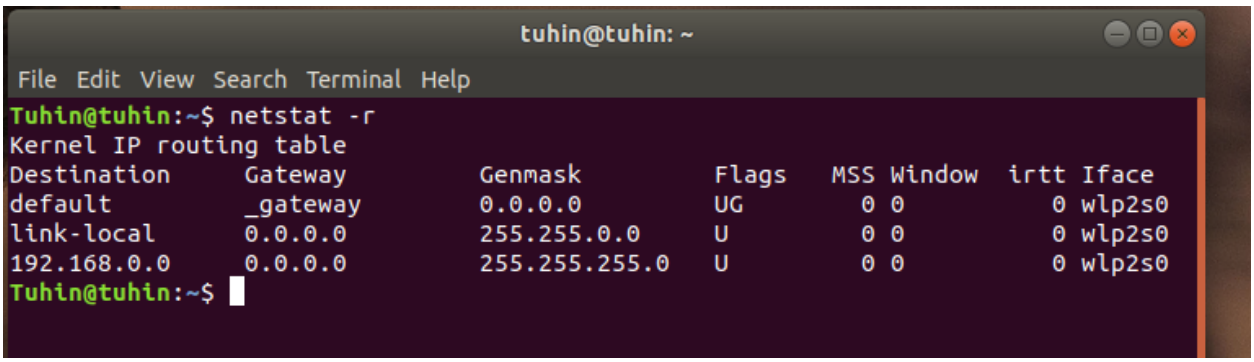
2. Find IP & MAC: Find out about network and hardware information for the computer you are currently using.

Answer: ***ifconfig*** (interface configurator**)** command is use to initialize an interface, assign IP Address to interface and enable or disable interface on demand. With this command you can view IP Address and Hardware **/** MAC address assign to interface and also MTU **(**Maximum transmission unit**)** size.



3. Routing Table basics:

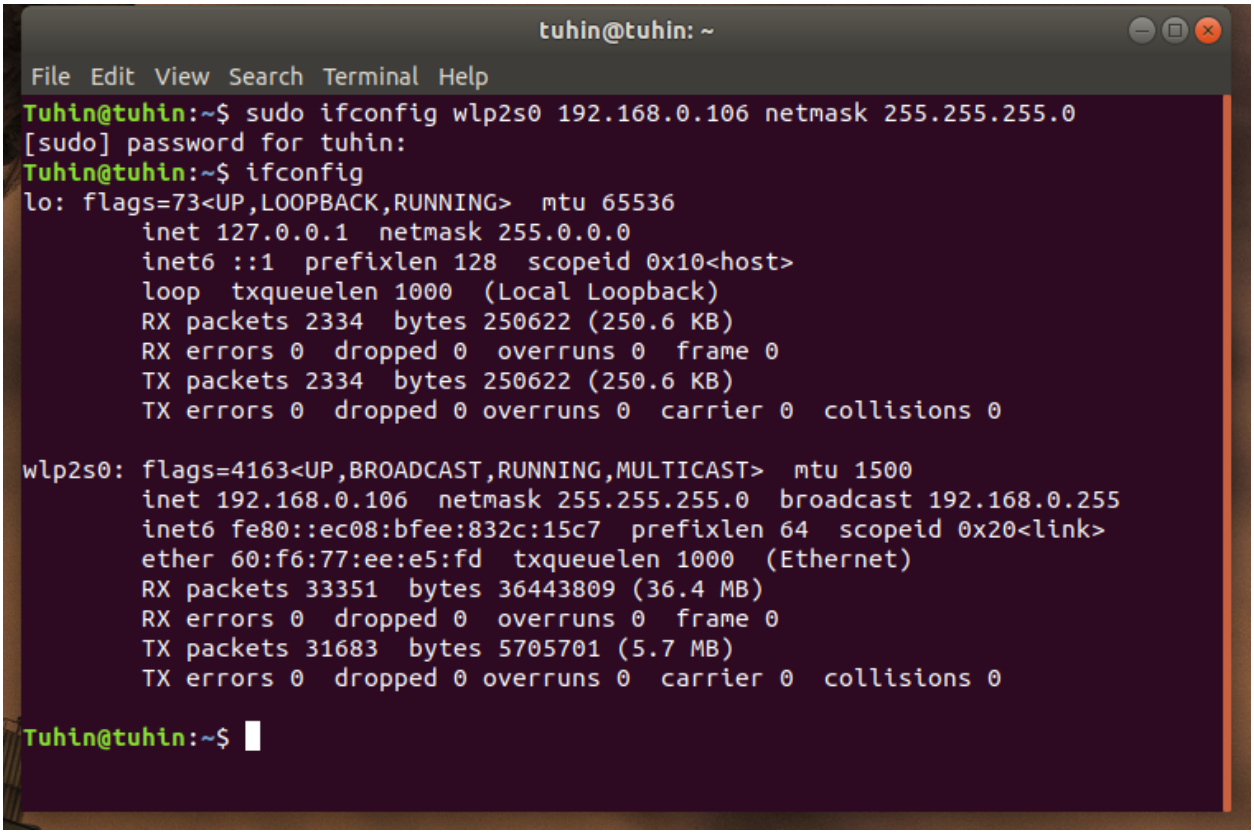
The netstat -r command is used to show the routing table:



4. Virtual Interfaces:

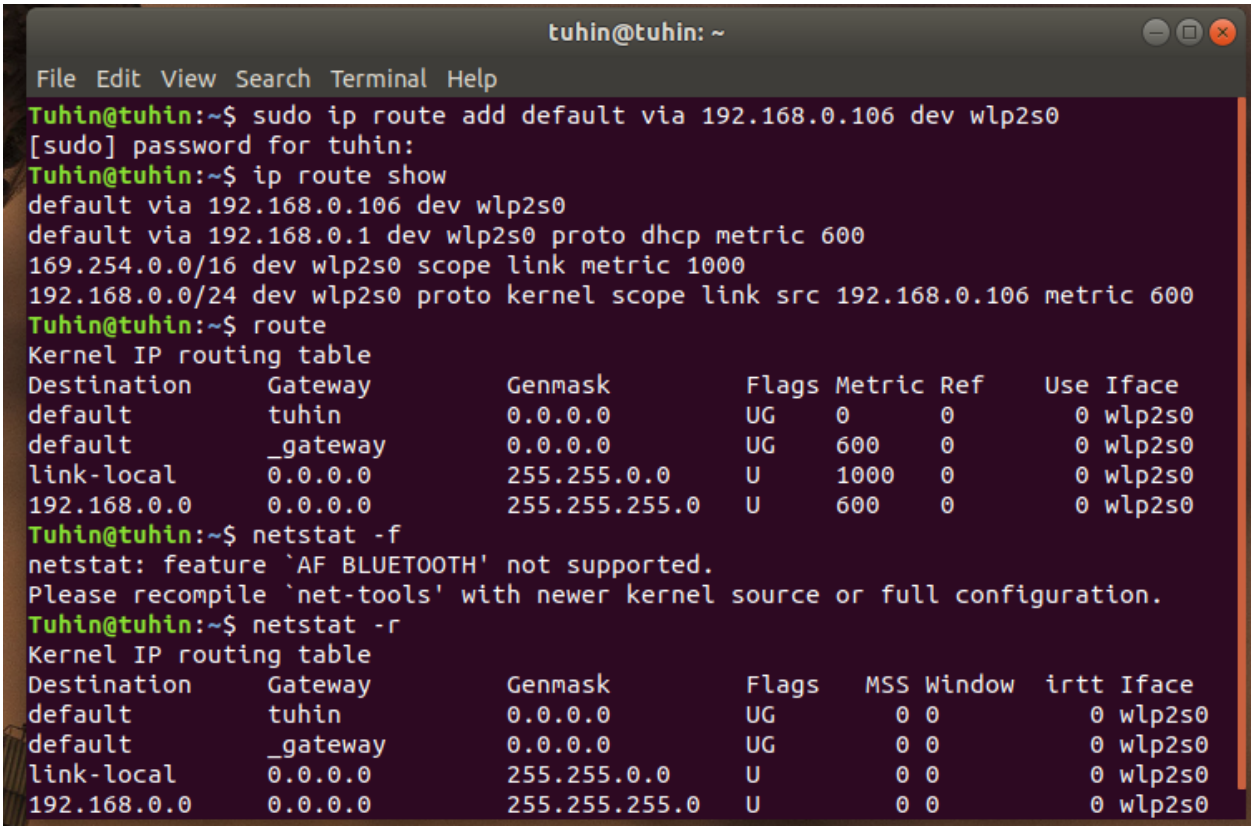
a) Create a new virtual interface with the following IP address , 192.168.2.32 and netmask 255.255.255.0 then check to see if the interface was created successfully?

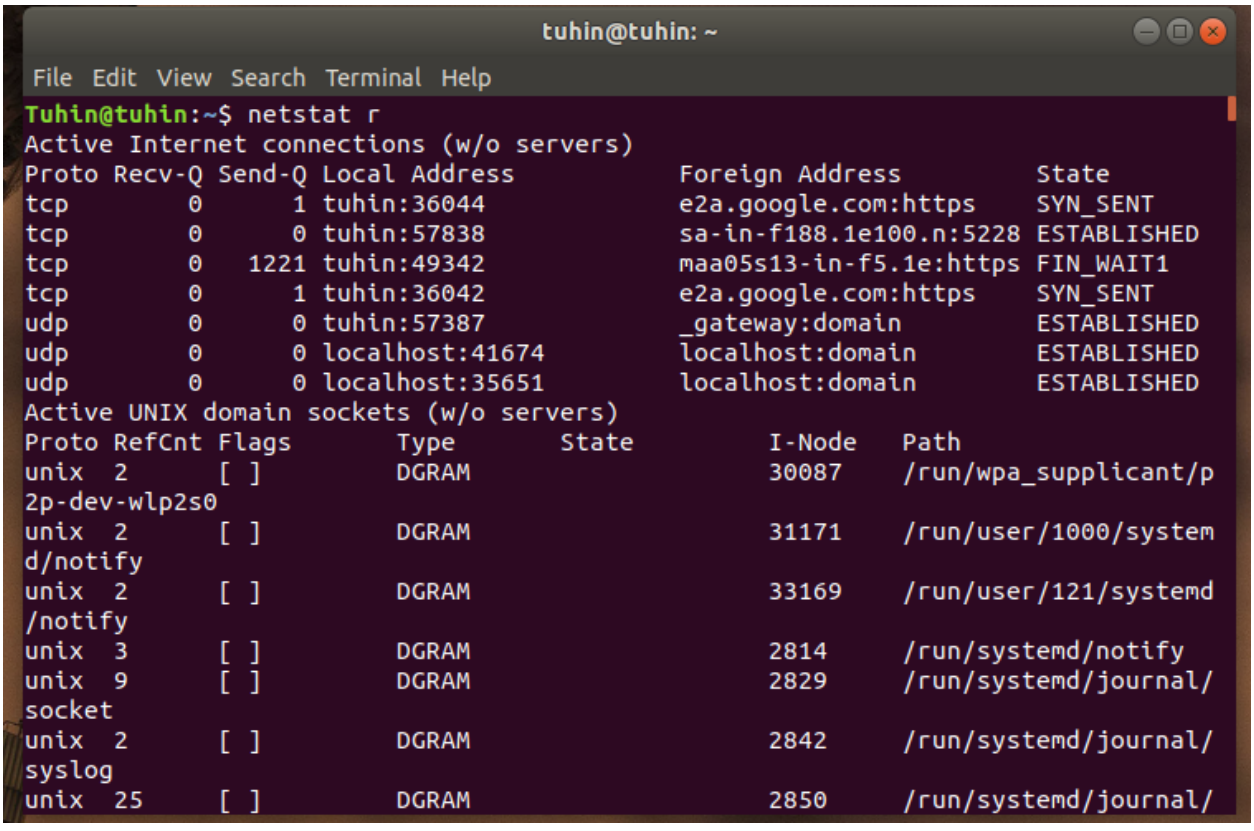
Answer:



b) You need to set up a route for this interface so that your computer can see it. Issue the needed command, then issue the "$ netstat -r" command and check if the route to your added interface is visible?

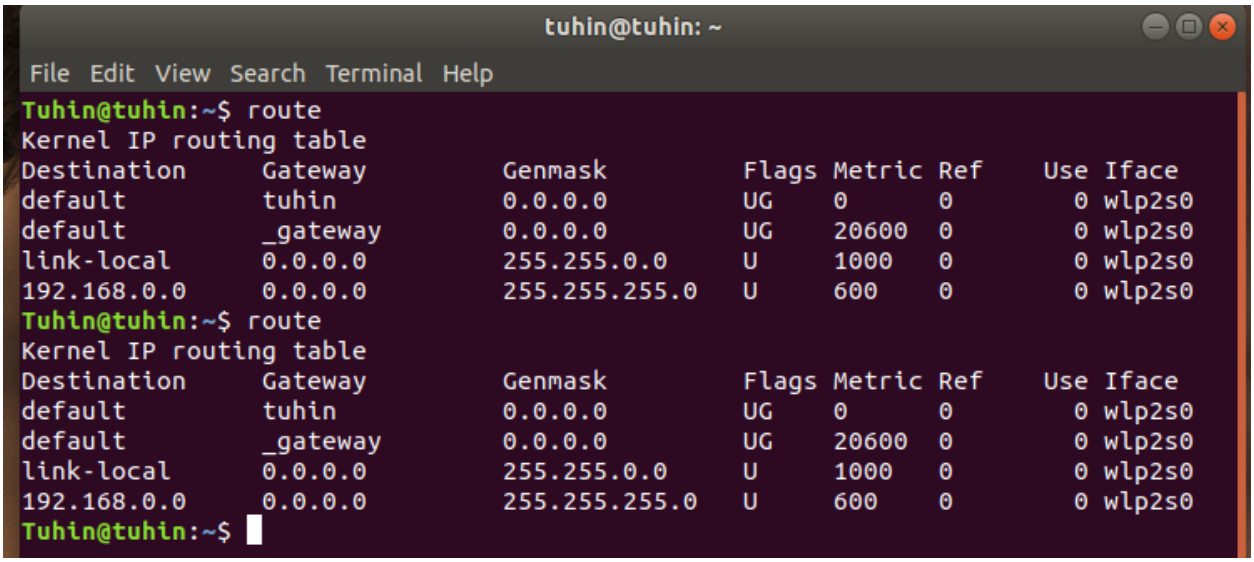
Answer:


tuhin@tuhin: ~
File Edit View Search Terminal Help
Tuhin@tuhin:~$ sudo ip route add default via 192.168.0.106 dev wlp2s0
[sudo] password for tuhin:
Tuhin@tuhin:~$ ip route show
default via 192.168.0.106 dev wlp2s0
default via 192.168.0.1 dev wlp2s0 proto dhcp metric 600
169.254.0.0/16 dev wlp2s0 scope link metric 1000
192.168.0.0/24 dev wlp2s0 proto kernel scope link src 192.168.0.106 metric 600
Tuhin@tuhin:~$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default tuhin 0.0.0.0 UG 0 0 0 wlp2s0
default _gateway 0.0.0.0 UG 600 0 0 wlp2s0
link-local 0.0.0.0 255.255.0.0 U 1000 0 0 wlp2s0
192.168.0.0 0.0.0.0 255.255.255.0 U 600 0 0 wlp2s0
Tuhin@tuhin:~$ netstat -f
netstat: feature `AF BLUETOOTH' not supported.
Please recompile `net-tools' with newer kernel source or full configuration.
Tuhin@tuhin:~$ netstat -r
Kernel IP routing table
Destination Gateway Genmask Flags MSS Window irtt Iface
default tuhin 0.0.0.0 UG 0 0 0 wlp2s0
default _gateway 0.0.0.0 UG 0 0 0 wlp2s0
link-local 0.0.0.0 255.255.0.0 U 0 0 0 wlp2s0
192.168.0.0 0.0.0.0 255.255.255.0 U 0 0 0 wlp2s0


tuhin@tuhin: ~
File Edit View Search Terminal Help
Tuhin@tuhin:~$ netstat r
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State
tcp 0 1 tuhin:36044 e2a.google.com:https SYN_SENT
tcp 0 0 tuhin:57838 sa-in-f188.1e100.n:5228 ESTABLISHED
tcp 0 1221 tuhin:49342 maa05s13-in-f5.1e:https FIN_WAIT1
tcp 0 1 tuhin:36042 e2a.google.com:https SYN_SENT
udp 0 0 tuhin:57387 _gateway:domain ESTABLISHED
udp 0 0 localhost:41674 localhost:domain ESTABLISHED
udp 0 0 localhost:35651 localhost:domain ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags Type State I-Node Path
unix 2 [ ] DGRAM 30087 /run/wpa_supplicant/p
2p-dev-wlp2s0
unix 2 [ ] DGRAM 31171 /run/user/1000/system
d/notify
unix 2 [ ] DGRAM 33169 /run/user/121/systemd
/notify
unix 3 [ ] DGRAM 2814 /run/systemd/notify
unix 9 [ ] DGRAM 2829 /run/systemd/journal/
socket
unix 2 [ ] DGRAM 2842 /run/systemd/journal/
syslog
unix 25 [ ] DGRAM 2850 /run/systemd/journal/

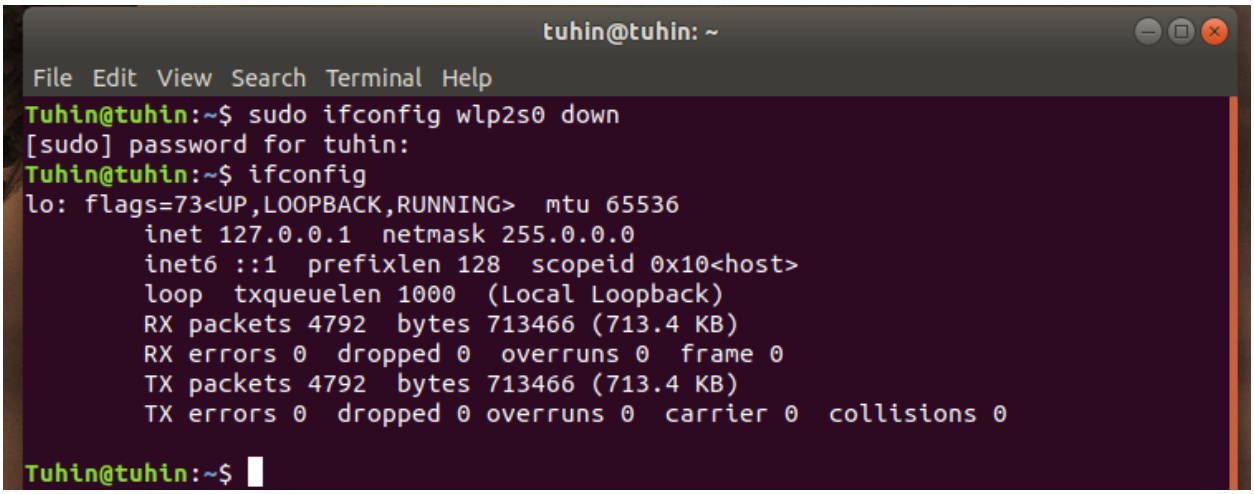
c) Remove the route for this interface:

Answer:



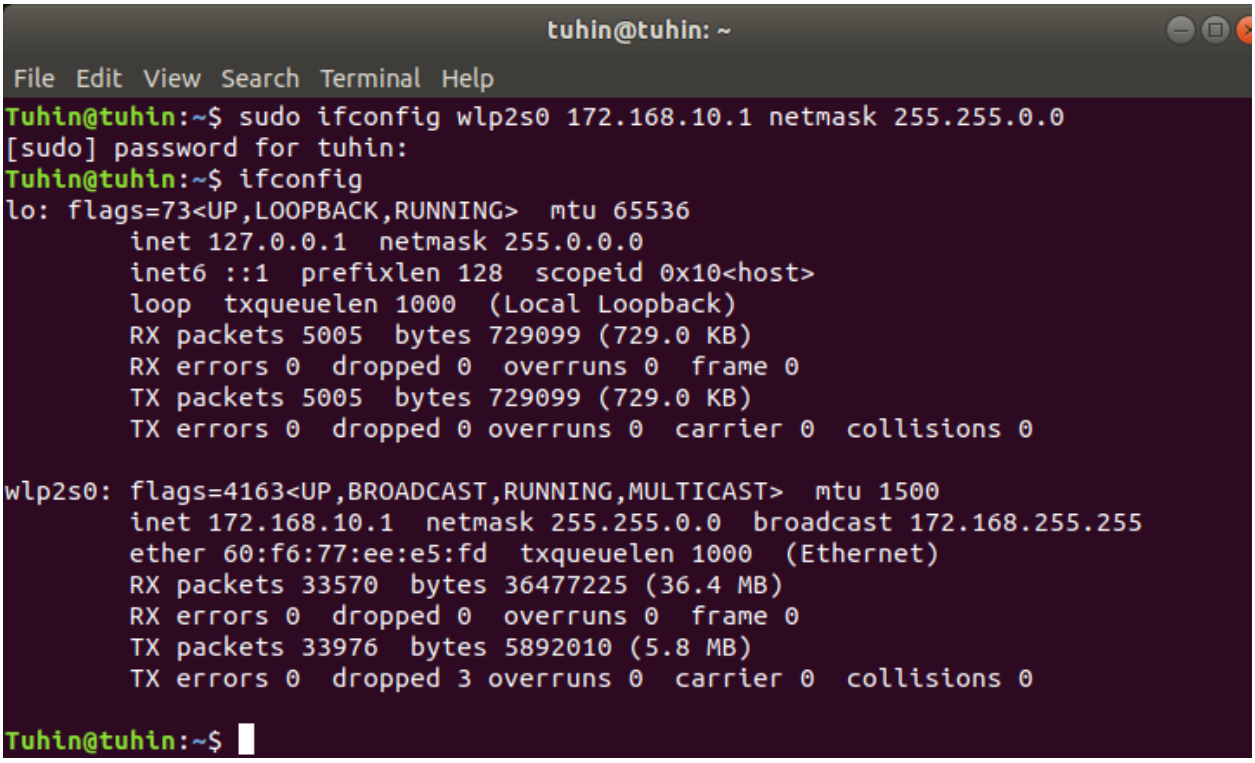
d) Then remove the interface completely.

Command for removing the interface completely, sudo ifconfig wlp2s0 down is used

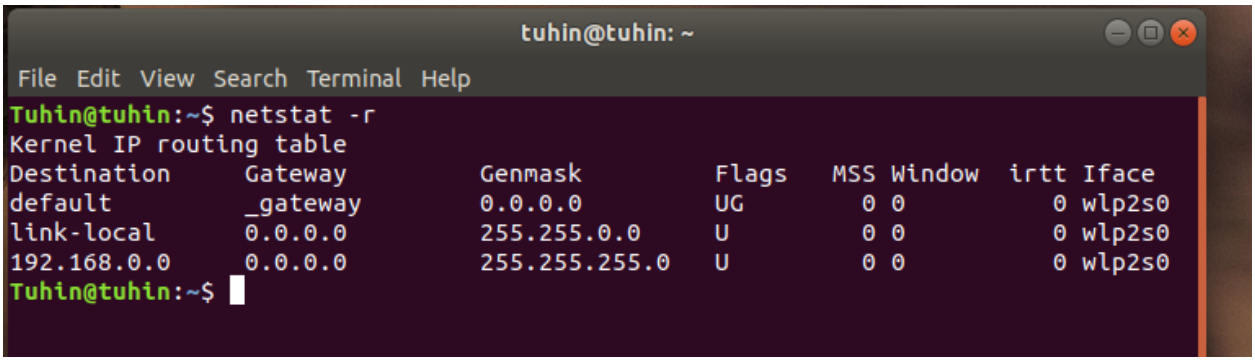


5. Add a New Network:

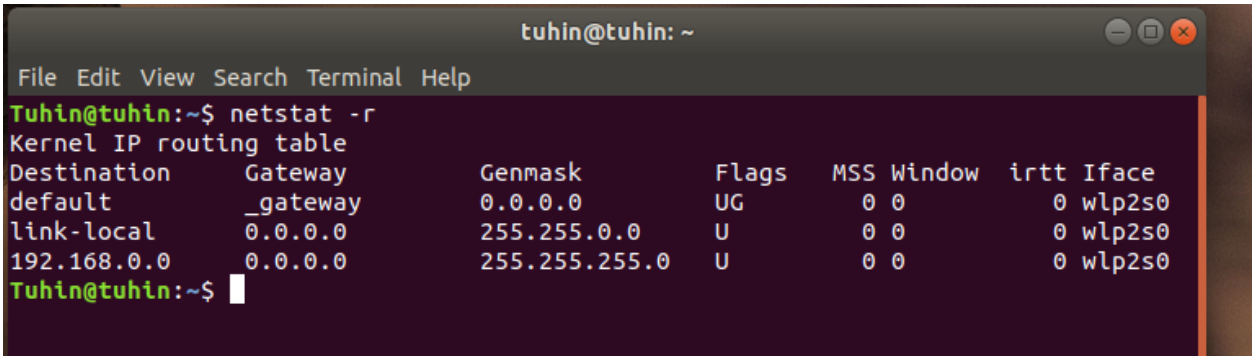
a) Enter the command needed to add another network with the same values as your primary network meaning.



b) Assign the default gateway for newly added network (Your default Gateway Address):

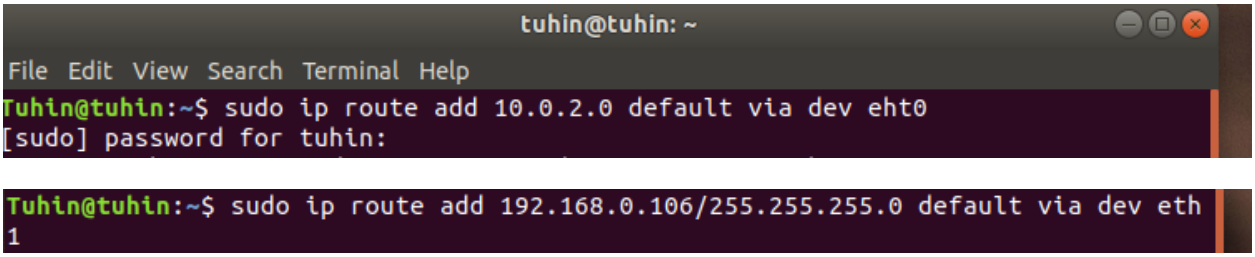


c) Look for your newly added network in your routing table by issuing the "$ netstat -r "command.

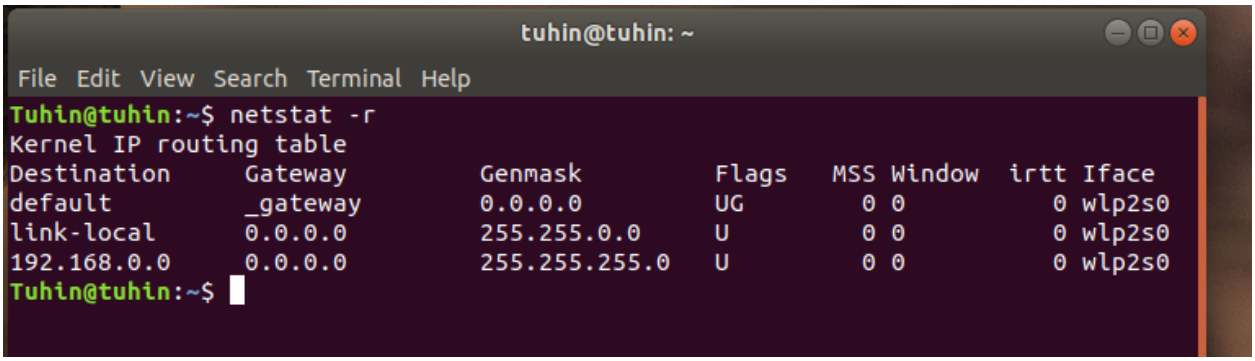


6. Multi network scenario configuration:

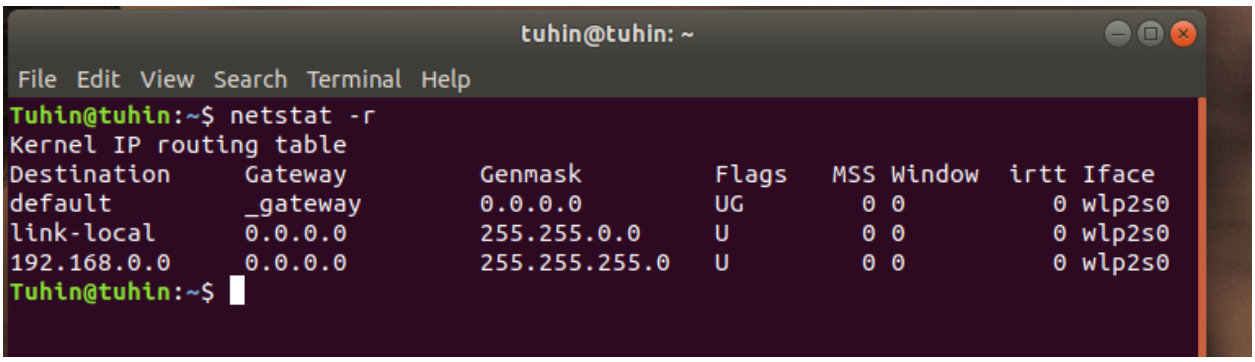
a) Assign the firewall IP addresses to eth1 and eth2.



b) Add the routes for the networks, i.e. 192.168.0.0 on eth1 and 10.0.2.0 on eth0



c) Assign the internet gateway (meaning: 192.168.1.1) as the default gateway.



d) Enter the necessary commands in order for packets belonging to computers in the 10.0.2.0 network to be routed to the 192.168.1.0 network and the internet. In other words this should tell each computer on the 10.0.2.0, which the default gateway is, i.e.., your firewall/router. You do not need to be worry about the route back configuration it is enough to assign the proper default gateway for the 10.0.2.0 network.