CAN THO UNIVERSITY
COLLEGE OF ICT

COMPUTER NETWORK
(CT106H)

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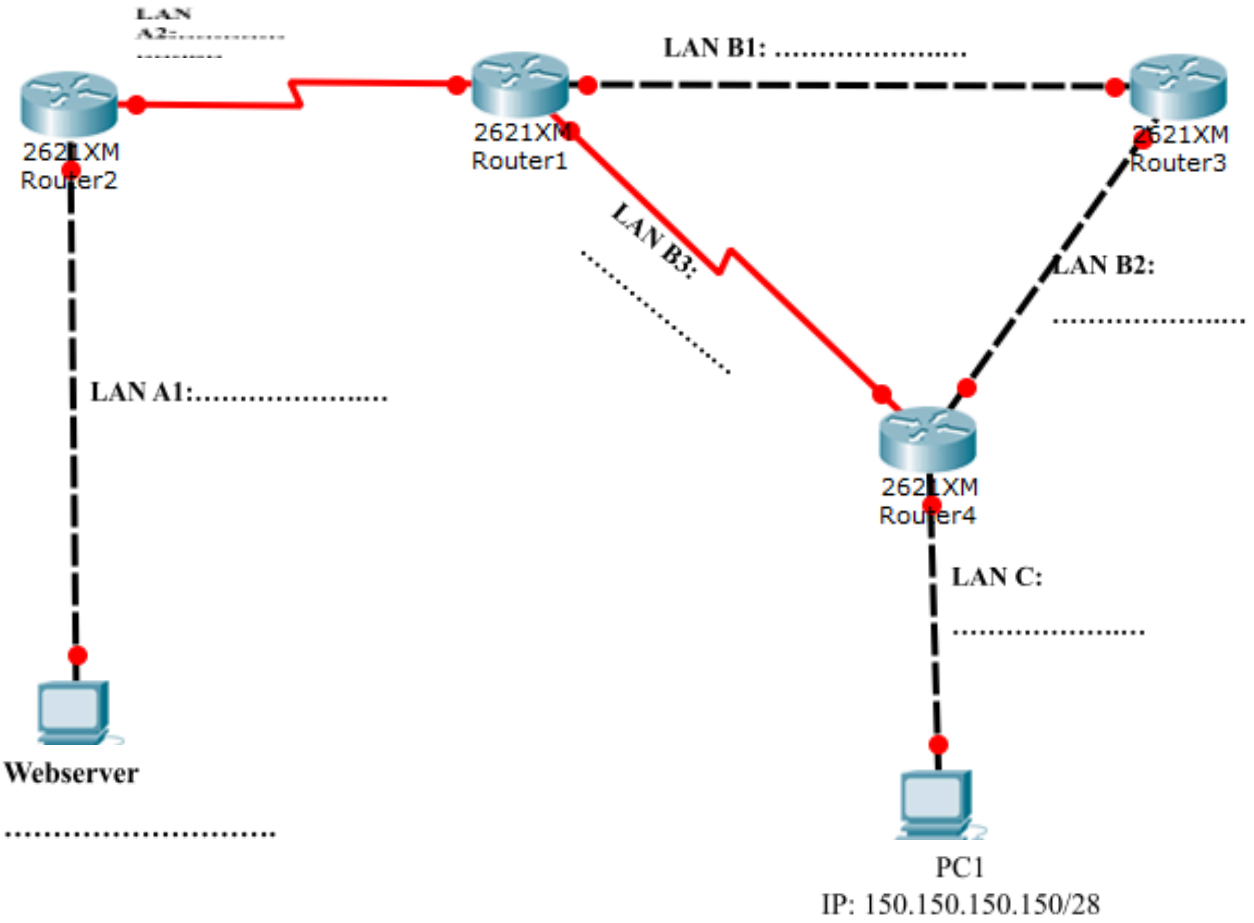
Group: M01

Construct a network system as follows:

- LAN A has a single network address of 156.156.156.0/24, using static routing. LAN A is divided into 2 subnets, consisting of A1 and A2. In addition, there is a Web server running a simple webpage showing "YEAH! My name is *YOUR_FULL_NAME*" (replace *YOUR_FULL_NAME* by your full name) in LAN A1.
- LAN B1 has a network address of 140.140.140.0/27, using the RIPv2 protocol.
- LAN B2 has a network address of 140.140.140.128/27, using the RIPv2 protocol.
- LAN B3 has a network address of 140.140.140.192/27, using the RIPv2 protocol.
- LAN C includes PC1 and Router 4. The IP address of PC1 is 150.150.150.150/28.

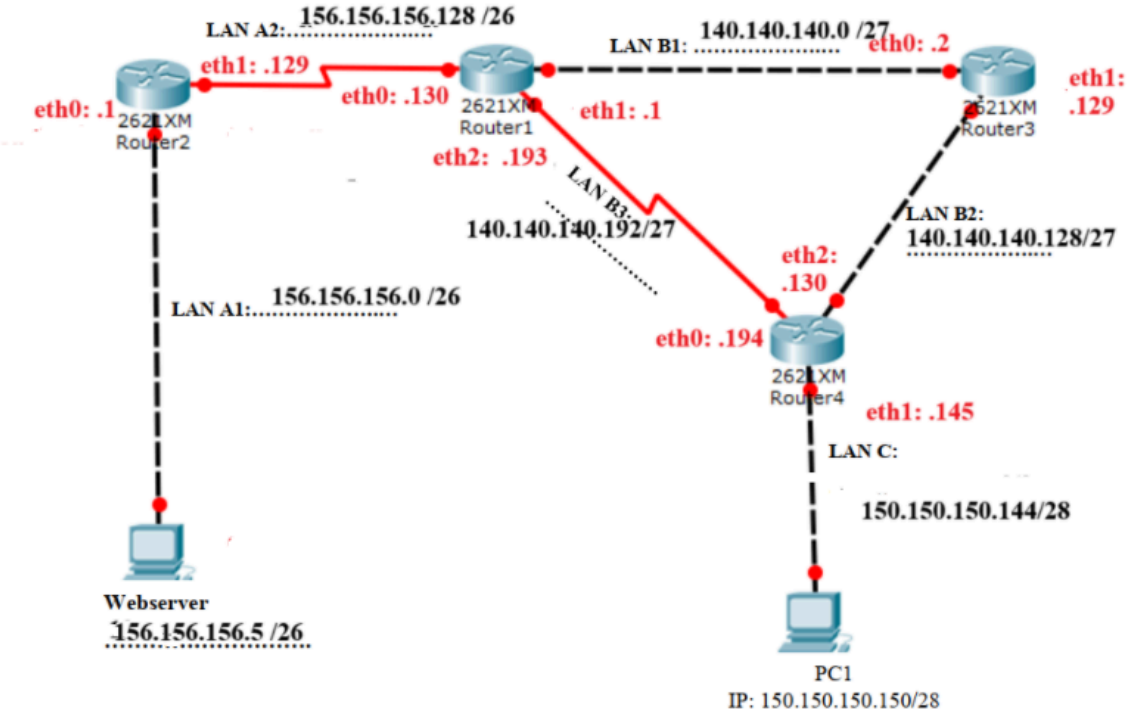


Please take screenshots showing:

1. (0,5 point) select and assign the IP addresses for all of the Ethernet interfaces.
2. (1,0 point) the directory tree structure of this network system (using the ***tree*** command).
3. (1,0 point) the content of the file *lab.conf*?
4. (5,0 points) the content of all files *. *startup*
5. (1,0 point) the contents of all files and commands you use in order to set up the web service on the web server
6. (0,5 point) the command line to check the hops for transmitting data from PC1 to the web server? List all hops between PC1 and the Web server.
7. (1,0 points) check the network system constructed (using the ***ping*** command).

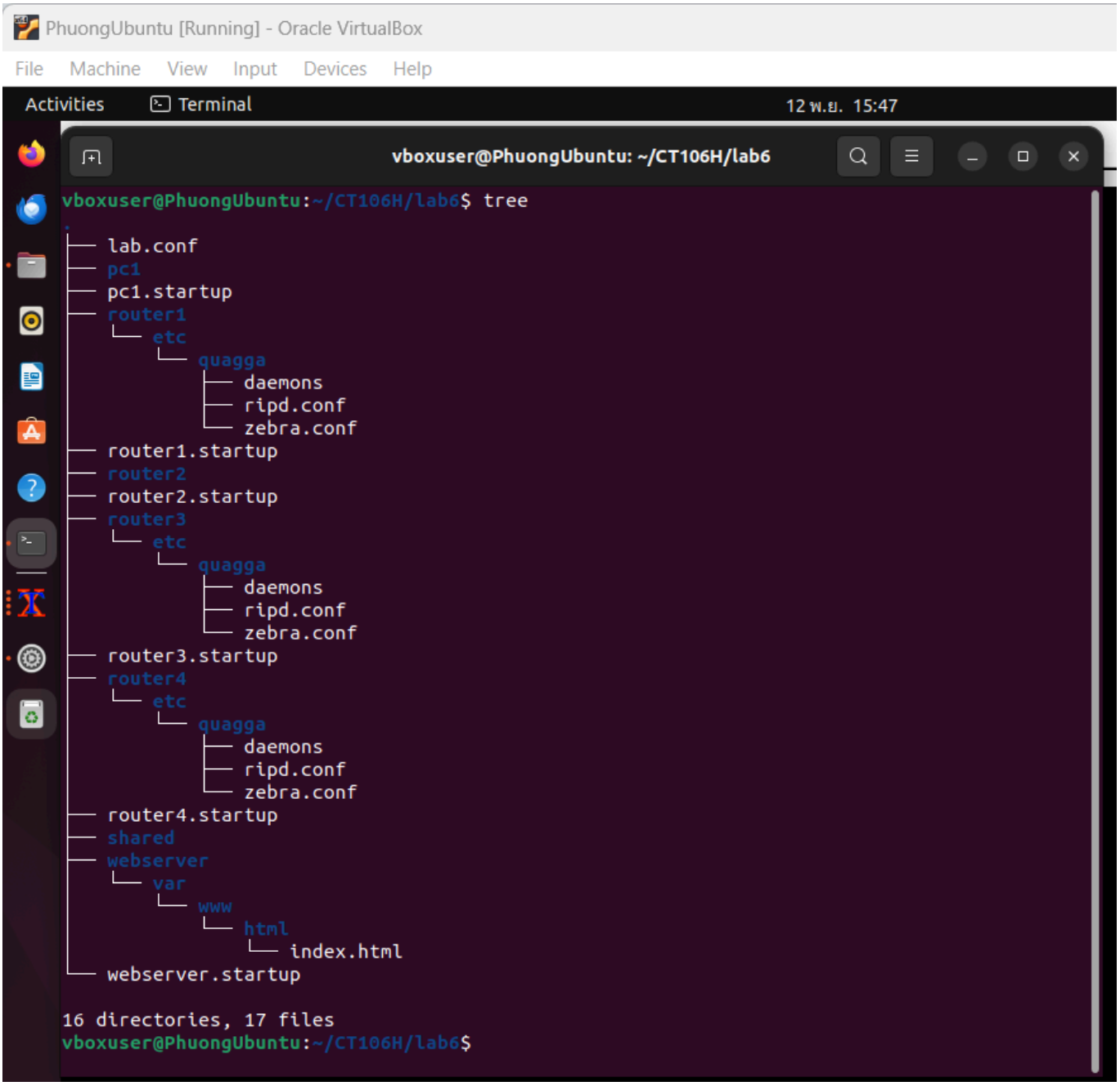
**********GOOD LUCK**********

1.(0,5 point) select and assign the IP addresses for all of the Ethernet interfaces.



2.(1,0 point) the directory tree structure of this network system (using the *tree* command).

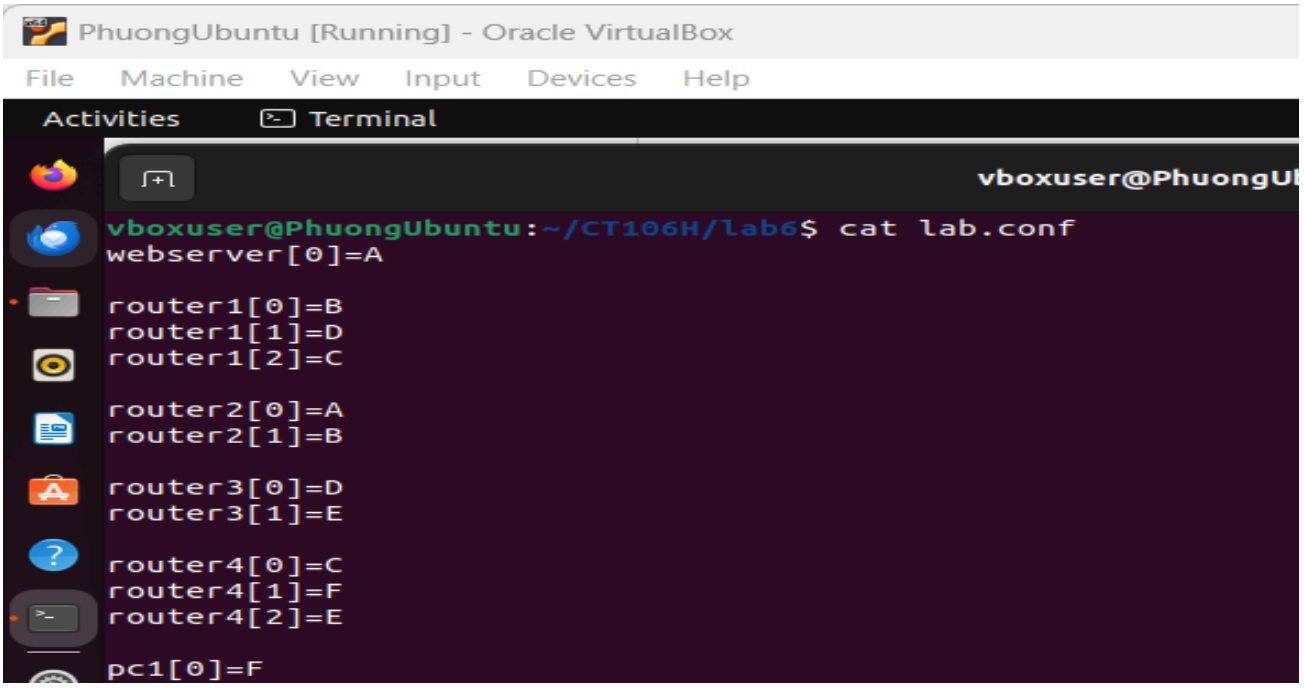
command: ~/CT106H/lab6$tree


PhuongUbuntu [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities
Terminal
12 พ.ย. 15:47
vboxuser@PhuongUbuntu: ~/CT106H/lab6
vboxuser@PhuongUbuntu:~/CT106H/lab6$ tree
.
├── lab.conf
├── pc1
├── pc1.startup
├── router1
│ └── etc
│ └── quagga
│ ├── daemons
│ ├── ripd.conf
│ └── zebra.conf
├── router1.startup
├── router2
├── router2.startup
├── router3
│ └── etc
│ └── quagga
│ ├── daemons
│ ├── ripd.conf
│ └── zebra.conf
├── router3.startup
├── router4
│ └── etc
│ └── quagga
│ ├── daemons
│ ├── ripd.conf
│ └── zebra.conf
├── router4.startup
├── shared
├── webserver
│ └── var
│ └── www
│ └── html
│ └── index.html
└── webserver.startup
16 directories, 17 files
vboxuser@PhuongUbuntu:~/CT106H/lab6$

3.(1,0 point) the content of the file *lab.conf*?

command:

~/CT106H/lab6$cat lab.conf



4.(5,0 points) the content of all files **. startup*

~/CT106H/lab6$cat pc1.startup

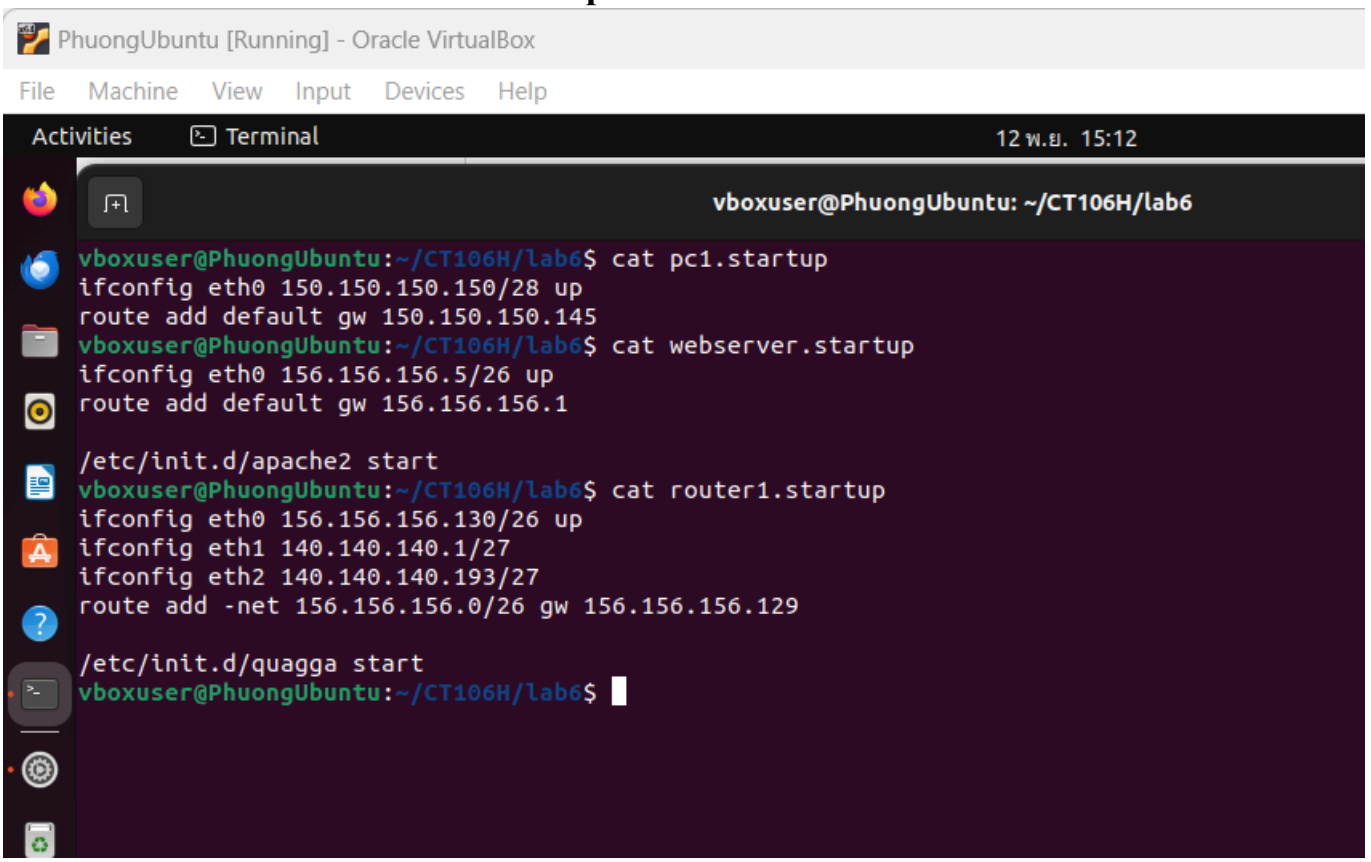
~/CT106H/lab6$cat router1.startup

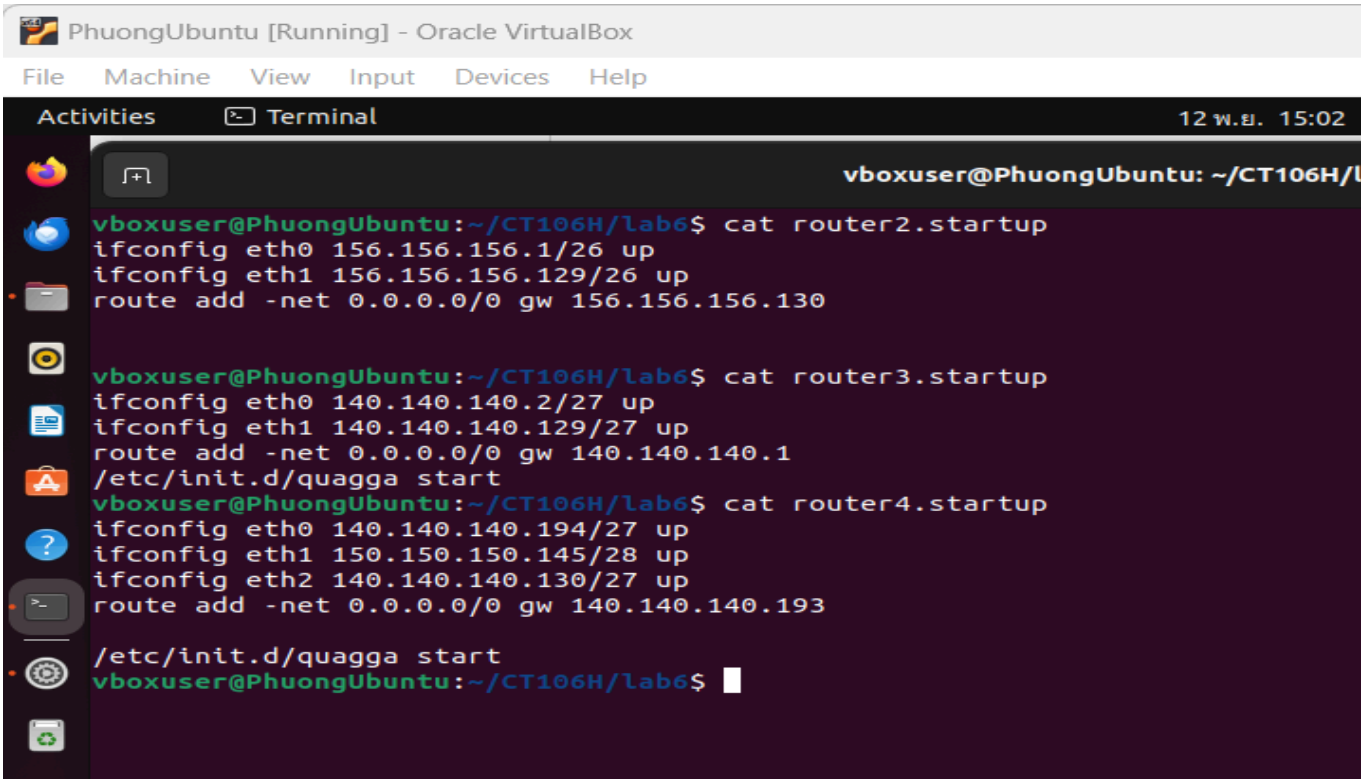
~/CT106H/lab6$cat router2.startup

~/CT106H/lab6$cat router3.startup

~/CT106H/lab6$cat router4.startup

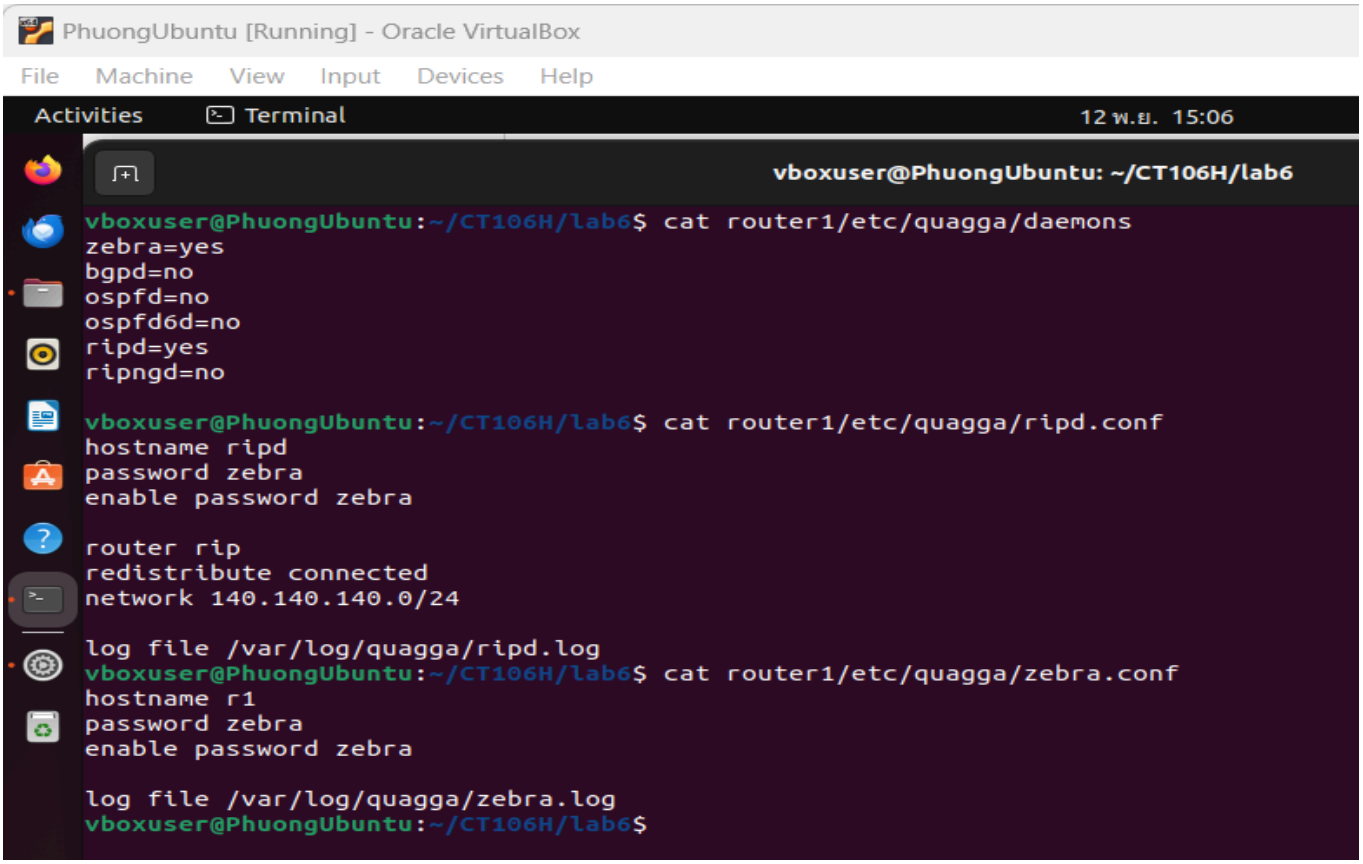
~/CT106H/lab6$cat webserver.startup

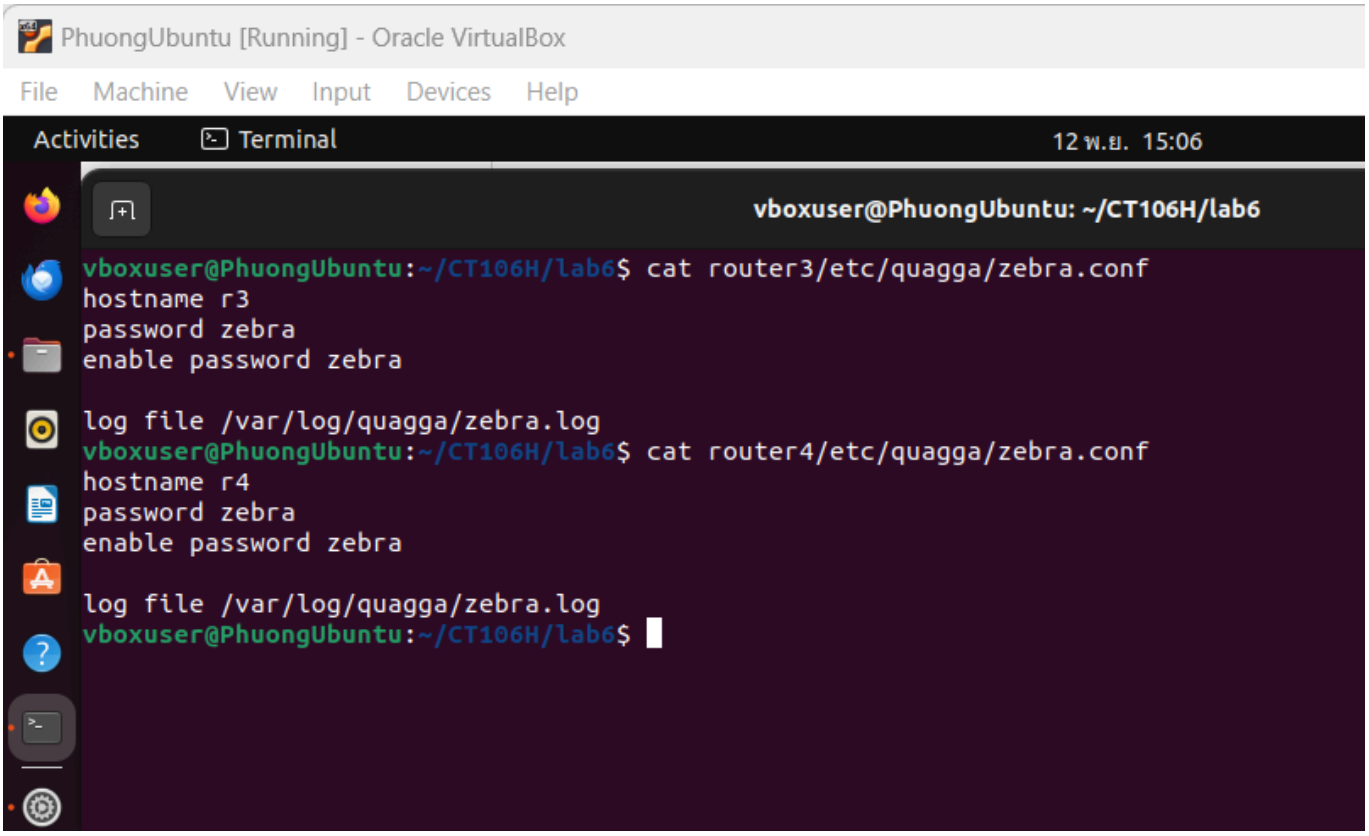




RIPv2 configuration

~/CT106H/lab6$cat router1/etc/quagga/daemons
~/CT106H/lab6$cat router1/etc/quagga/ripd.conf
~/CT106H/lab6$cat router1/etc/quagga/zebra.conf
~/CT106H/lab6$cat router3/etc/quagga/ripd.conf
~/CT106H/lab6$cat router4/etc/quagga/ripd.conf

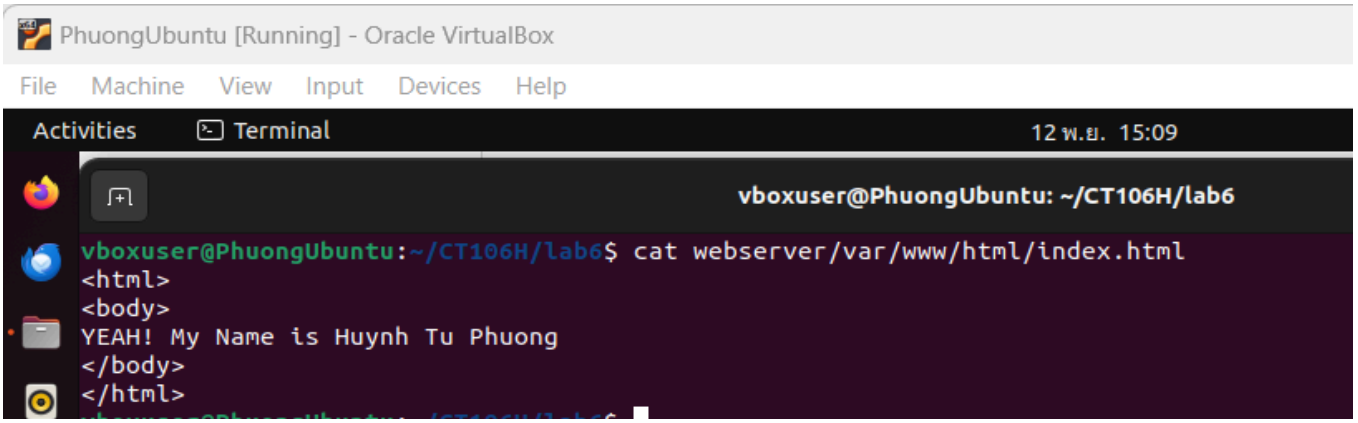




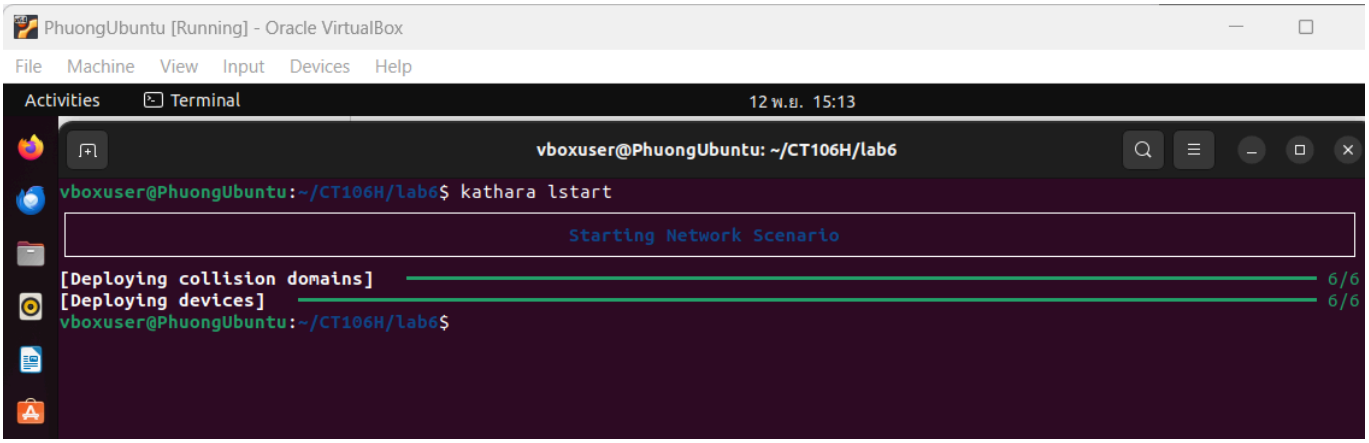
5.(1,0 point) the contents of all files and commands you use in order to set up the web service on the web server

The contents of file index.html:

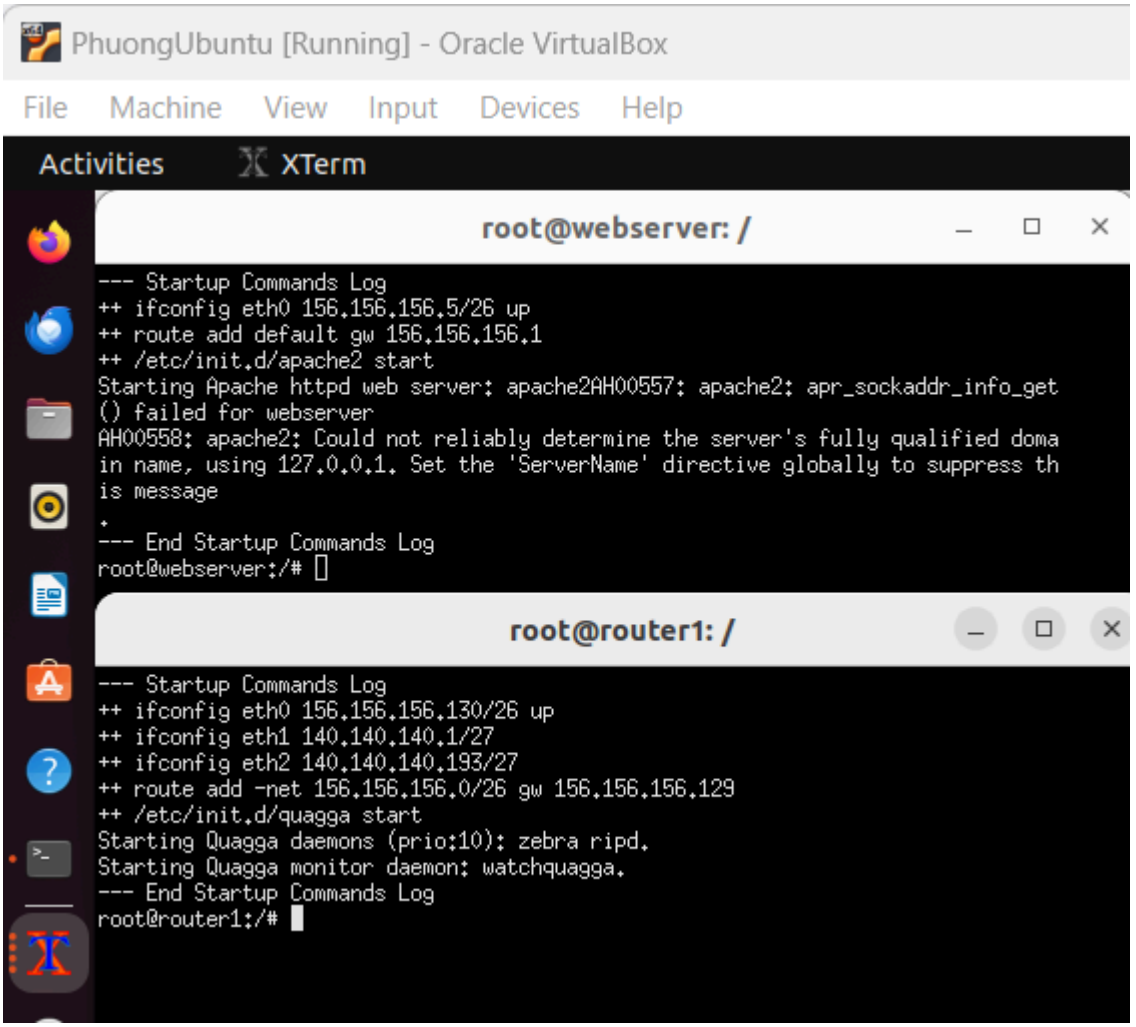
~/CT106H/lab6$cat webserver/var/www/html/index.html

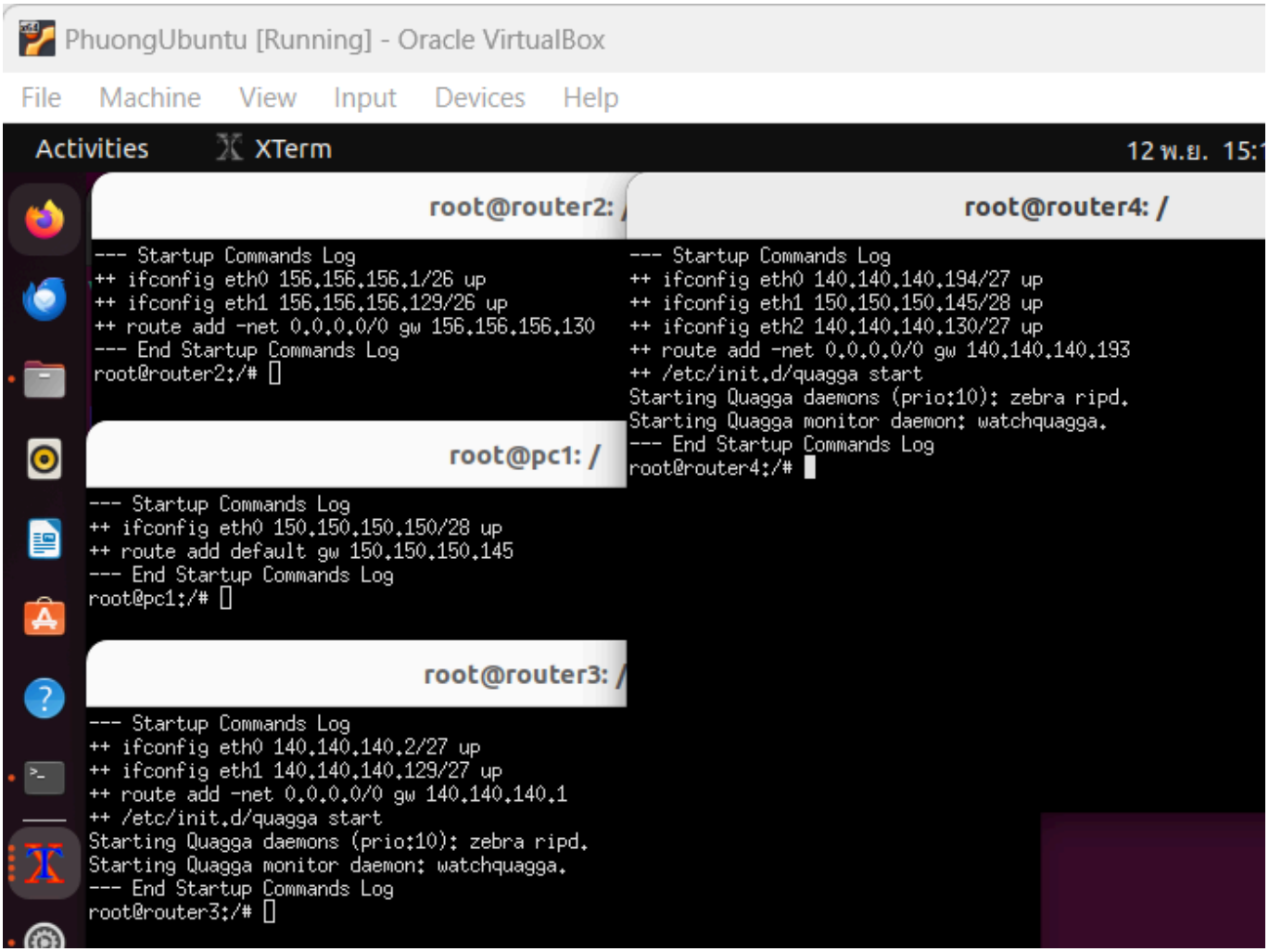


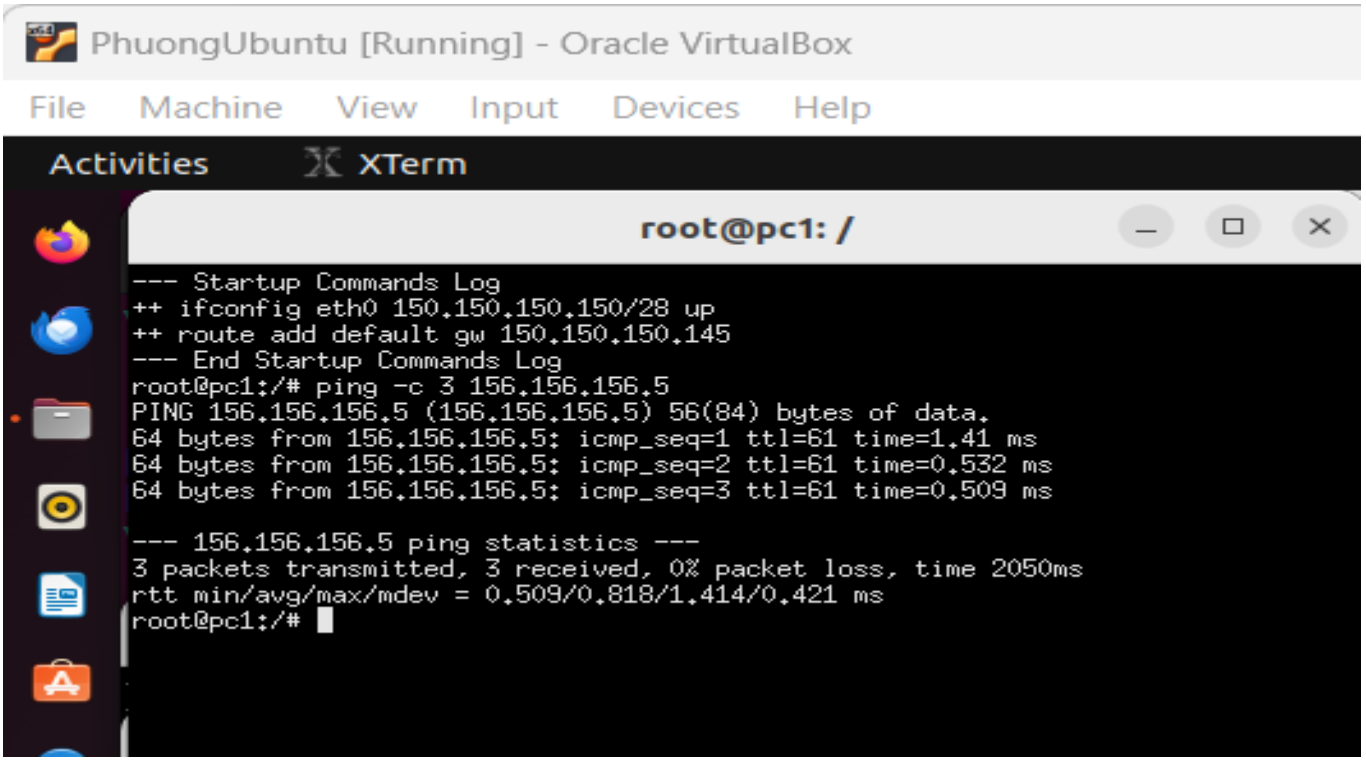
$kathara lstart



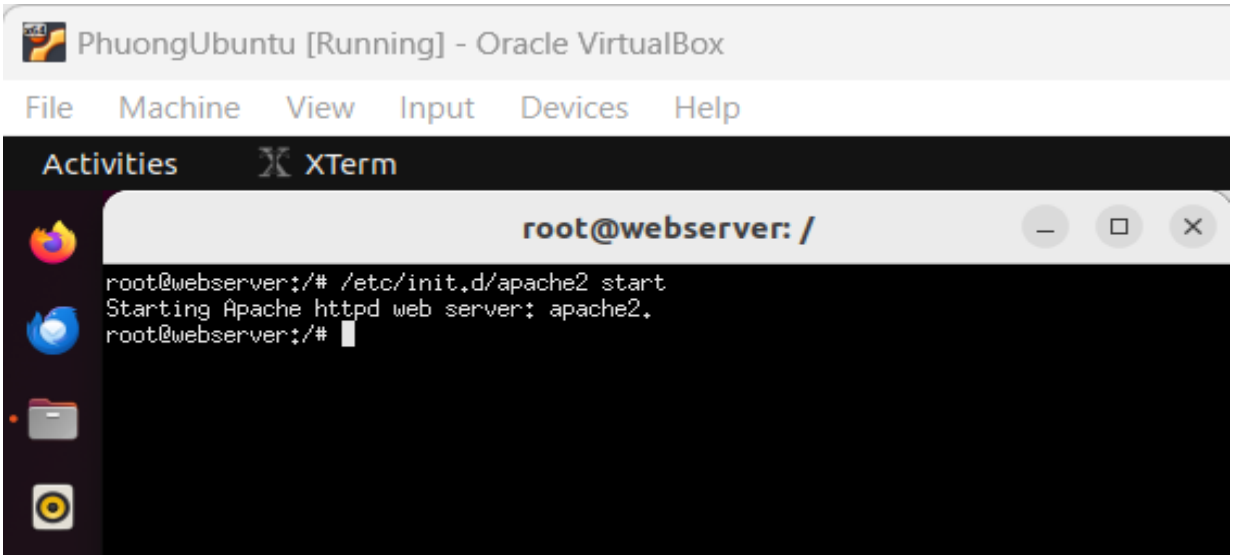
IFCONFIG


PhuongUbuntu [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities XTerm
root@webserver: /
--- Startup Commands Log
++ ifconfig eth0 156.156.156.5/26 up
++ route add default gw 156.156.156.1
++ /etc/init.d/apache2 start
Starting Apache httpd web server: apache2AH00557: apache2: apr_sockaddr_info_get
() failed for webserver
AH00558: apache2: Could not reliably determine the server's fully qualified doma
in name, using 127.0.0.1. Set the 'ServerName' directive globally to suppress th
is message
.
--- End Startup Commands Log
root@webserver:/#
root@router1: /
--- Startup Commands Log
++ ifconfig eth0 156.156.156.130/26 up
++ ifconfig eth1 140.140.140.1/27
++ ifconfig eth2 140.140.140.193/27
++ route add -net 156.156.156.0/26 gw 156.156.156.129
++ /etc/init.d/quagga start
Starting Quagga daemons (prio:10): zebra ripd.
Starting Quagga monitor daemon: watchquagga.
--- End Startup Commands Log
root@router1:/#

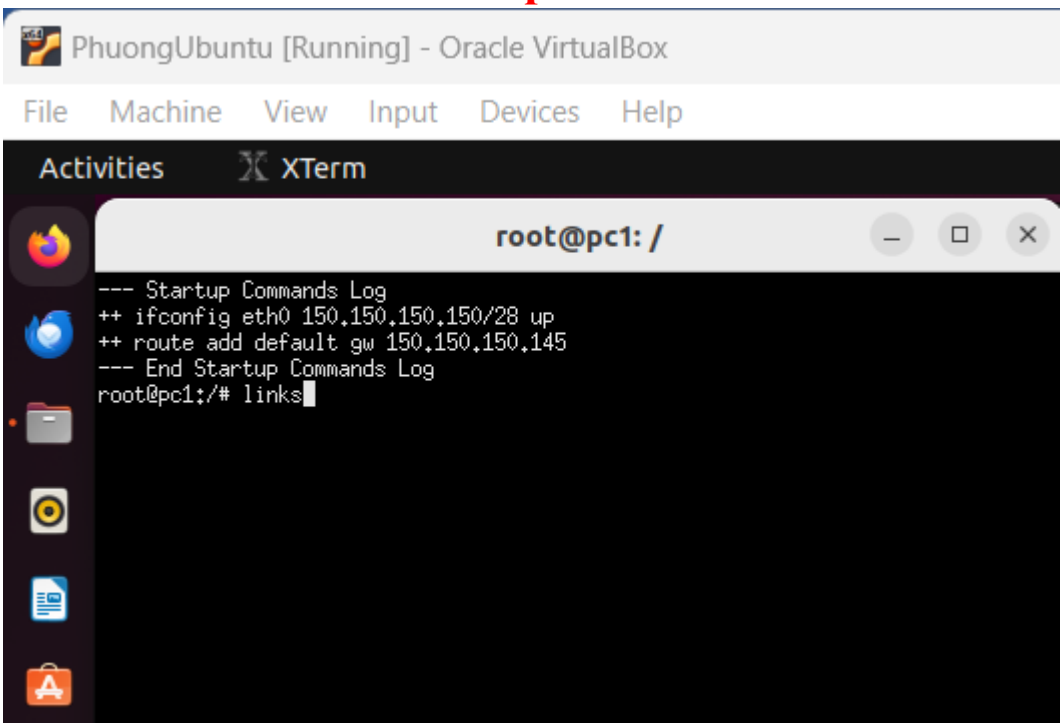

PhuongUbuntu [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities XTerm 12 พ.ย. 15:1
root@router2: /
--- Startup Commands Log
++ ifconfig eth0 156.156.156.1/26 up
++ ifconfig eth1 156.156.156.129/26 up
++ route add -net 0.0.0.0/0 gw 156.156.156.130
--- End Startup Commands Log
root@router2:/#
root@router4: /
--- Startup Commands Log
++ ifconfig eth0 140.140.140.194/27 up
++ ifconfig eth1 150.150.150.145/28 up
++ ifconfig eth2 140.140.140.130/27 up
++ route add -net 0.0.0.0/0 gw 140.140.140.193
++ /etc/init.d/quagga start
Starting Quagga daemons (prio:10): zebra ripd.
Starting Quagga monitor daemon: watchquagga.
--- End Startup Commands Log
root@router4:/#
root@pc1: /
--- Startup Commands Log
++ ifconfig eth0 150.150.150.150/28 up
++ route add default gw 150.150.150.145
--- End Startup Commands Log
root@pc1:/#
root@router3: /
--- Startup Commands Log
++ ifconfig eth0 140.140.140.2/27 up
++ ifconfig eth1 140.140.140.129/27 up
++ route add -net 0.0.0.0/0 gw 140.140.140.1
++ /etc/init.d/quagga start
Starting Quagga daemons (prio:10): zebra ripd.
Starting Quagga monitor daemon: watchquagga.
--- End Startup Commands Log
root@router3:/#

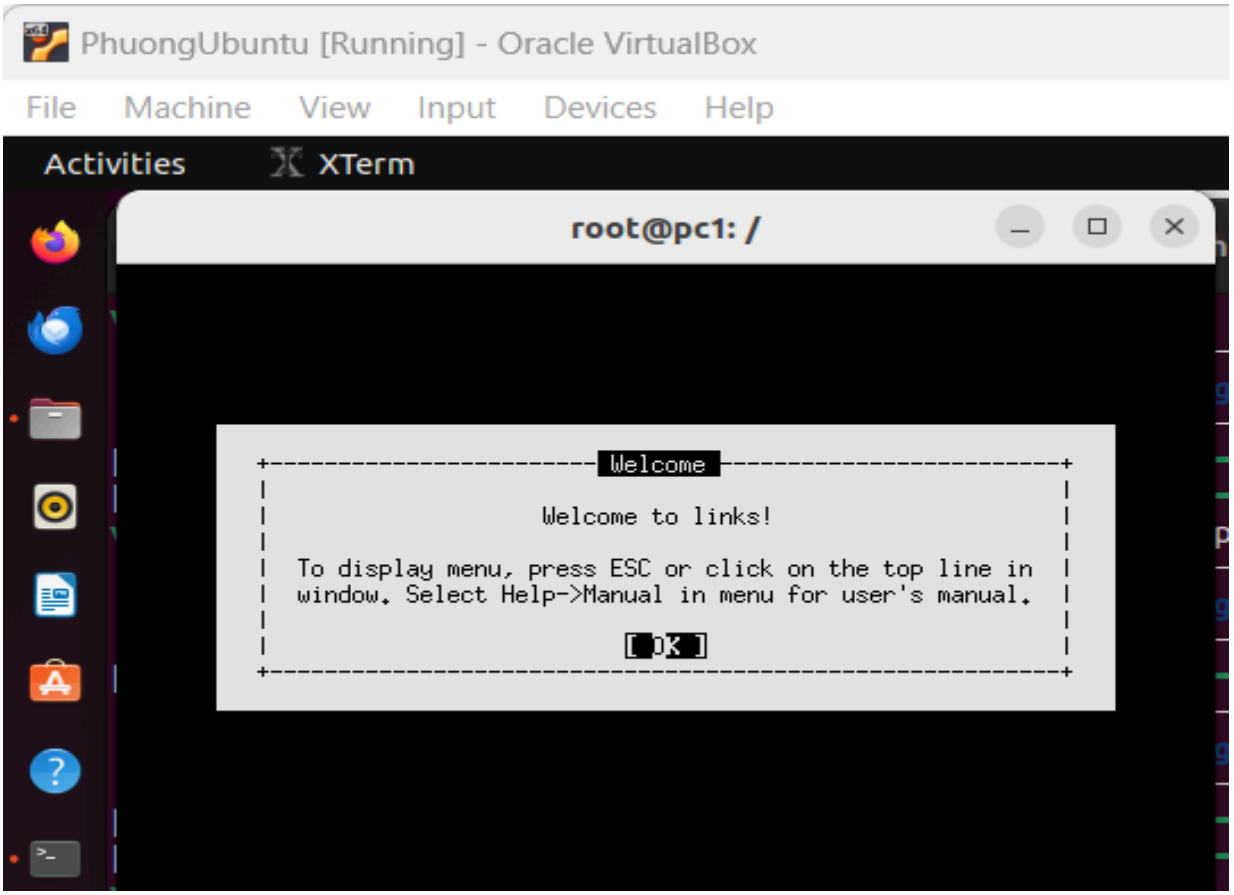

PhuongUbuntu [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities XTerm
root@pc1: /
--- Startup Commands Log
++ ifconfig eth0 150.150.150.150/28 up
++ route add default gw 150.150.150.145
--- End Startup Commands Log
root@pc1:/# ping -c 3 156.156.156.5
PING 156.156.156.5 (156.156.156.5) 56(84) bytes of data.
64 bytes from 156.156.156.5: icmp_seq=1 ttl=61 time=1.41 ms
64 bytes from 156.156.156.5: icmp_seq=2 ttl=61 time=0.532 ms
64 bytes from 156.156.156.5: icmp_seq=3 ttl=61 time=0.509 ms
--- 156.156.156.5 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2050ms
rtt min/avg/max/mdev = 0.509/0.818/1.414/0.421 ms
root@pc1:/#

On server

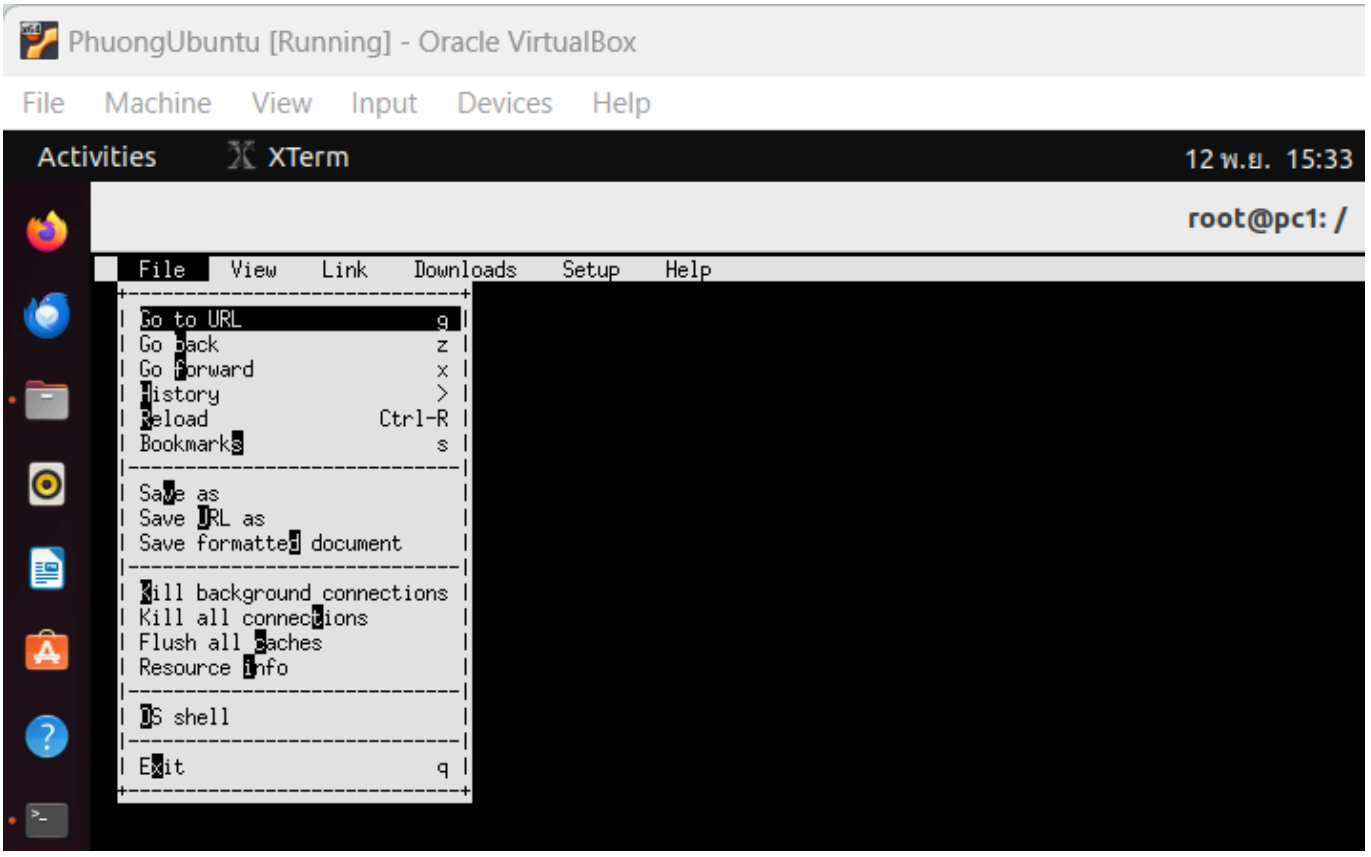


Use links command from pc1

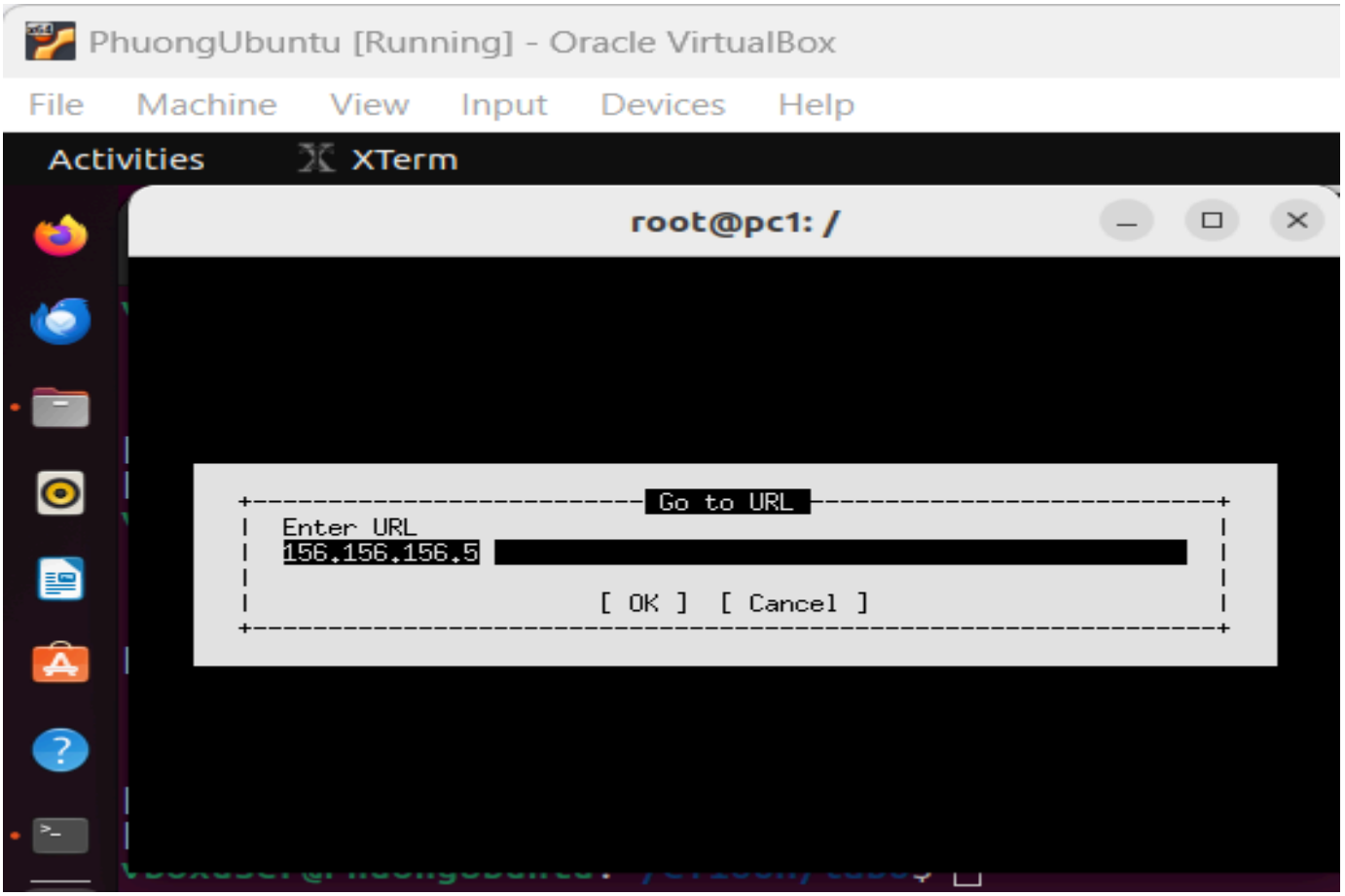




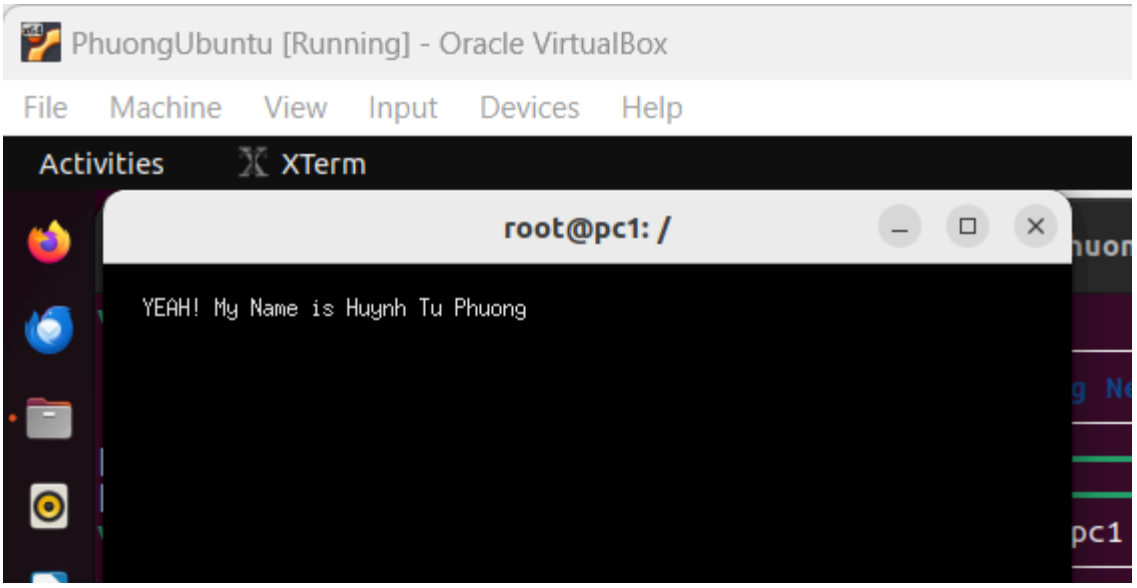
Press F10, then select "Go to URL"



Enter IP ADDRESS: 156.156.156.5

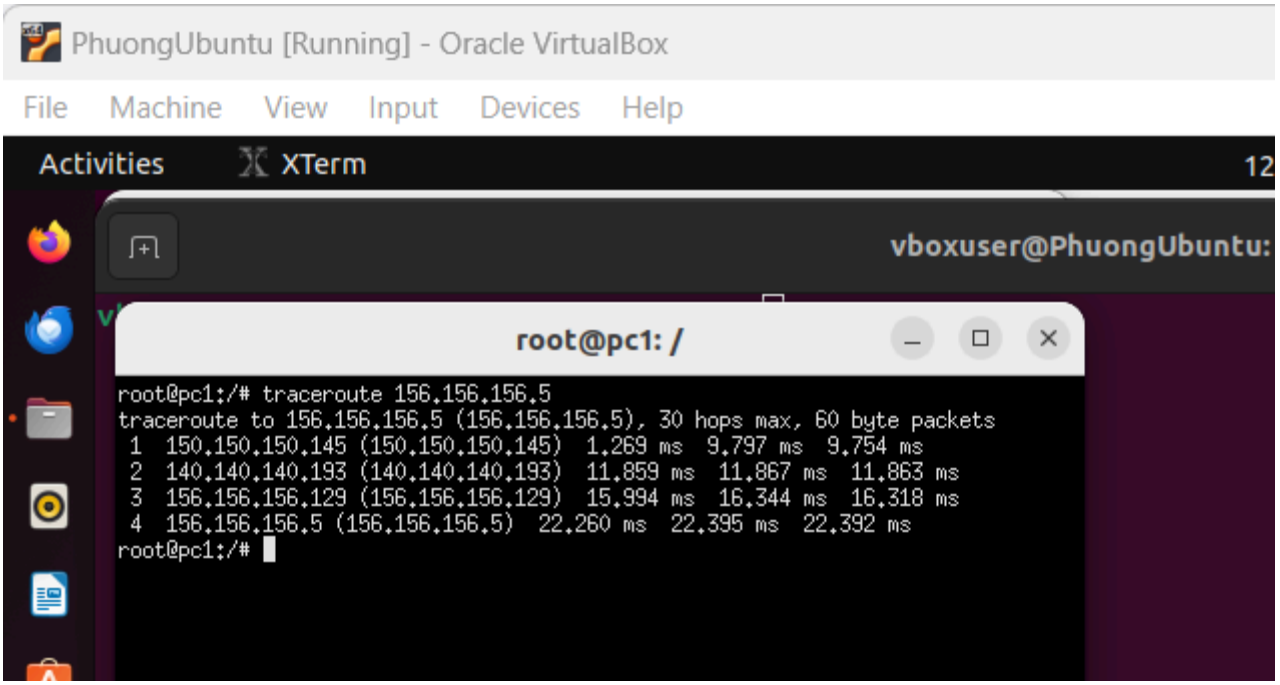


Result



6. The command line to check the hops for transmitting data from PC1 to the web server? List all hops between PC1 and the Web server. The command is traceroute:

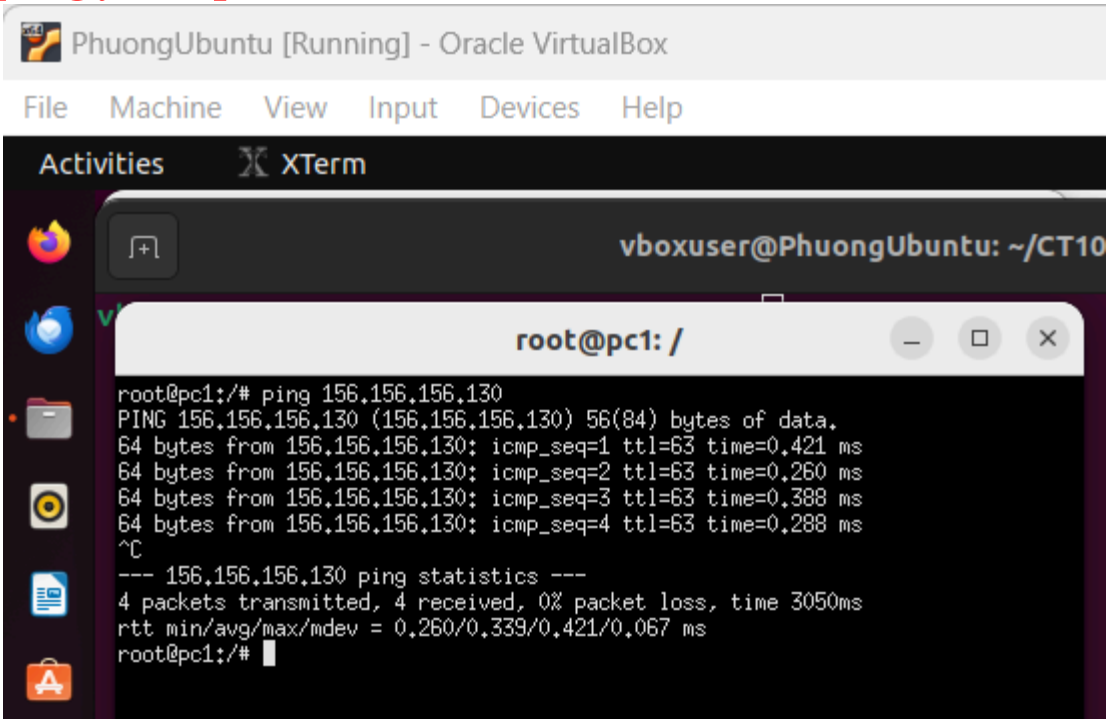
The output from traceroute 156.156.156.5 indicates how many servers or hops it takes for transmitting data from pc1 to the server. (from 150.150.150.150 to 156.156.156.5).



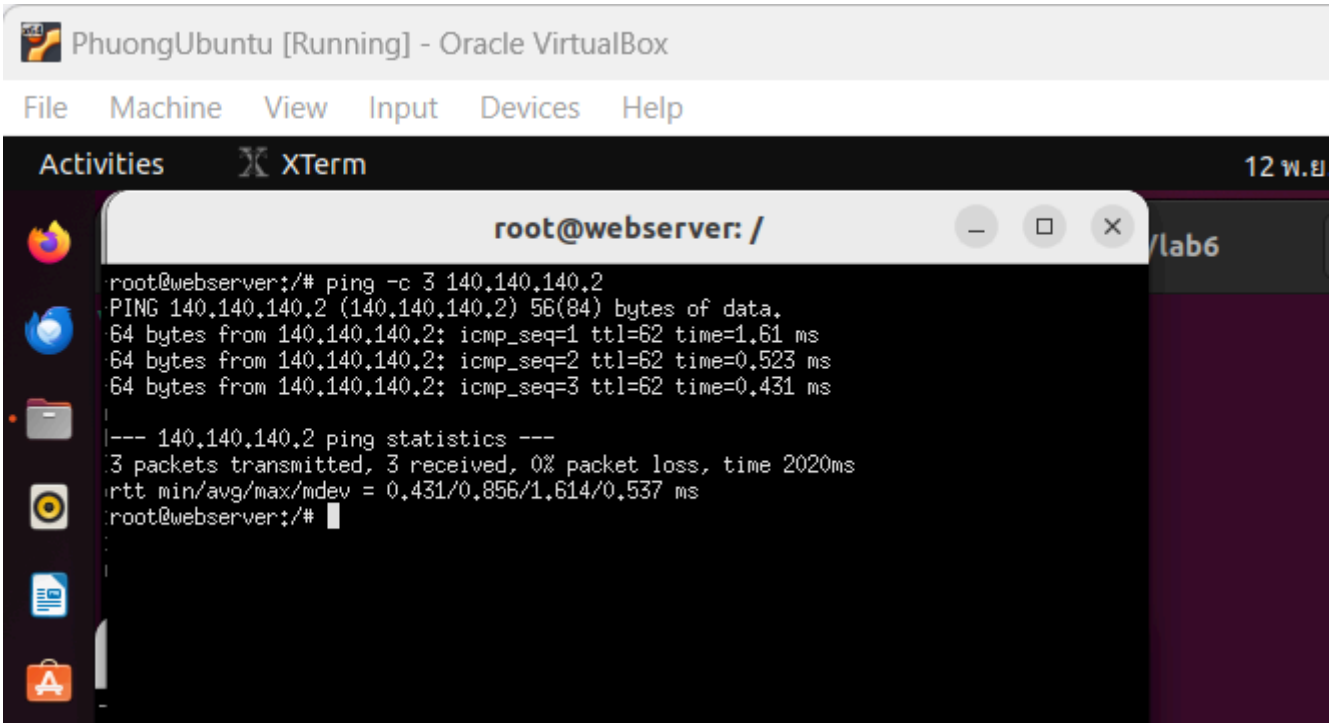
The destination is 156.156.156.5 and we need 4 hops:
- The first next hop is 150.150.150.145 (r4).
- The second is 140.140.140.193 (r1).
- The third is 156.156.156.129 (r2).
- The final is 156.156.156.5 (server).

7. Check the network system constructed

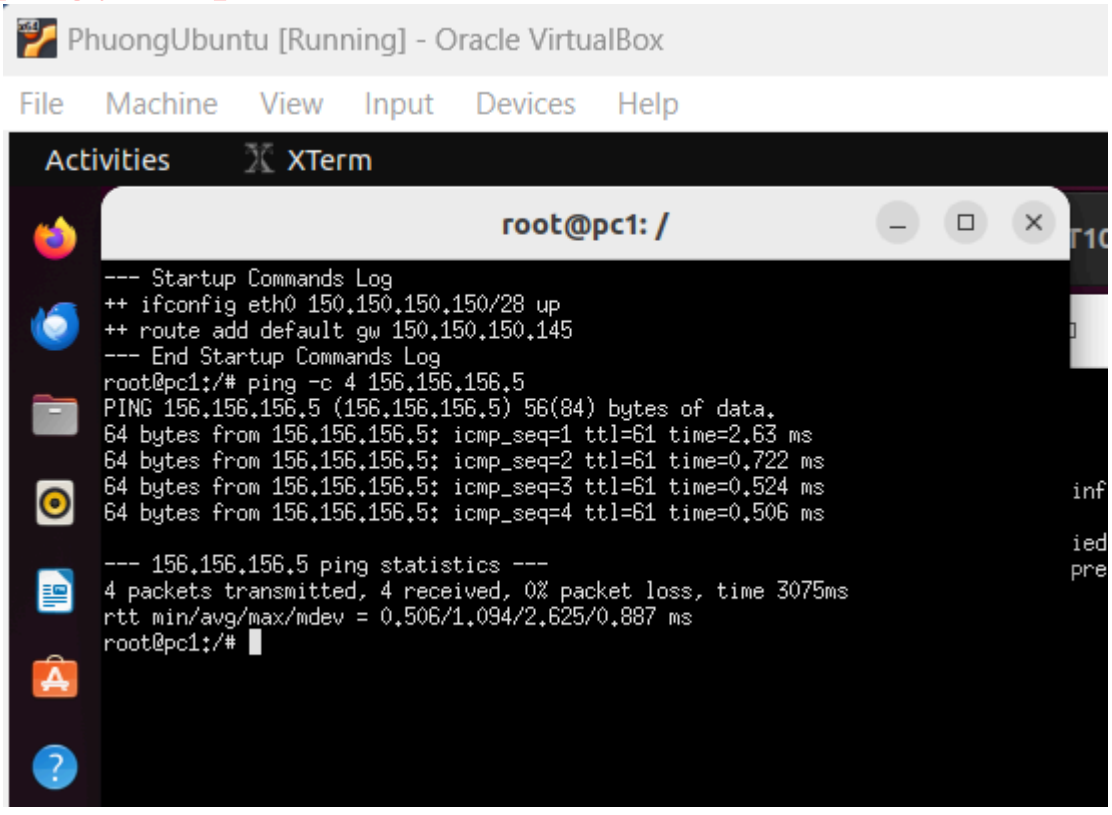
ping from pc1 to router1



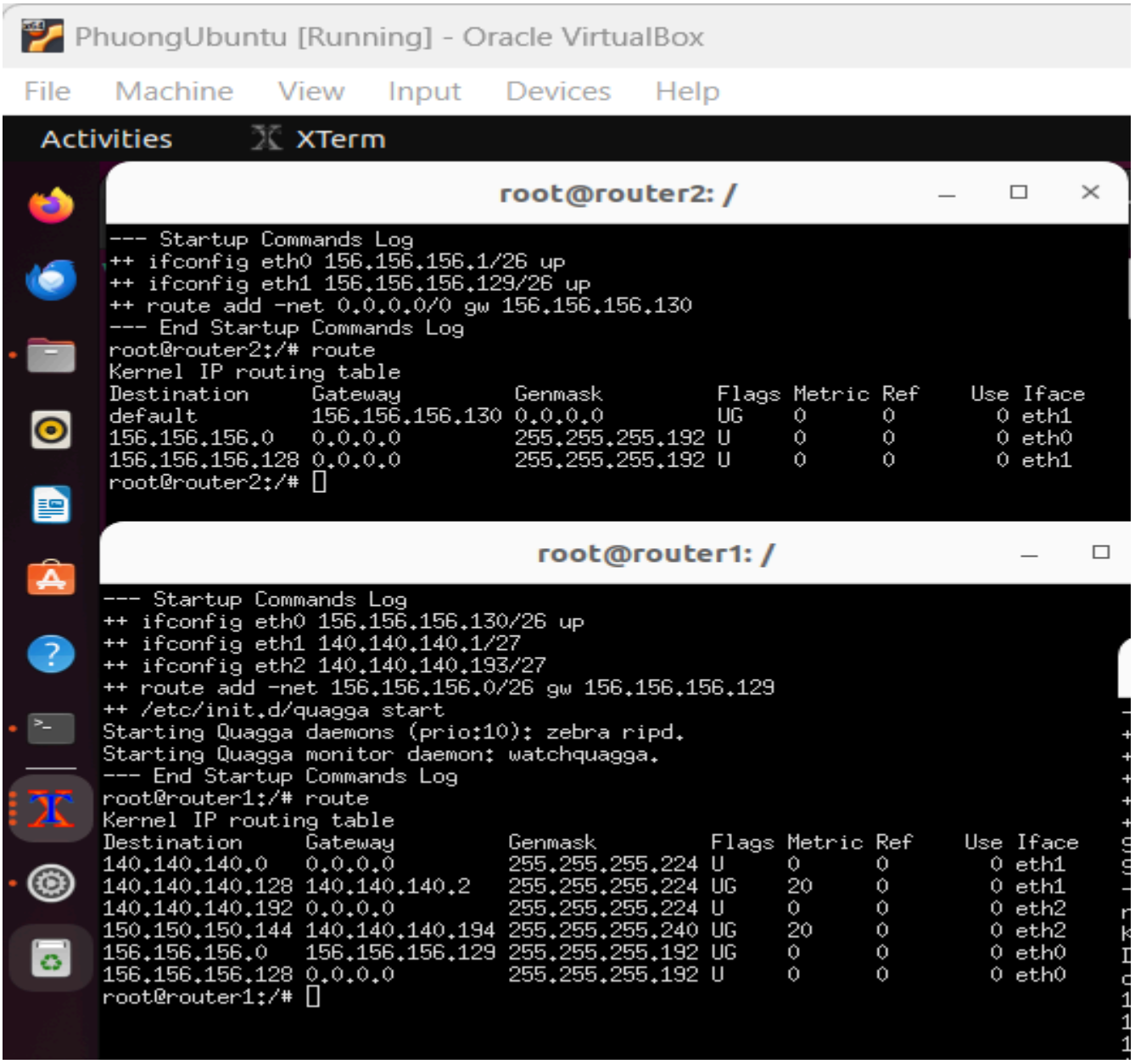
ping from webserver to router3

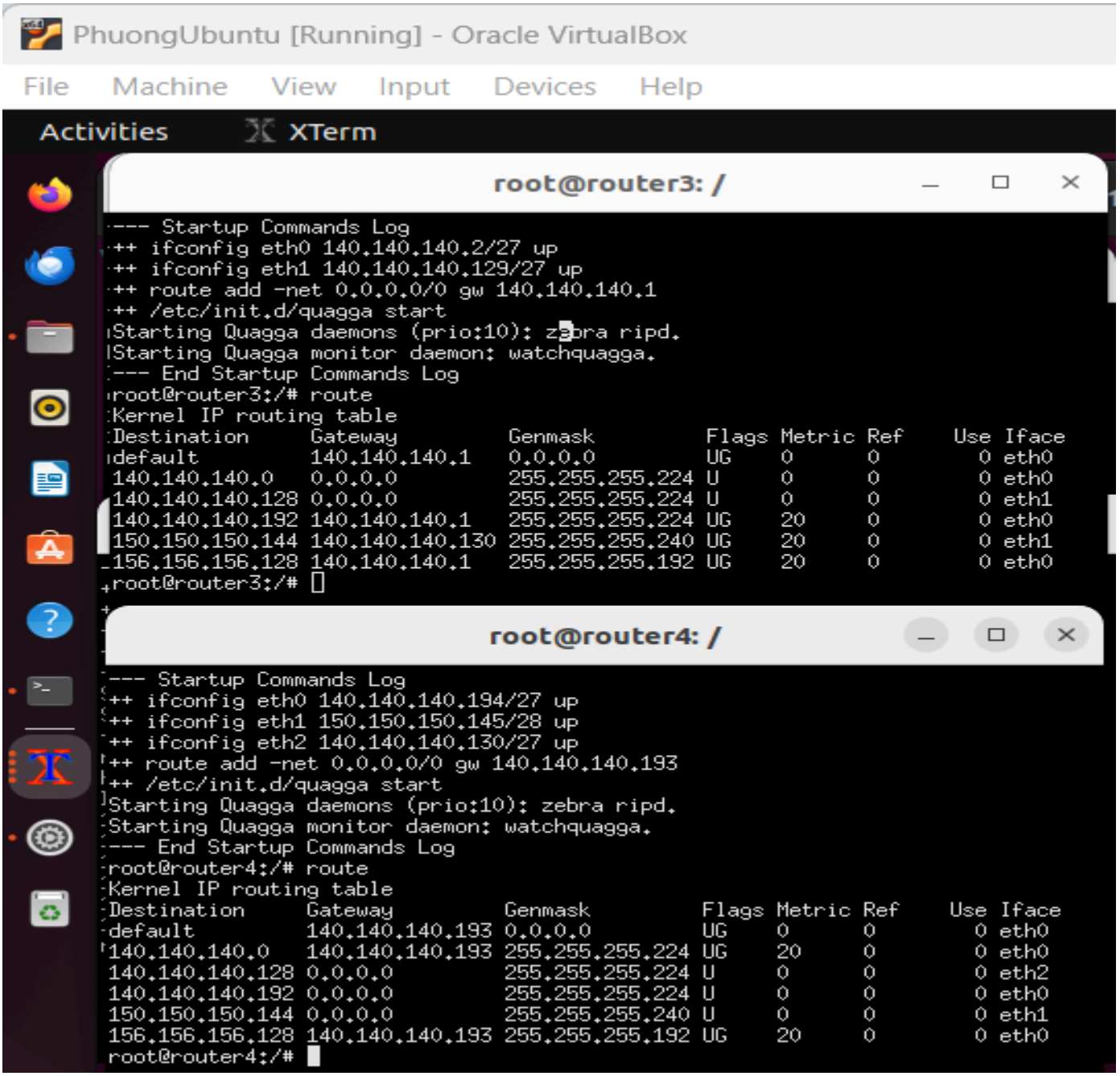


ping from pc1 to webserver

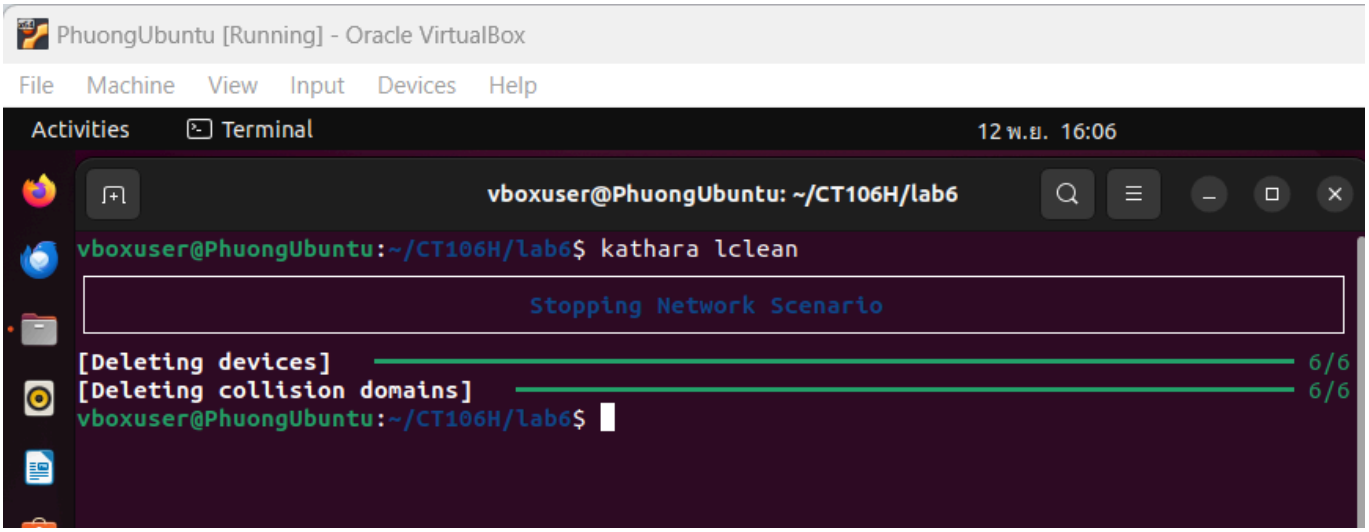


Routing tables


PhuongUbuntu [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Activities
XTerm
root@router2: /
--- Startup Commands Log
++ ifconfig eth0 156.156.156.1/26 up
++ ifconfig eth1 156.156.156.129/26 up
++ route add -net 0.0.0.0/0 gw 156.156.156.130
--- End Startup Commands Log
root@router2:/# route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 156.156.156.130 0.0.0.0 UG 0 0 0 eth1
156.156.156.0 0.0.0.0 255.255.255.192 U 0 0 0 eth0
156.156.156.128 0.0.0.0 255.255.255.192 U 0 0 0 eth1
root@router2:/#
root@router1: /
--- Startup Commands Log
++ ifconfig eth0 156.156.156.130/26 up
++ ifconfig eth1 140.140.140.1/27
++ ifconfig eth2 140.140.140.193/27
++ route add -net 156.156.156.0/26 gw 156.156.156.129
++ /etc/init.d/quagga start
Starting Quagga daemons (prio:10): zebra ripd.
Starting Quagga monitor daemon: watchquagga.
--- End Startup Commands Log
root@router1:/# route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
140.140.140.0 0.0.0.0 255.255.255.224 U 0 0 0 eth1
140.140.140.128 140.140.140.2 255.255.255.224 UG 20 0 0 eth1
140.140.140.192 0.0.0.0 255.255.255.224 U 0 0 0 eth2
150.150.150.144 140.140.140.194 255.255.255.240 UG 20 0 0 eth2
156.156.156.0 156.156.156.129 255.255.255.192 UG 0 0 0 eth0
156.156.156.128 0.0.0.0 255.255.255.192 U 0 0 0 eth0
root@router1:/#



~/CT106H/lab6$kathara lclean



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