Computer Networks and Security Lab
Practical Assignment 1

Problem Definition: Setup a wired LAN using Layer 2 Switch. It includes preparation of cable, testing of cable using line tester configuration machine using IP addresses, testing using PING utility and demonstrating the PING packets captured traces using Wireshark Packet Analyser Tool.

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Name: Ashish Kumar
Date of Assignment: 16-7-25

Demo I: Connect Two Computer in LAN using Crossover Cable

Step1: Prepare Crossover Cable using Cabling Standard 568A and 568B

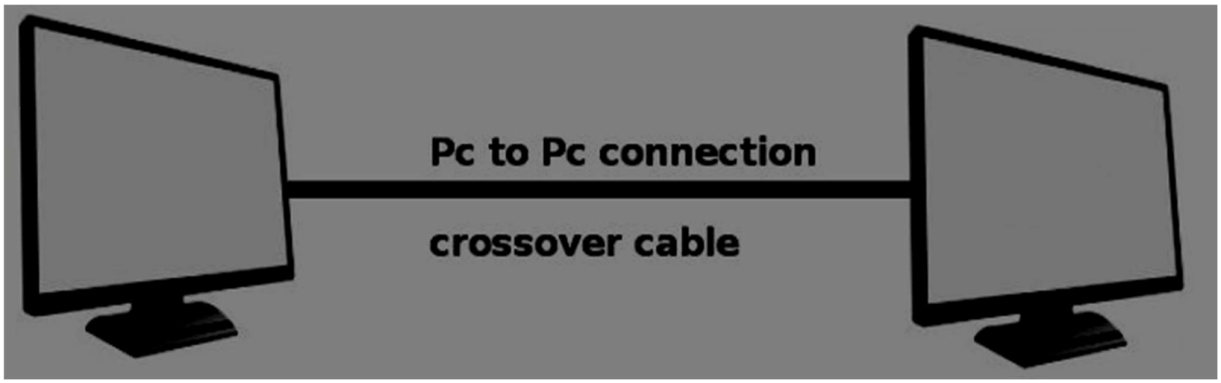
Pin Diagram TIA/EIA 568-A

PIN	F()	Pair	Polarity	COLOR	A
1	Rx	3	Rx+	Green/White	G
2	Rx	3	RX-	Green	G
3	Tx	2	Tx+	Orange/White	O
4	-	1	Not Used	Blue	B
5	-	1	Not Used	Blue/White	B
6	Tx	2	Tx-	Orange	O
7	-	4	Not Used	Brown/White	B
8	-	4	Not Used	Brown	B

Pin Diagram TIA/EIA 568-B

PIN	F()	Pair	Polarity	COLOR	A
1	Tx	2	Tx+	Orange/White	O
2	Tx	2	Tx-	Orange	O
3	Rx	3	Rx+	Green/White	G
4	-	1	Not Used	Blue	B
5	-	1	Not Used	Blue/White	B
6	Rx	3	Rx-	Green	G
7	-	4	Not Used	Brown/White	B
8	-	4	Not Used	Brown	B

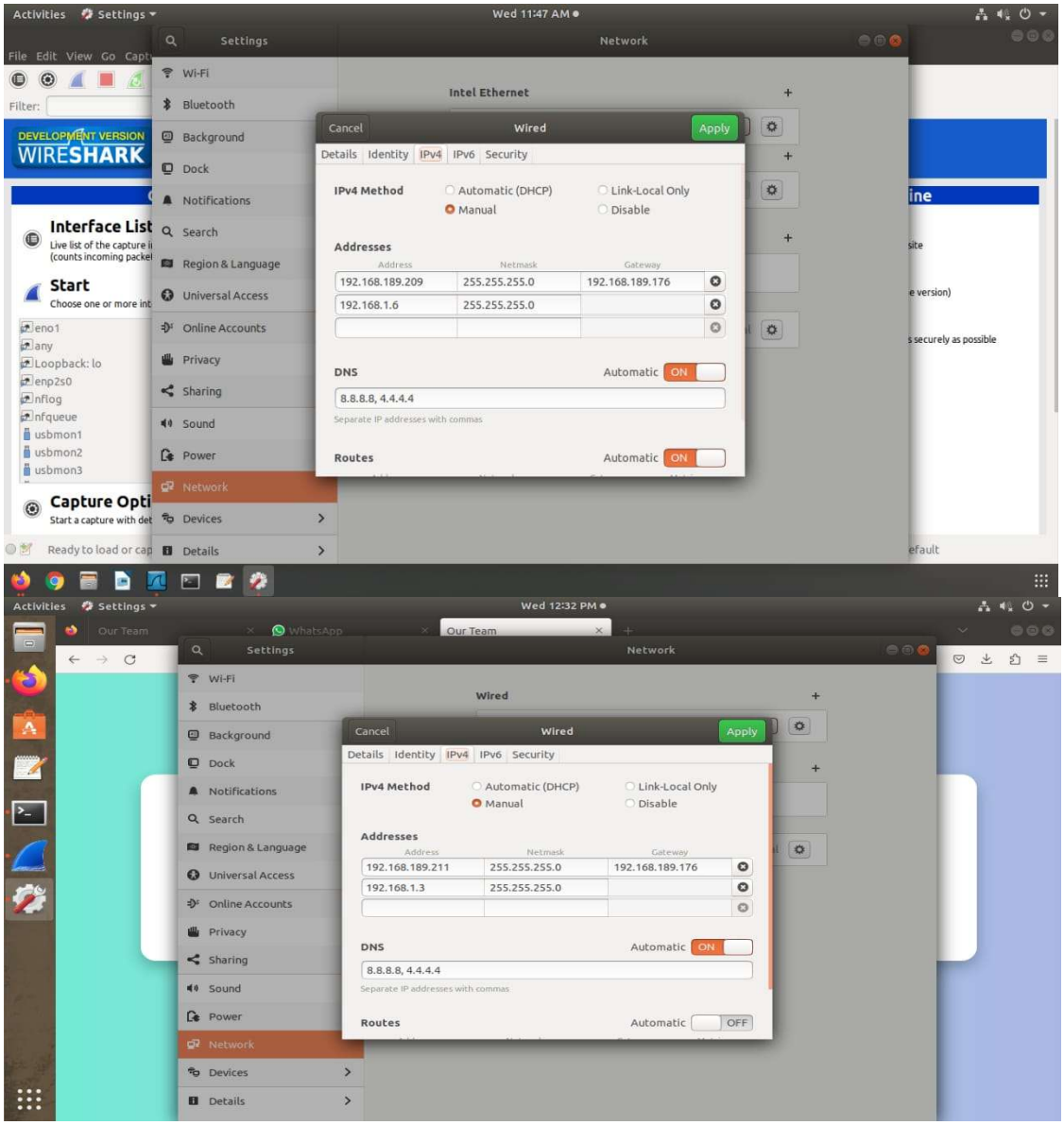
Step 2: Connect two Computer using Crossover Cable as shown in Figure below



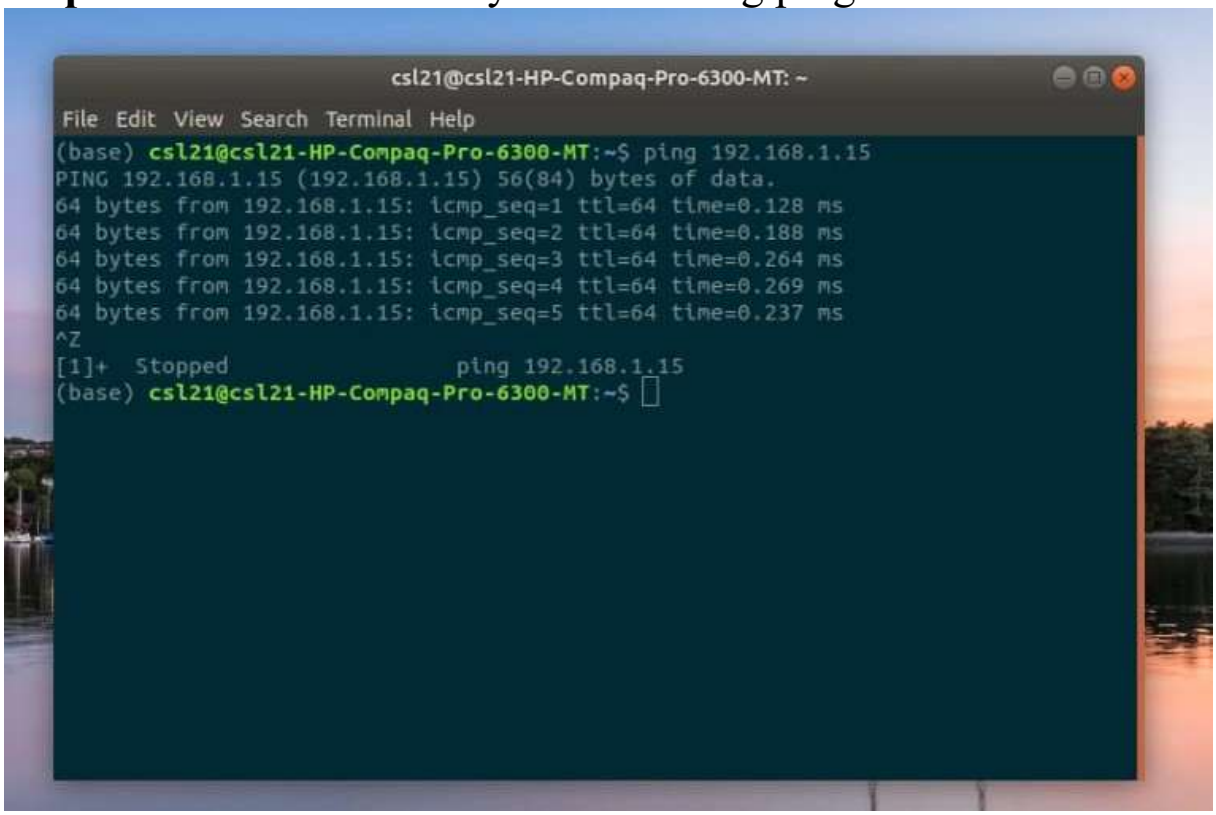
Configure IP Address

IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0

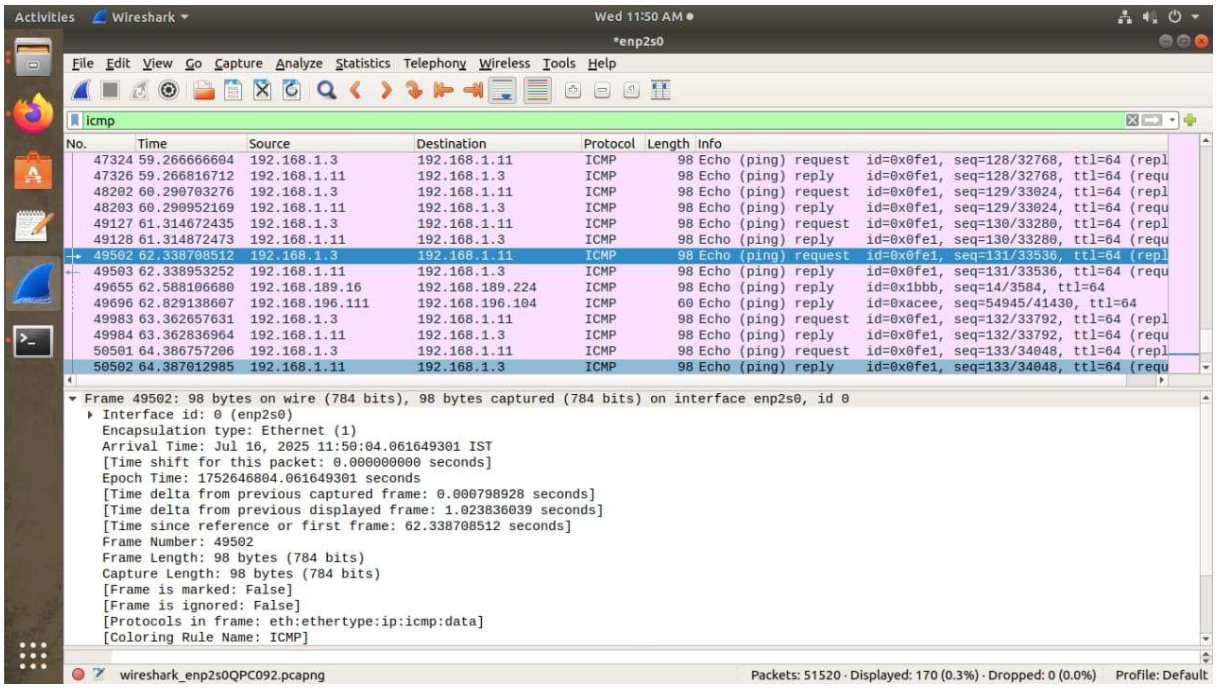
IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0



Step3: Test the connectivity of Host using ping command



Step4: Capture the traces of ping using Wireshark Protocol Analyzer



Demo II: Connect Four Computer in LAN using straight through twisted pair Cable and switch

Step1: Prepare Straight through twisted pair Cable using Cabling Standard 568A or 568B

Pin Diagram TIA/EIA 568-A

PIN	F()	Pair	Polarity	COLOR	A
1	Rx	3	Rx+	Green/White	G
2	Rx	3	RX-	Green	G
3	Tx	2	Tx+	Orange/White	O
4	-	1	Not Used	Blue	B
5	-	1	Not Used	Blue/White	B
6	Tx	2	Tx-	Orange	O
7	-	4	Not Used	Brown/White	B
8	-	4	Not Used	Brown	B

Pin Diagram TIA/EIA 568-B

PIN	F()	Pair	Polarity	COLOR	A
1	Tx	2	Tx+	Orange/White	O
2	Tx	2	Tx-	Orange	O
3	Rx	3	Rx+	Green/White	G
4	-	1	Not Used	Blue	B
5	-	1	Not Used	Blue/White	B
6	Rx	3	Rx-	Green	G
7	-	4	Not Used	Brown/White	B
8	-	4	Not Used	Brown	B

Step2: Connect Four Computer in LAN using Straight through twisted pair Cable and switch as shown in figure below

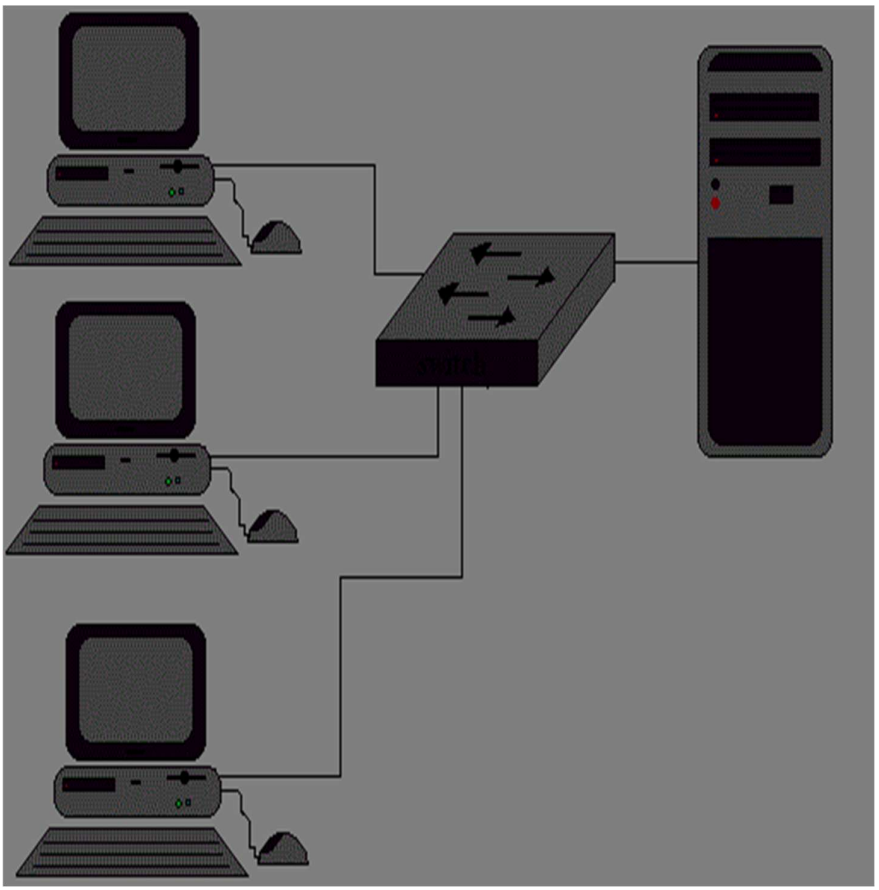
Configure IP Address

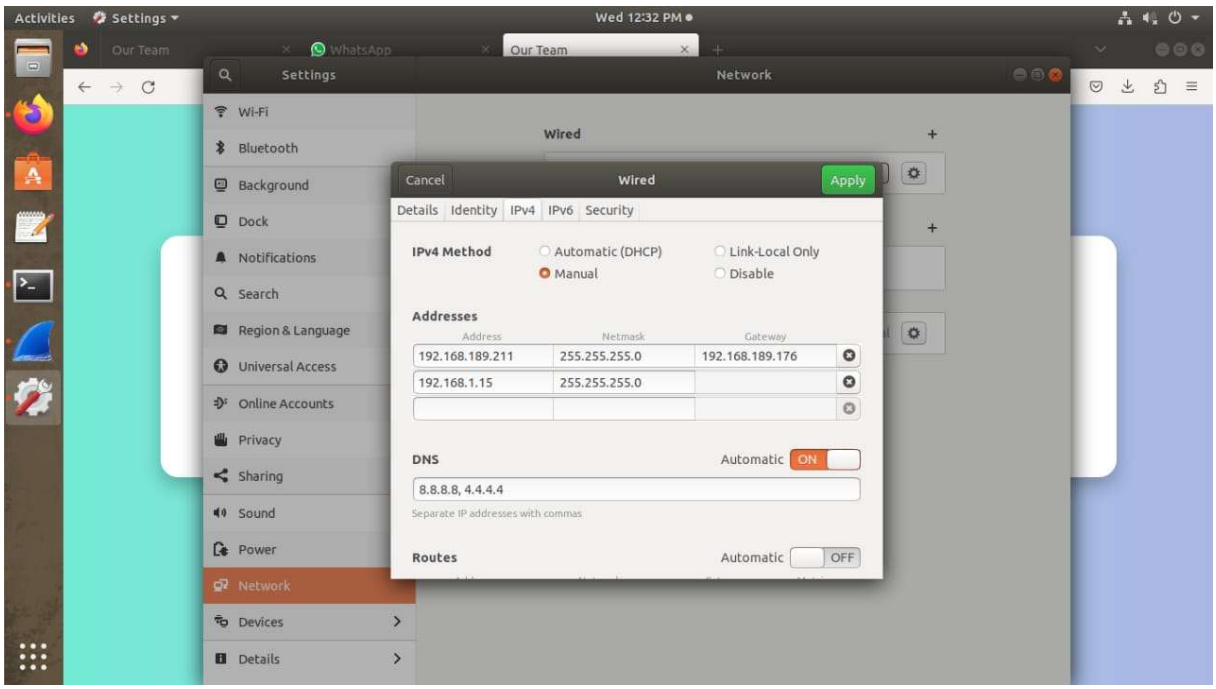
IP Address: 192.168.1.11 **(Server)**
Subnet Mask: 255.255.255.0

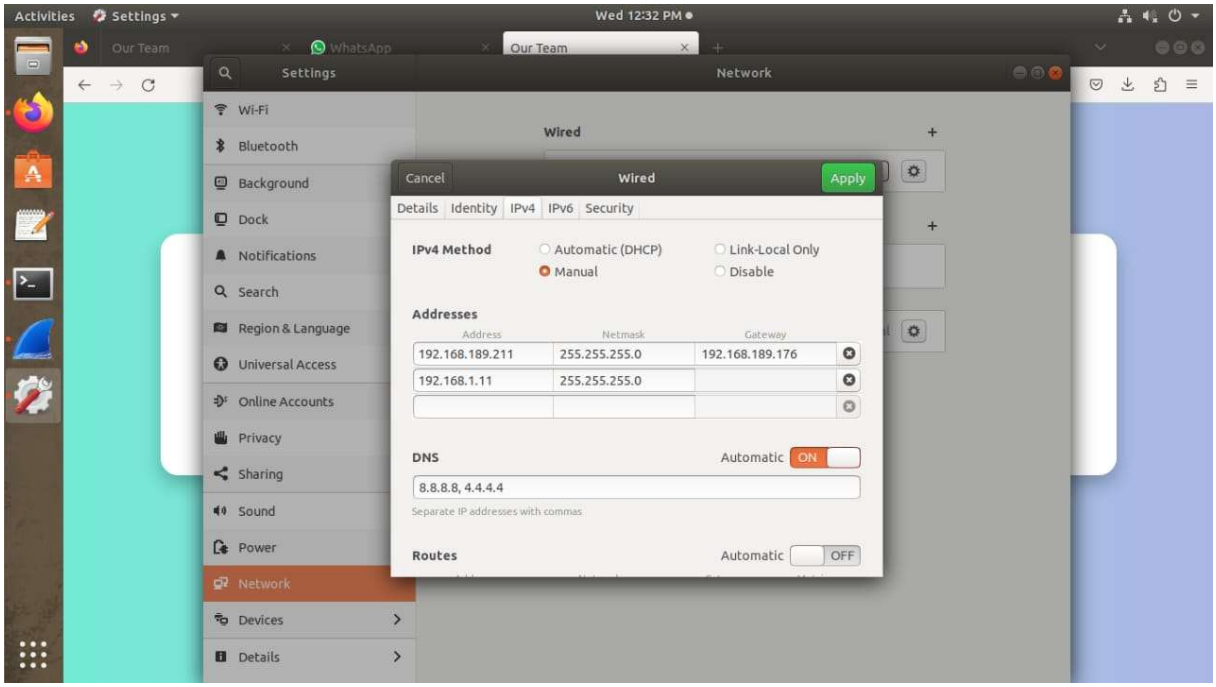
IP Address: 192.168.1.15
Subnet Mask: 255.255.255.0

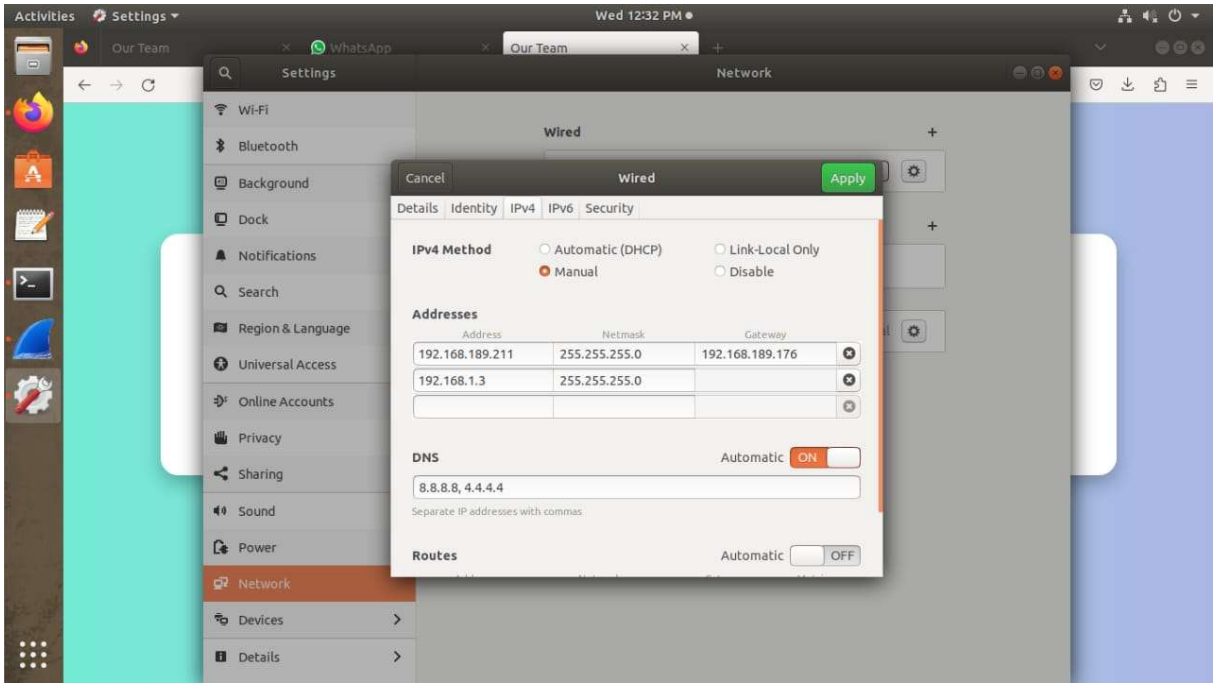
IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0

IP Address: 192.168.1.6
Subnet Mask: 255.255.255.0






Activities
Settings
Wed 12:32 PM
Our Team
WhatsApp
Our Team
Settings
Network
Wi-Fi
Bluetooth
Background
Dock
Notifications
Search
Region & Language
Universal Access
Online Accounts
Privacy
Sharing
Sound
Power
Network
Devices
Details
Wired
Cancel
Wired
Apply
Details
Identity
IPv4
IPv6
Security
IPv4 Method
Automatic (DHCP)
Link-Local Only
Manual
Disable
Addresses
Address
Netmask
Gateway
192.168.189.211
255.255.255.0
192.168.189.176
192.168.1.11
255.255.255.0
DNS
Automatic
ON
8.8.8.8, 4.4.4.4
Separate IP addresses with commas
Routes
Automatic
OFF


Activities
Settings
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Wi-Fi
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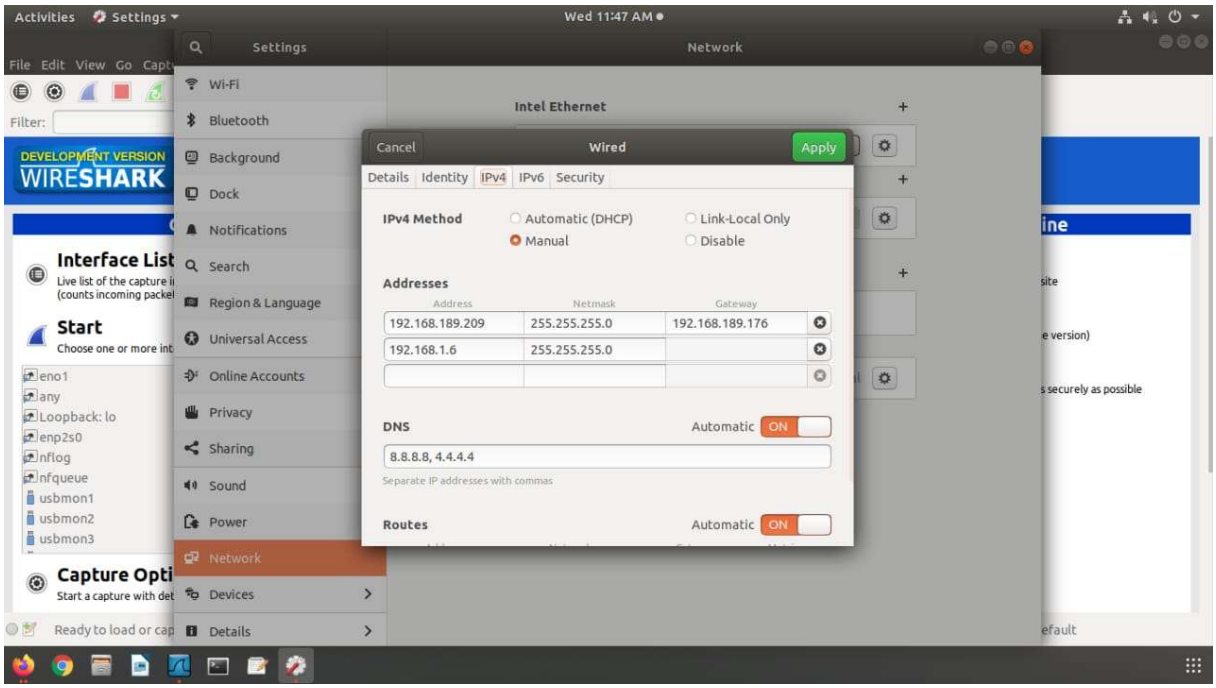
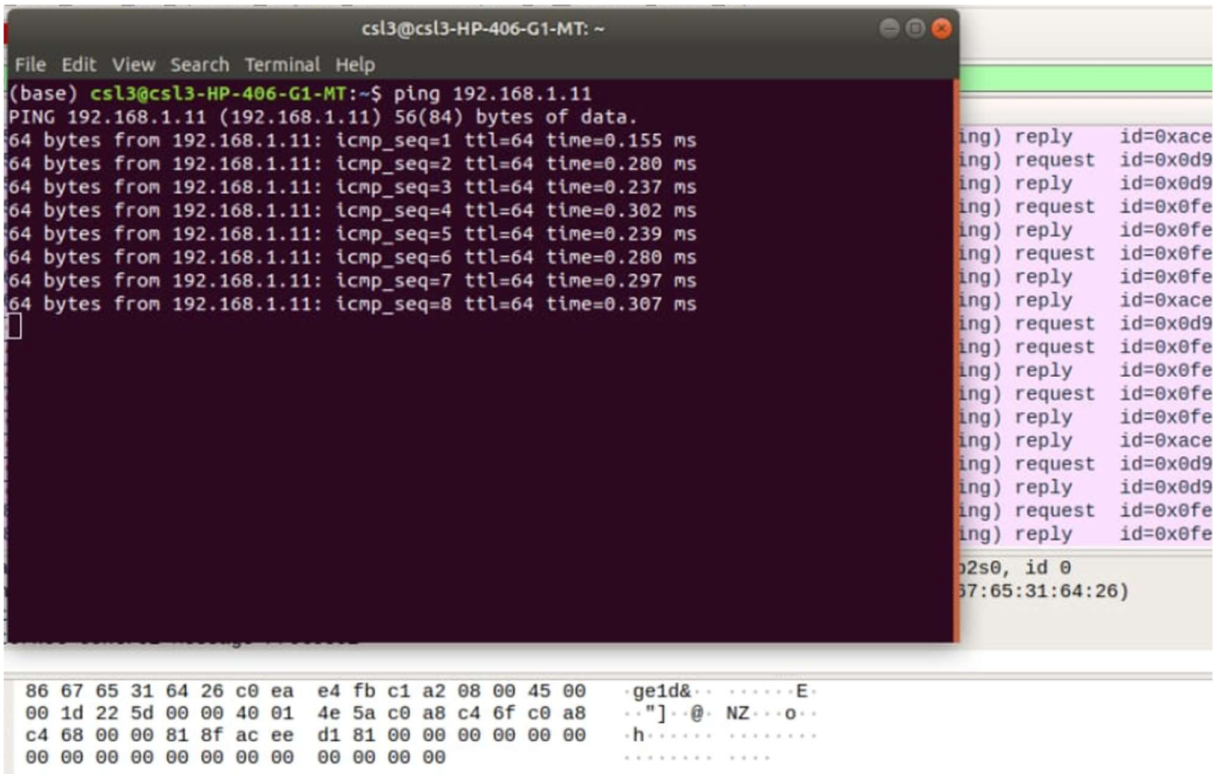
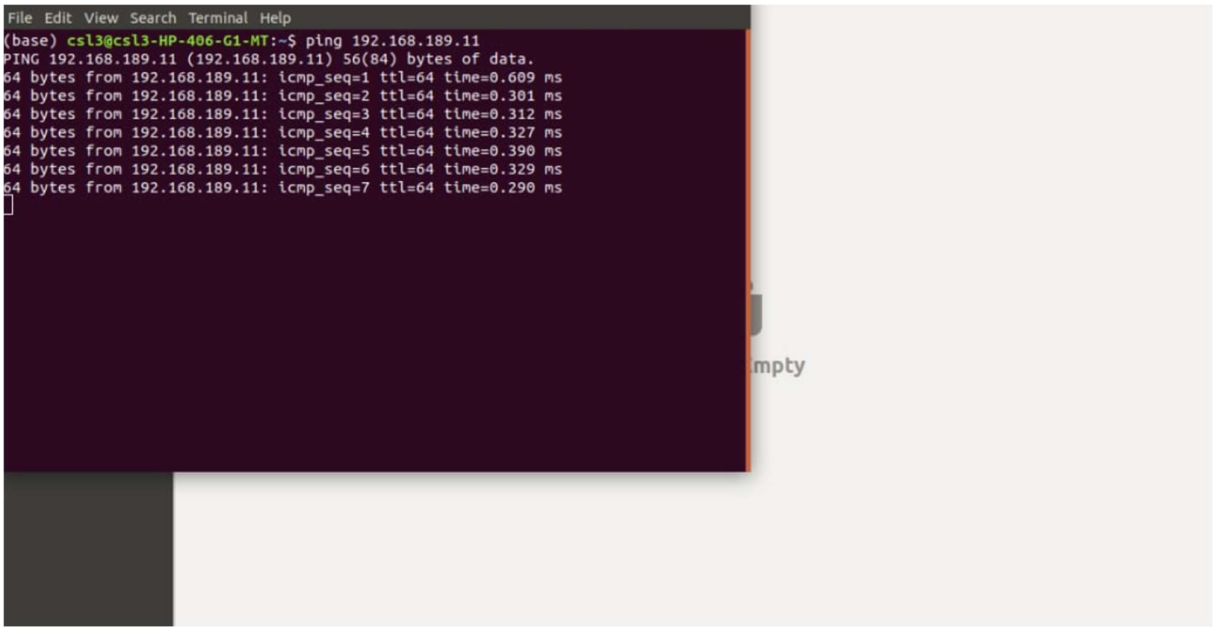
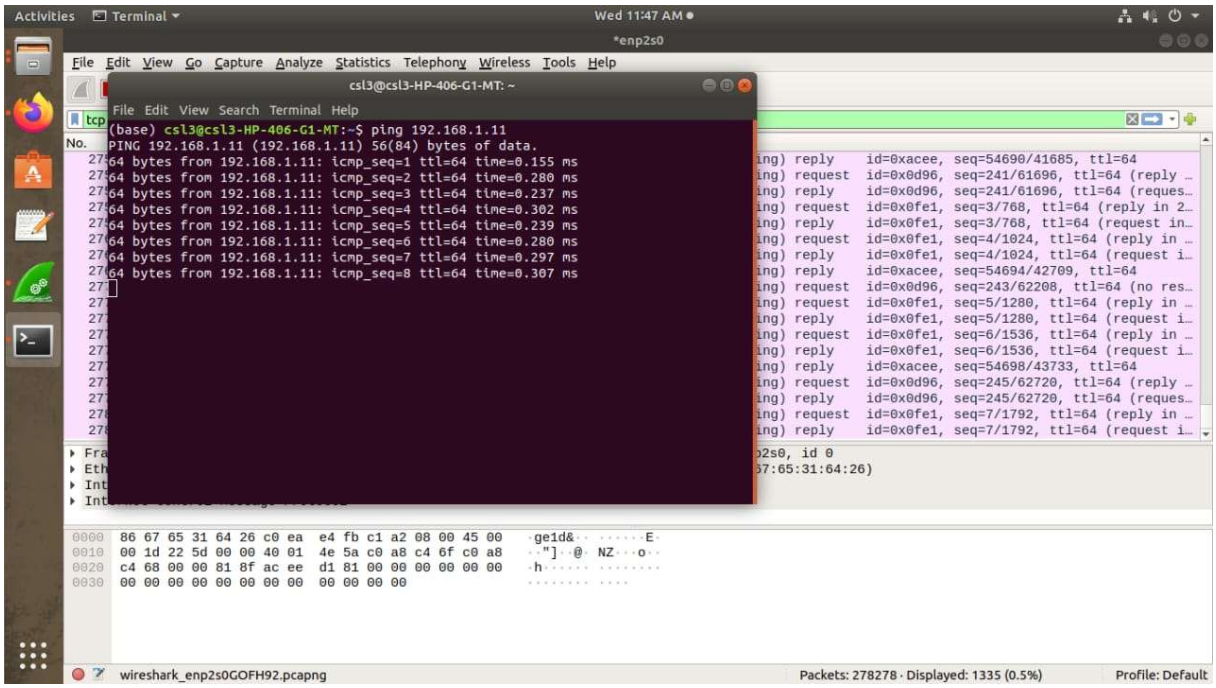
Background
Dock
Notifications
Search
Region & Language
Universal Access
Online Accounts
Privacy
Sharing
Sound
Power
Network
Devices
Details
Wired
Cancel
Wired
Apply
Details
Identity
IPv4
IPv6
Security
IPv4 Method
Automatic (DHCP)
Link-Local Only
Manual
Disable
Addresses
Address
Netmask
Gateway
192.168.189.211
255.255.255.0
192.168.189.176
192.168.1.3
255.255.255.0
DNS
Automatic
ON
8.8.8.8, 4.4.4.4
Separate IP addresses with commas
Routes
Automatic
OFF



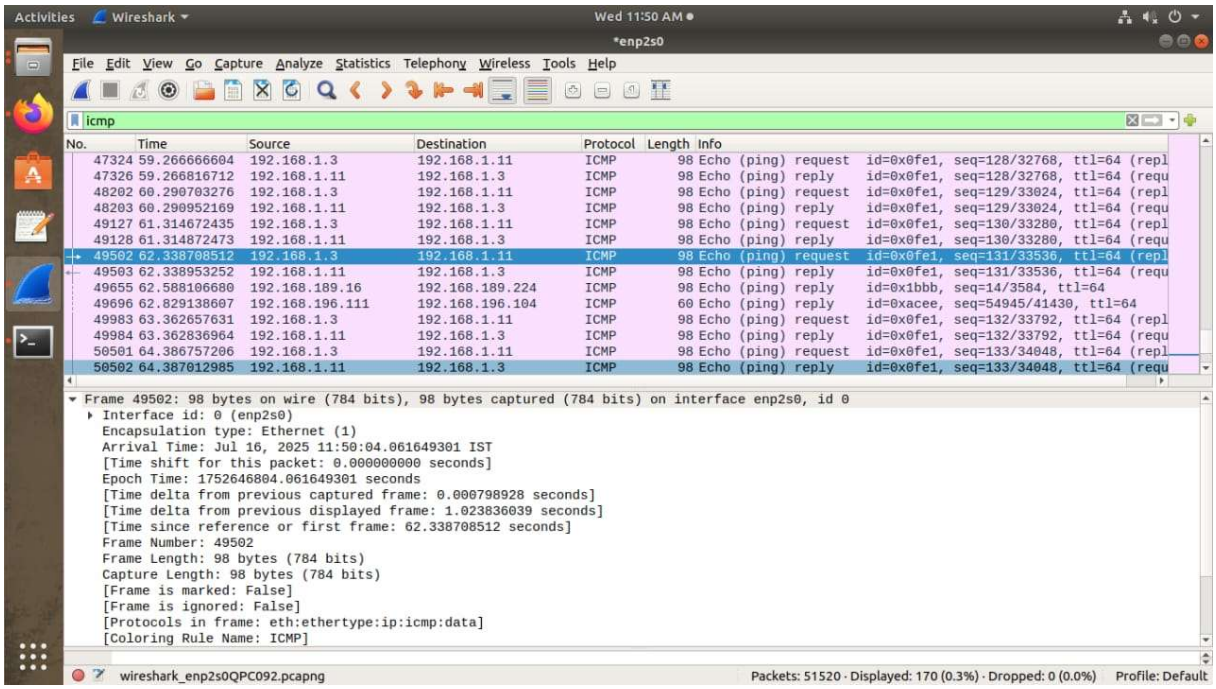
Step3: Test the connectivity of Host using ping command




File Edit View Search Terminal Help
(base) csl3@csl3-HP-406-G1-MT:~$ ping 192.168.189.11
PING 192.168.189.11 (192.168.189.11) 56(84) bytes of data.
64 bytes from 192.168.189.11: icmp_seq=1 ttl=64 time=0.609 ms
64 bytes from 192.168.189.11: icmp_seq=2 ttl=64 time=0.301 ms
64 bytes from 192.168.189.11: icmp_seq=3 ttl=64 time=0.312 ms
64 bytes from 192.168.189.11: icmp_seq=4 ttl=64 time=0.327 ms
64 bytes from 192.168.189.11: icmp_seq=5 ttl=64 time=0.390 ms
64 bytes from 192.168.189.11: icmp_seq=6 ttl=64 time=0.329 ms
64 bytes from 192.168.189.11: icmp_seq=7 ttl=64 time=0.290 ms
mpty


Activities
Terminal
Wed 11:47 AM
*enp2s0
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
csl3@csl3-HP-406-G1-MT: ~
File Edit View Search Terminal Help
(base) csl3@csl3-HP-406-G1-MT:~$ ping 192.168.1.11
PING 192.168.1.11 (192.168.1.11) 56(84) bytes of data.
64 bytes from 192.168.1.11: icmp_seq=1 ttl=64 time=0.155 ms
64 bytes from 192.168.1.11: icmp_seq=2 ttl=64 time=0.280 ms
64 bytes from 192.168.1.11: icmp_seq=3 ttl=64 time=0.237 ms
64 bytes from 192.168.1.11: icmp_seq=4 ttl=64 time=0.302 ms
64 bytes from 192.168.1.11: icmp_seq=5 ttl=64 time=0.239 ms
64 bytes from 192.168.1.11: icmp_seq=6 ttl=64 time=0.280 ms
64 bytes from 192.168.1.11: icmp_seq=7 ttl=64 time=0.297 ms
64 bytes from 192.168.1.11: icmp_seq=8 ttl=64 time=0.307 ms
wireshark_enp2s0GOFH92.pcapng
Packets: 278278 · Displayed: 1335 (0.5%)
Profile: Default

Step4: Capture the traces of ping using Wireshark Protocol Analyzer

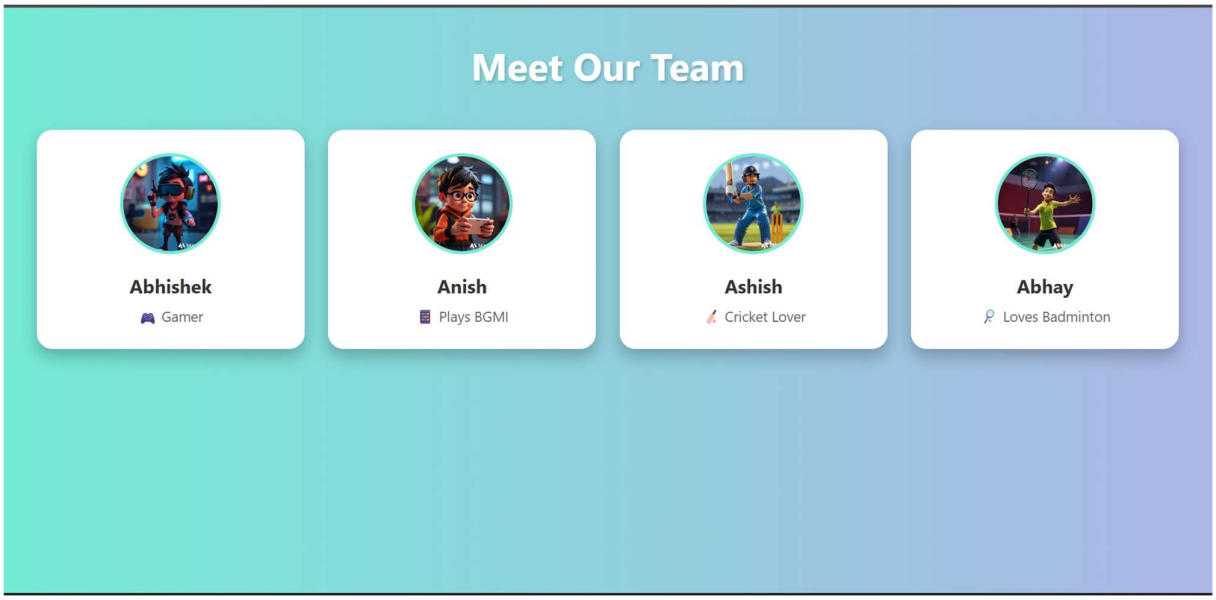


Demo III: Testing of Web Server Over LAN Set in DemoII

Follow following Steps

1. Installation of Web Server on one Computer – Apache2 or Tomcat7
2. Install the server – sudo apt-get install apache2
3. Start web server - /etc/init.d/apache2 start
4. Create the web page and store in /var/www/html
5. Access the web pages from client machines 1/2/3
6.

Access Web Page: http:\\192.168.1.44\index.html



Test the web server by accessing web pages stored on server and capture the traces of http, tcp, ip and Ethernet-II using Wireshark