VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

LAB REPORT
on

COMPUTER NETWORKS

Submitted by

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in partial fulfillment for the award of the degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING

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B. M. S. College of Engineering,
Bull Temple Road, Bangalore 560019
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CERTIFICATE

This is to certify that the Lab work entitled "COMPUTER NETWORKS" carried out by ANSHU MOHANDAS **(1BM21CS025),** who is bonafide student of **B. M. S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2023. The Lab report has been approved as it satisfies the academic requirements in respect of a **COMPUTER NETWORK LAB-(22CS4PCCON)** work prescribed for the said degree.

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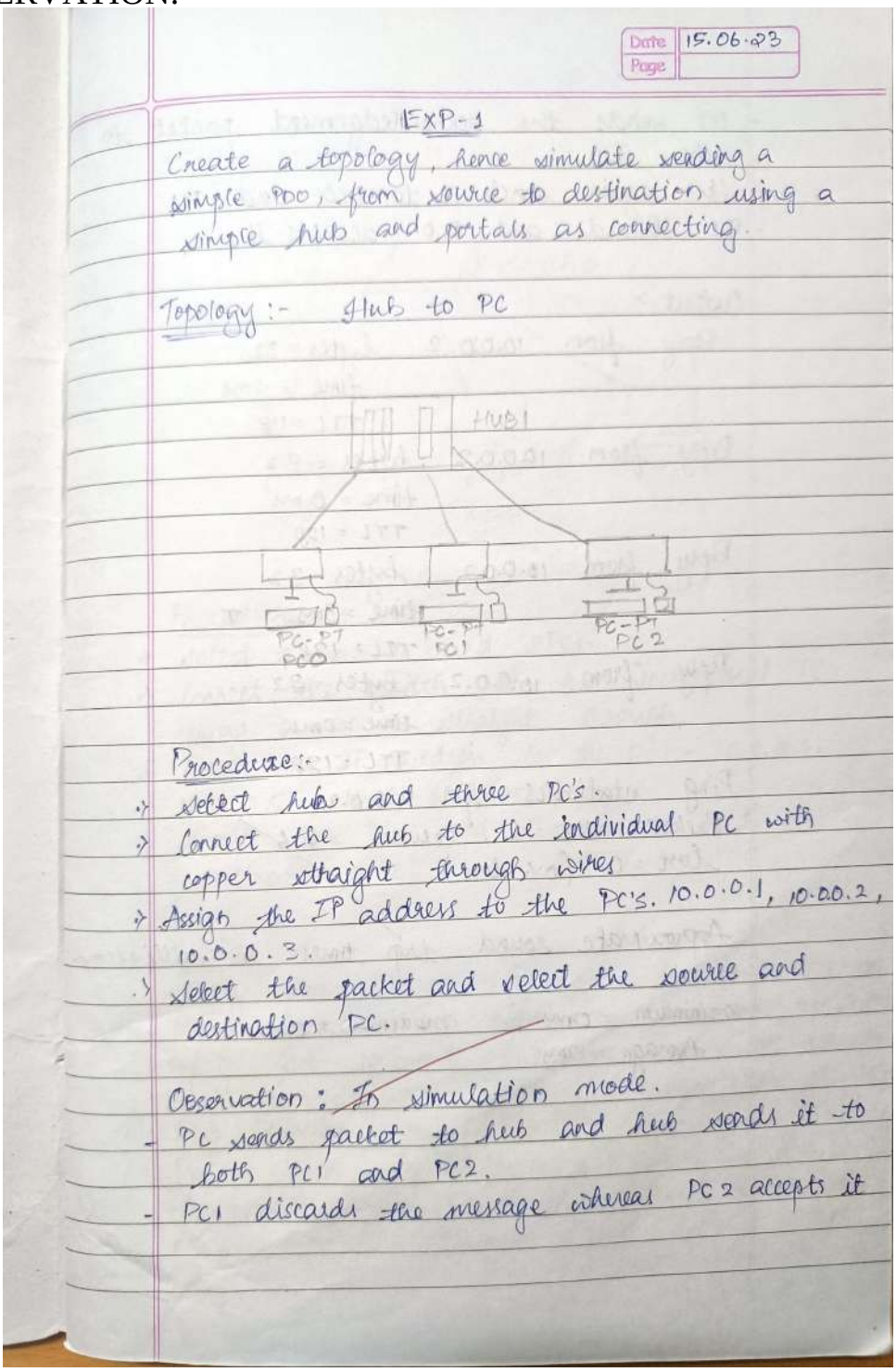
Index

Sl. No.	Date	Experiment Title	Page No.
		CYCLE 1	
1	15/6/23	Create a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices and demonstrating ping messages.	4
2	22/6/23	Configure IP address to routers in packet tracer. Explore the following messages: ping responses, destination unreachable, request timed out, reply.	12
3	13/7/23	Configure default route, static route to the Router.	22
4	13/7/23	Configure DHCP within a LAN and outside LAN.	27
5	20/7/23	Configure Web Server, DNS within a LAN.	32
6	20/7/23	Configure RIP routing Protocol in Routers.	35
7	27/7/23	Configure OSPF routing protocol.	40
8	3/8/23	To construct simple LAN and understand the concept and operation of Address Resolution Protocol (ARP).	46
9	10/8/23	To construct a VLAN and make a pc communicate among VLAN.	50
10	10/8/23	Demonstrate the TTL/ Life of a Packet.	53
11	10/8/23	To construct a WLAN and make the nodes communicate wirelessly.	59
12	10/8/23	To understand the operation of TELNET by accessing the router in server room from a PC in IT office.	63
		CYCLE 2	
13	17/8/23	Write a program for error detecting code using CRC CCITT (16-bits).	67
14	17/8/23	Write a program for congestion control using Leaky bucket algorithm.	73
15	24/8/23	Using TCP/IP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.	76
16	24/8/23	Using UDP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.	80
17	24/8/23	Tool Exploration -Wireshark	84

WEEK 1

Create a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices and demonstrate ping messages.

OBSERVATION:



Date 15.06.23
Page

EXP-1

Create a topology, hence simulate sending a simple PDU, from source to destination using a simple hub and portals as connecting.

Topology :- Hub to PC

Procedure:-

- Select hub and three PC's.
- Connect the hub to the individual PC with copper straight through wires
- Assign the IP address to the PC's. 10.0.0.1, 10.00.2, 10.0.0.3.
- Select the packet and select the source and destination PC.

Observation : In simulation mode.

- PC sends packet to hub and hub sends it to both PC1 and PC2.
- PC1 discards the message whereas PC2 accepts it

- PC2 sends the acknowledgement packet to the hub.
- Hub again sends it to PC0 and PC1
- PC1 discards and PC0 accepts it.

Output :

Reply from 10.0.0.2 bytes = 32
time = 2ms
TTL = 118

Reply from 10.0.0.2 bytes = 32
time = 0 ms
TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 3ms
TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 0ms
TTL = 128

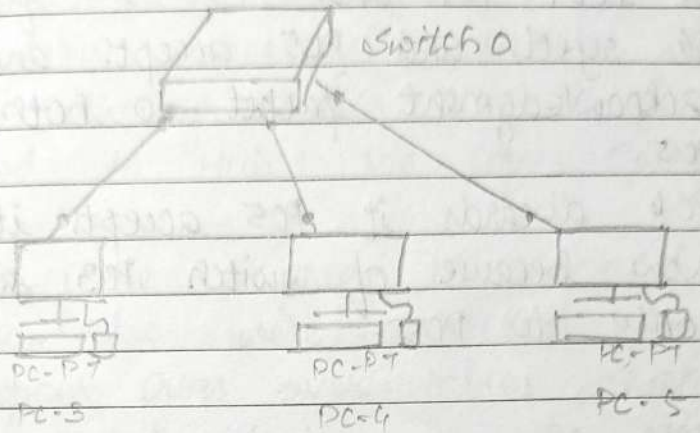
Ping statistics for 10.0.0.2
Packet : sent = 4, Recived = 4, 6
lost = 0 (0% loss)

Approximate round trip times in milliseconds

minimum = 0ms, maximus = 3ms
Average = 0ms.

Date
Page

Topology :-



Procedure

Select a switch and 3 PC's,
Connect the switch to the individual PC's using a copper straight through.
Assign the IP address to the PC's - 10.0.0.4, 10.0.0.5, 10.0.0.6 respectively.
Select the PDU and the source and destination PC.

Output

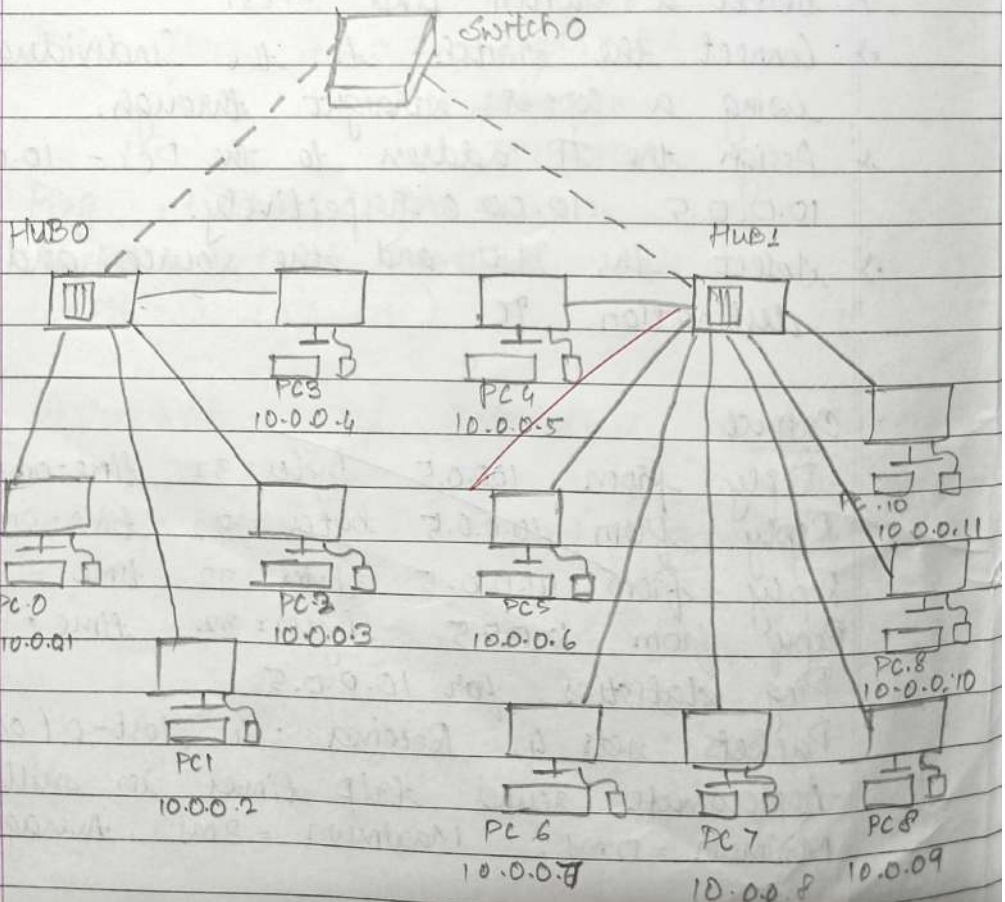
Reply from 10.0.0.5 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 3ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 3ms TTL = 128
Ping statistics for 10.0.0.5
Packets sets 4, Received = 4 lost = 0 (0% loss)
Approximate round trip times in milli seconds
Minimum = 0ms, Maximum = 3ms, Average = 2ms

Observation : In simulation mode

- PC 3 sends packet to switch and it sends to both PC4 and PC5 in first round.
- PC4 rejects and PC5 accepts and sends acknowledgment packet to both PC3 and PC5.
- PC4 discards it PC5 accepts it.

Now because of switch PC3 sends packets only to PC5.

Topology → Hybrid - Hub and Switch



PROCEDURE

- 11 PCs & generic Hub's and 1 switch were placed in the workspace.
- 4 PCs were connected to Hub 0 via copper straigh through cables. Remaining 7 PCs were connected to Hub 1 via copper through straight cable.
- All PCs were assigned IP's (10.0.0.1 to 10.0.0.11)
- The 2 hubs were connected to the switch via copper cross over cables which are used to connected devices on the same level.

Result

PC1 command line.

PC> ping 10.0.0.8

Pinging 10.0.0.8 with 32 bytes of data.

Reply from 10.0.0.8 bytes=32 time = 8ms TTL = 128
Reply from 10.0.0.8 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.8 bytes = 32 time = 0 ms TTL = 128
Reply from 10.0.0.8 bytes = 32 time = 0ms TTL = 128

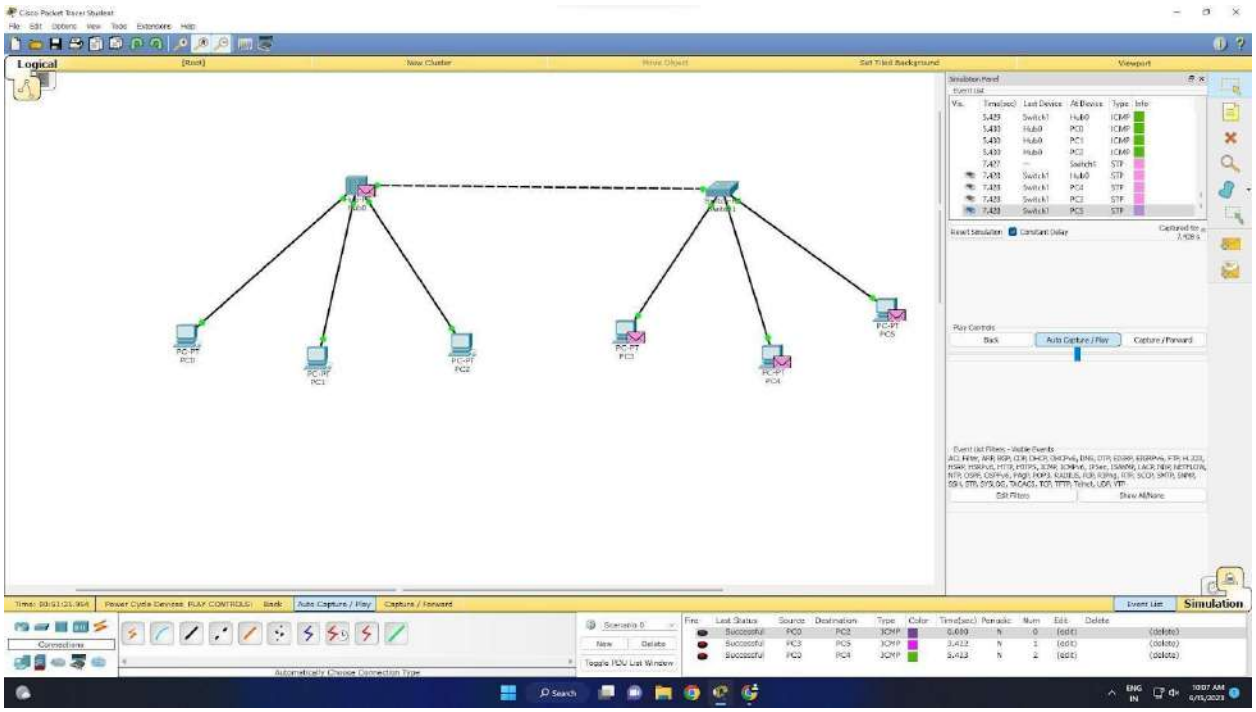
Ping statistics for 10.0.0.8
Packets sent = 4, Recieved = 4, Lost = 0 (0% loss)
Approximate round trip time in milliseconds
Minimum = 0 ms Maximum = 8ms Average = 2ms

OBSERVATIONS

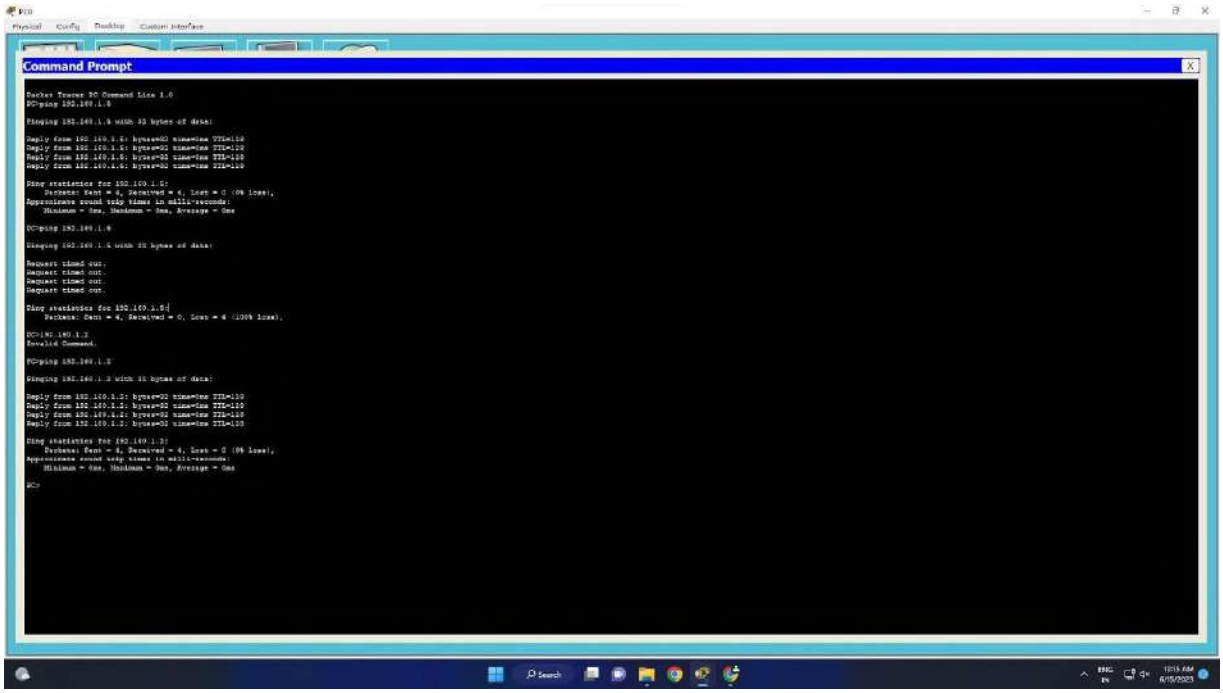
HUB :- A hub recieves data and broadcasts it to all devices connected to it.

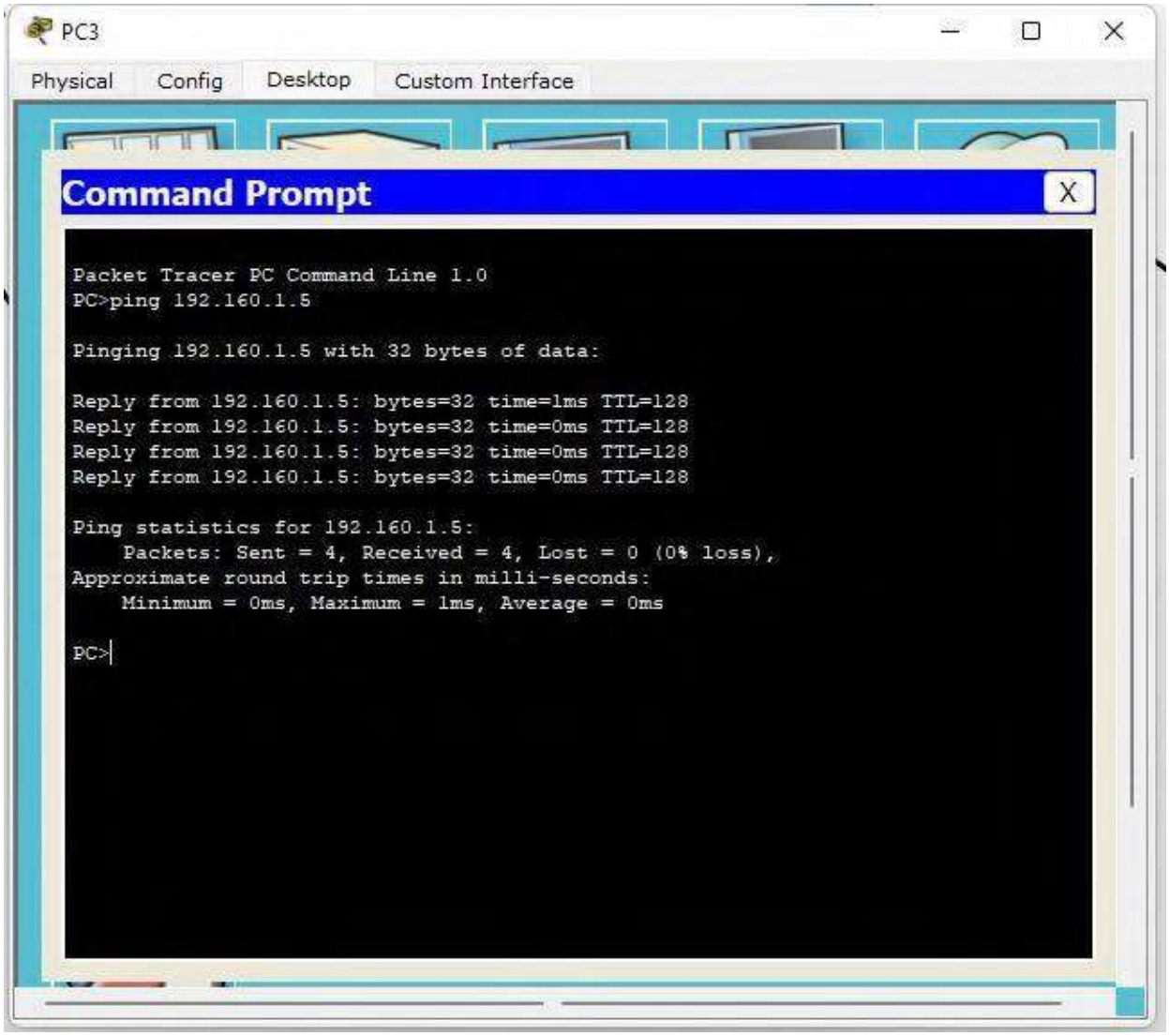
Switch :- A switch prevents traffic between devices from being shared with other devices connected to it. It sends messages only to the reciever

TOPOLOGY:



OUTPUT:

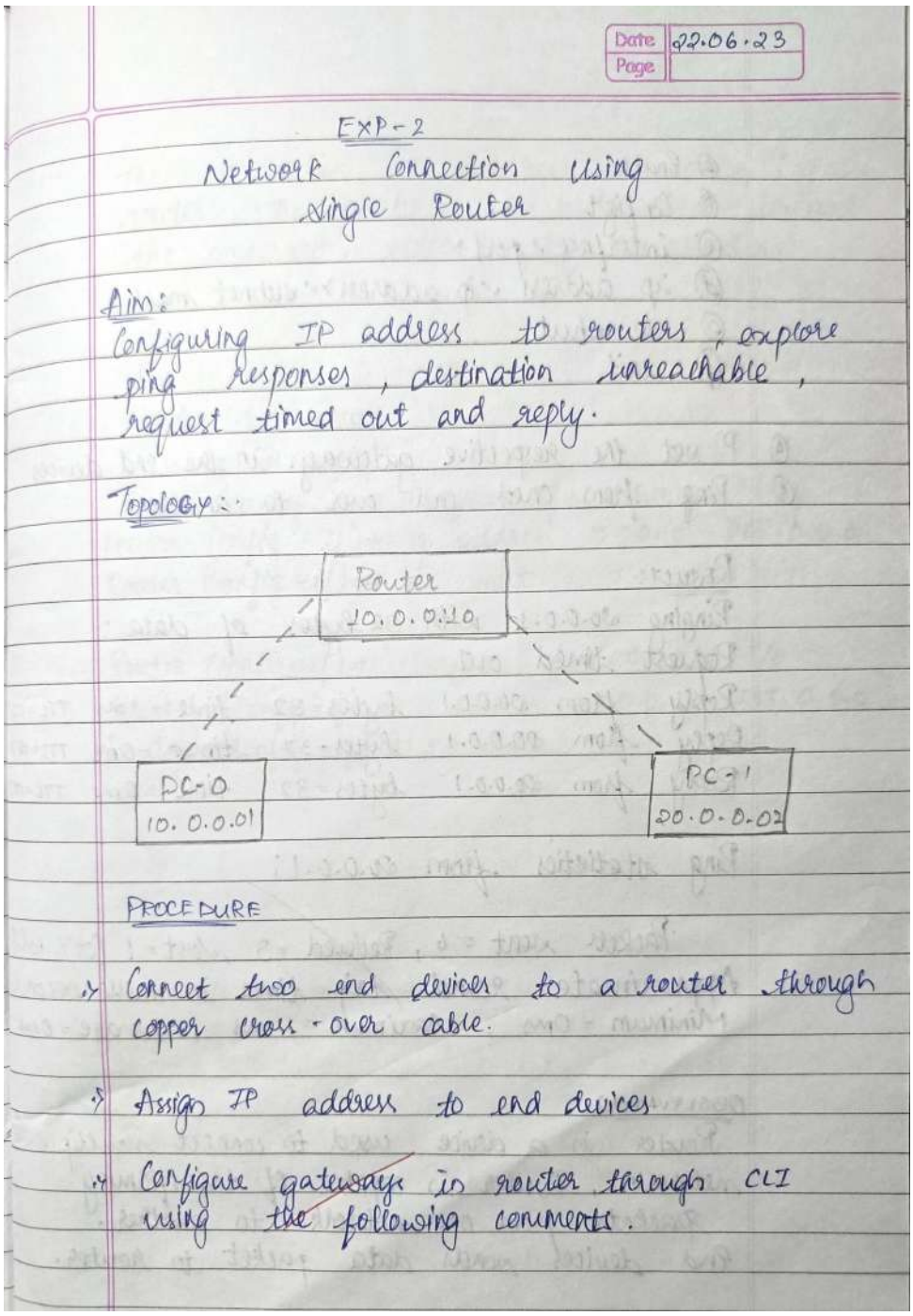



PC3
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 192.160.1.5
Pinging 192.160.1.5 with 32 bytes of data:
Reply from 192.160.1.5: bytes=32 time=1ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Ping statistics for 192.160.1.5:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>

WEEK 2

Configure IP address to routers (one and three) in packet tracer. Explore the following messages: ping responses, destination unreachable, request timed out, reply.

OBSERVATION:



(a) Enable
(b) Configt
(c) interface <port>
(d) ip address <ip address> <subnet mask>
(e) no shut
(f) exit

(4) P set the respective gateways in the end devices
(5) Ping from one end user to another.

RESULT:-

Pinging 20.0.0.1 with 32 bytes of data:
Request timed out
Reply from 20.0.0.1 bytes=32 time=1ms TTL=12
Reply from 20.0.0.1 bytes=32 time=0ms TTL=127
Reply from 20.0.0.1 bytes=32 time=0ms TTL=127

Ping statistics from 20.0.0.1;

Packets sent = 4, Recieved = 3, Lost = 1 (25% loss)
Approximate round trip times in milli seconds
Minimum = 0ms, Maximum = 1 ms, Average = 0ms

OBSERVATION

Router is a device used to connect multiple networks. Router is capable of transforming packets from one network to another. End devices sends data packet to router.

The destination IP address is noted by the router. The packet is redirected towards the concerned network by the router.

For Router 0 CLI

Router > enable
Router # config t
Router (config) # interface fastethernet 0/0
Router (config-if) # ip address 10.0.0.10 255.0.0.0
Router (config-if) # no shut
exit
Router (config-if) # interface fastethernet 1/0
Router (config-if) # ip address 20.0.0.10 255.0.0.0
Router (config-if) # no shut
exit

22.06.23

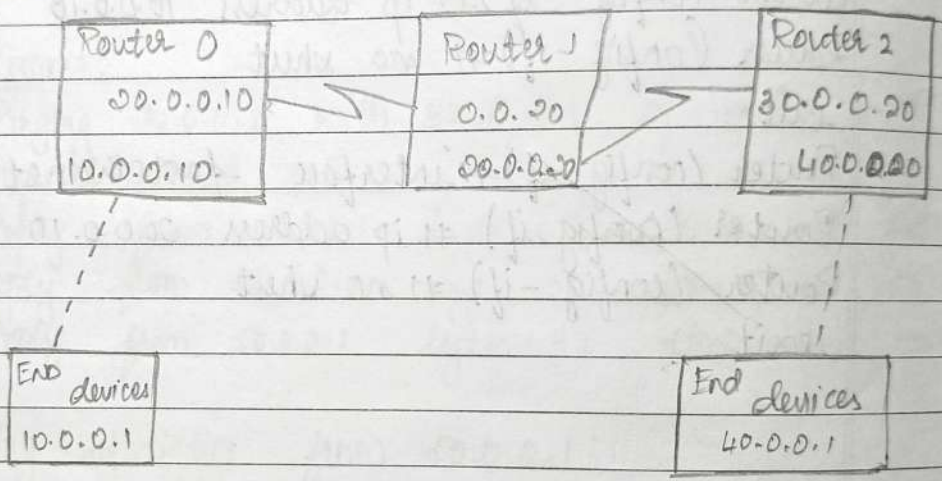
EXP-2

Network with multiple routers

Aim:

Configuring IP address of multiple routers, exploring ping responses, destination unreachable, request timed out and reply.

TOPOLOGY :-



PROCEDURE :-

- Add two end devices and three routers to work spaces.
- Connect router through serial DTE cable and end devices to routers through copper cross-over cable.
- Assign IP addresses to end devices and gateways.
- Configure gateways through CLI using following

commands :

ⓐ Enable
ⓑ configt
ⓒ interface <port>
ⓓ ip address <ip address> <subnet mask>
ⓔ no shut
ⓕ exit

Using command ip route <destination ip> <routing ip> set paths for each router.
Ping from one end devices to another.

Result :

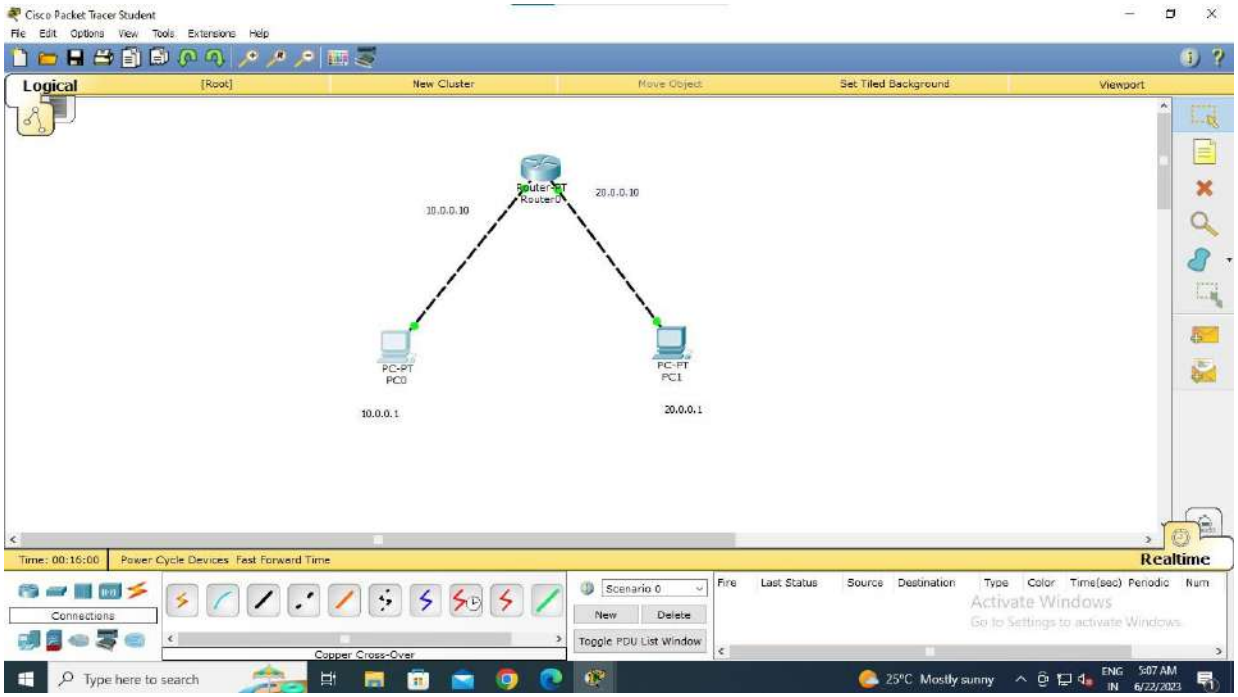
Pinging 40.0.0.1 with 32 bytes of data :

Request timed out :
Reply from 40.0.0.1 bytes = 32 time = 10ms TTL = 127
Reply from 40.0.0.1 bytes = 32 time = 12ms TTL = 127
Reply from 40.0.0.1 bytes = 32 time = 14ms TTL = 127

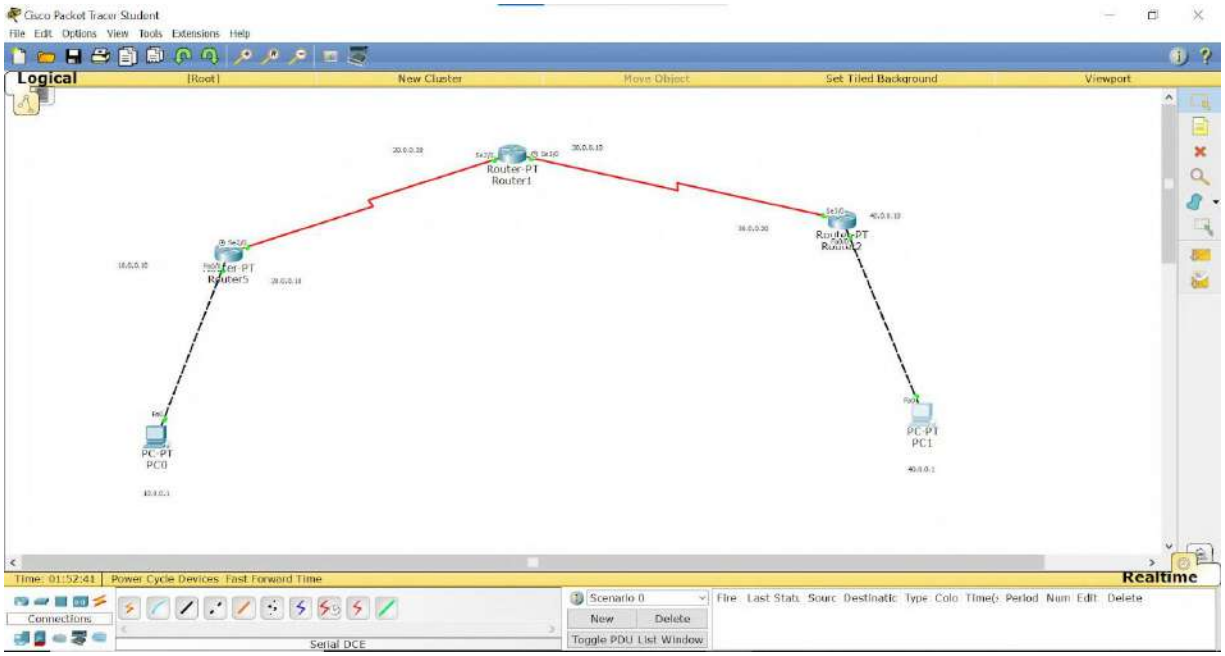
Ping statistics from 40.0.0.1 :
Packets sent = 4, Recured = 3, Lost = 1 (25 % loss)
Approximate round trip times in milli seconds
Minimum = 10ms Maximum = 14ms Average = 12ms

TOPOLOGY:

PROGRAM 2.1

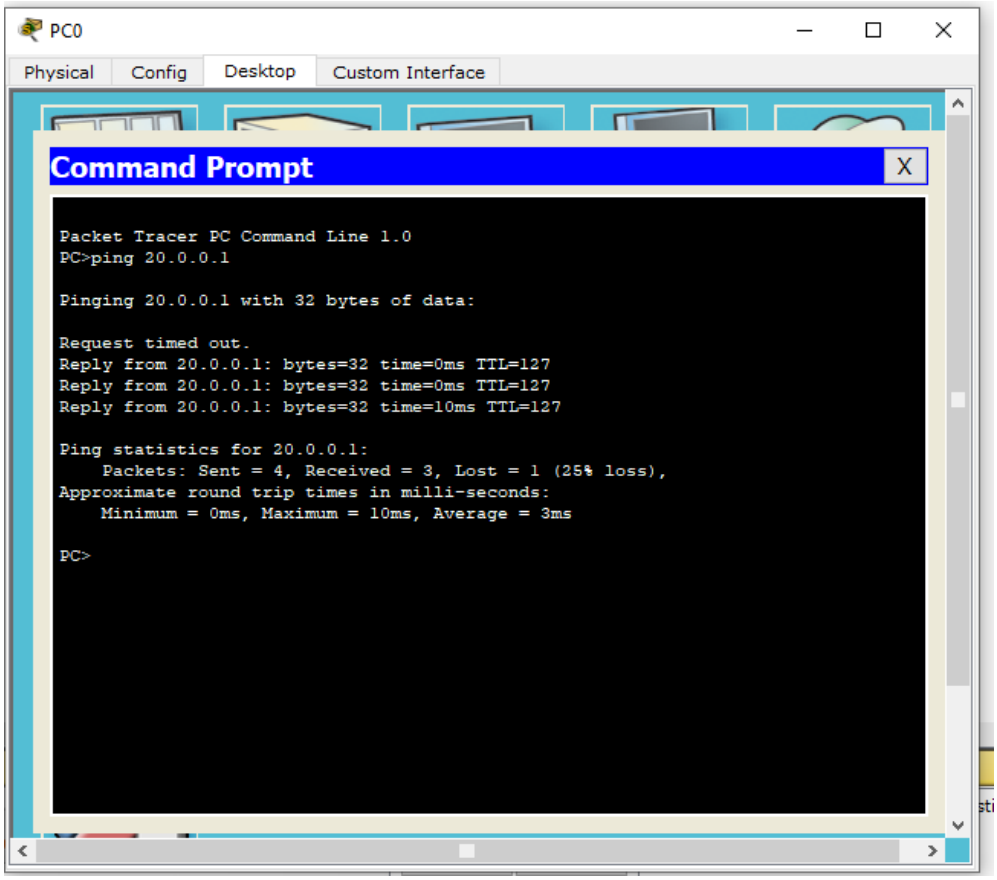


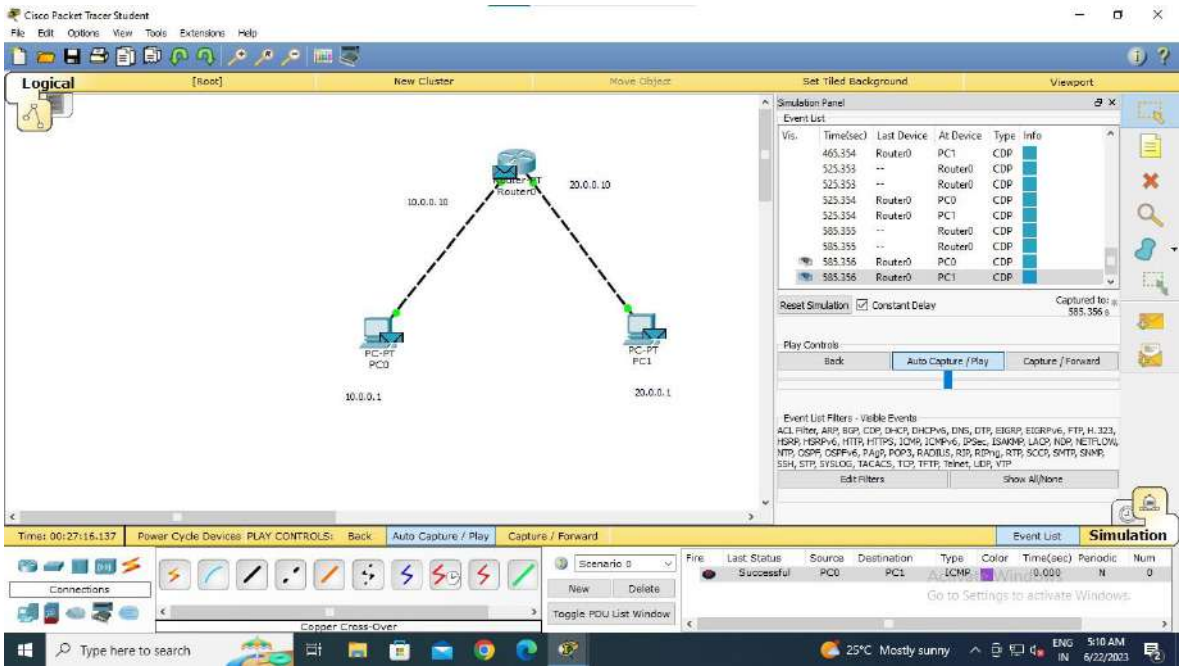
PROGRAM 2.2



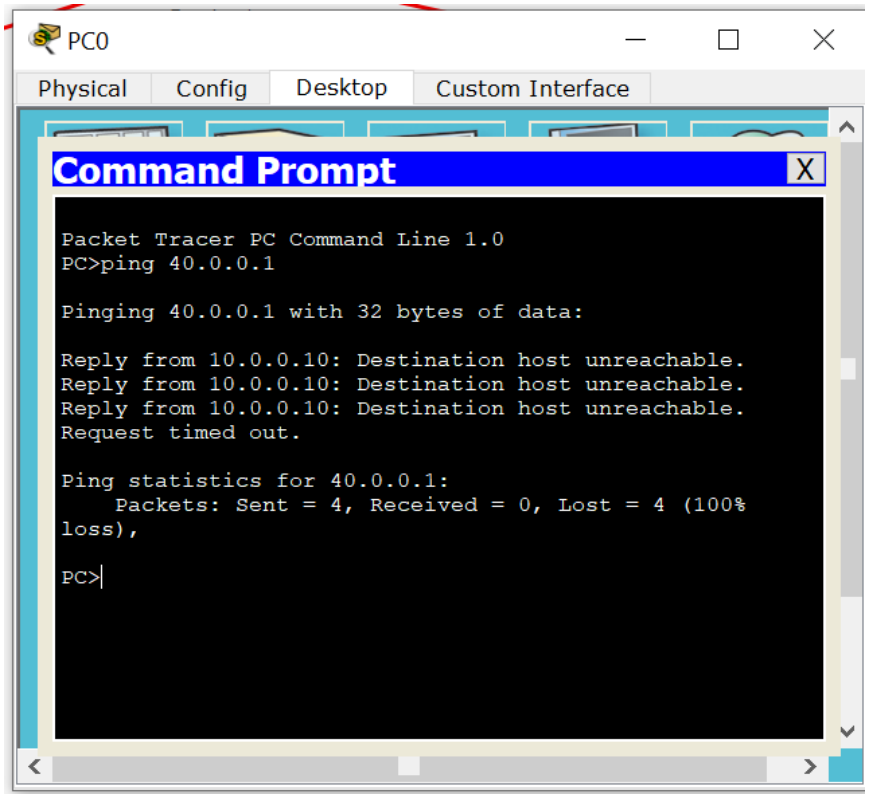
OUTPUT:

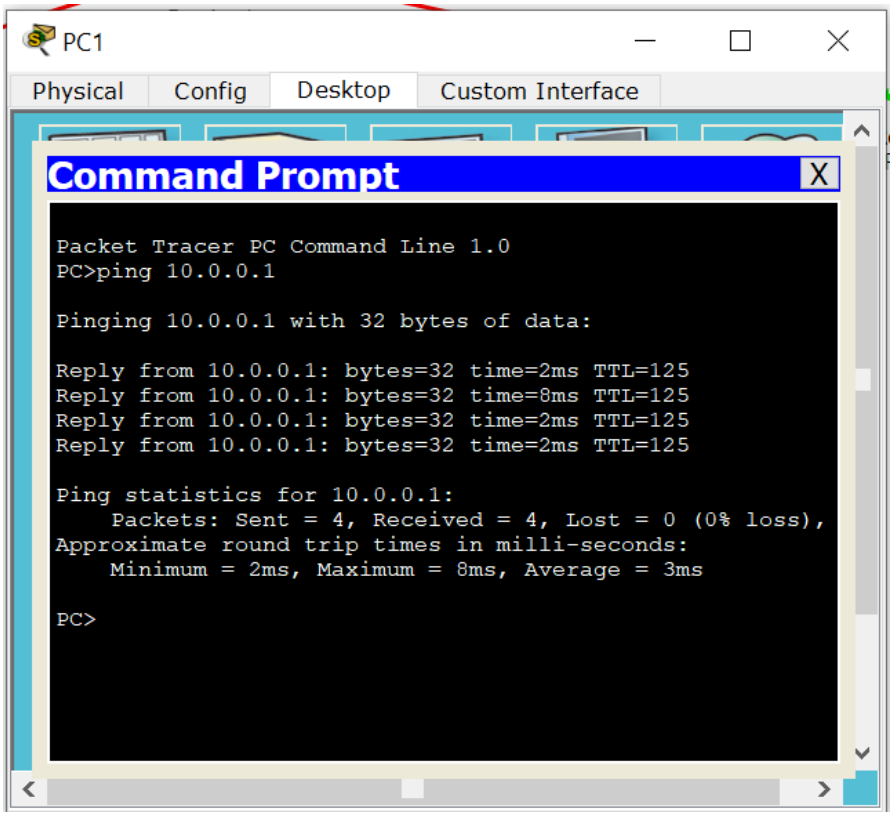
PROGRAM 2.1

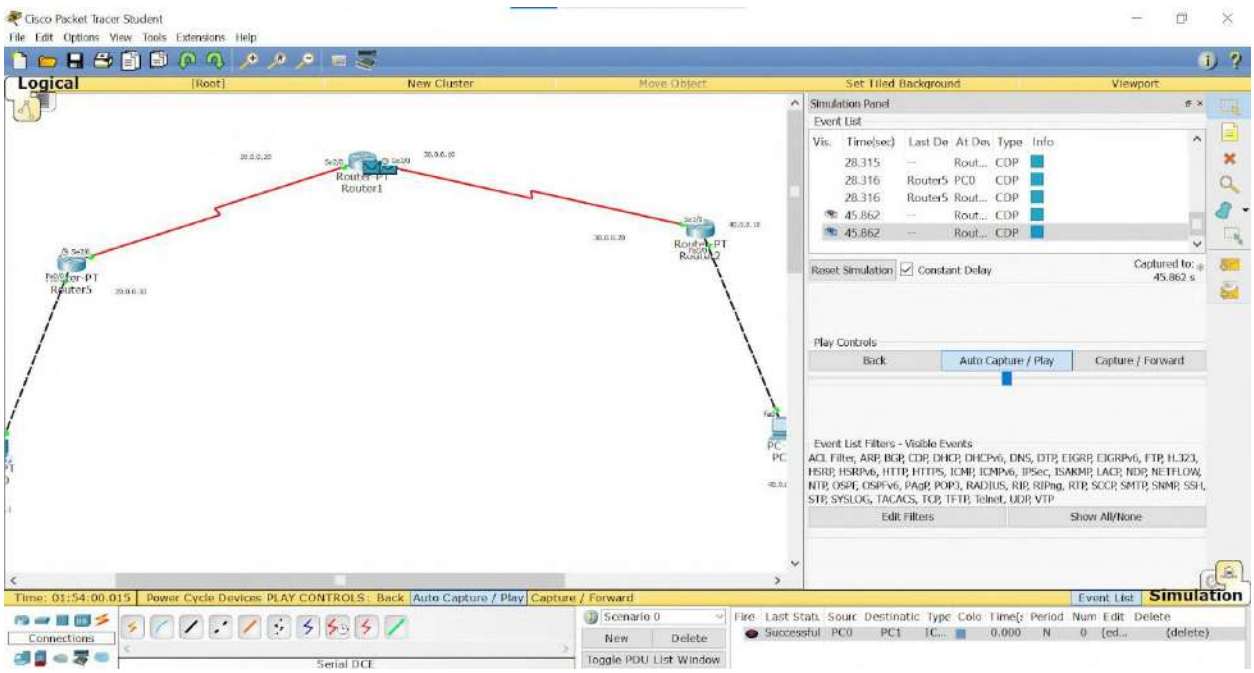




PROGRAM 2.2


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data:
Reply from 10.0.0.10: Destination host unreachable.
Reply from 10.0.0.10: Destination host unreachable.
Reply from 10.0.0.10: Destination host unreachable.
Request timed out.
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100%
loss),
PC>

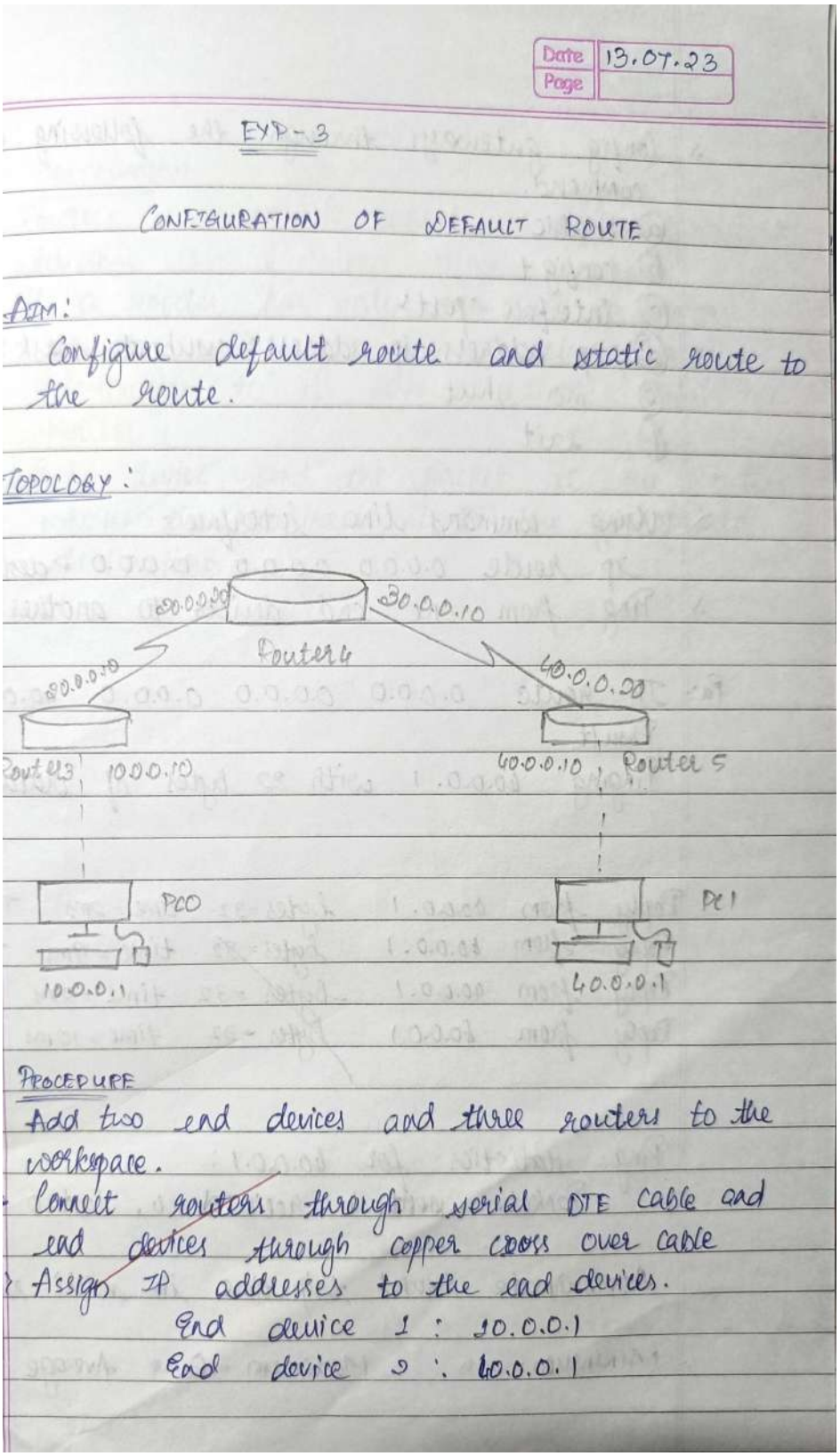

PC1
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Reply from 10.0.0.1: bytes=32 time=8ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 10.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 8ms, Average = 3ms
PC>


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT Router1
Router-PT Router5
Router-PT Router2
PC PC
Simulation Panel
Event List
Vis. Time(sec) Last De At Dev Type Info
28.315 -- Rout... CDP
28.316 Router5 PC0 CDP
28.316 Router5 Rout... CDP
45.862 -- Rout... CDP
45.862 -- Rout... CDP
Reset Simulation
Constant Delay
Captured to: 45.862 s
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters
Show All/None
Time: 01:54:00.015
Power Cycle Devices PLAY CONTROLS: Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Connections
Serial DCE
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Stat Sourc Destinatic Type Colo Time(s Period Num Edit Delete
Successful PC0 PC1 IC... 0.000 N 0 (ed... (delete)

WEEK 3

Configure default route, static route to the Router.

OBSERVATION:



Date 13.07.23
Page

EXP-3

CONFIGURATION OF DEFAULT ROUTE

AIM:

Configure default route and static route to the route.

TOPOLOGY:

PROCEDURE

Add two end devices and three routers to the workspace.

Connect routers through serial DTE cable and end devices through copper cross over cable

Assign IP addresses to the end devices.

End device 1 : 10.0.0.1

End device 2 : 40.0.0.1

→ Config gateways through the following CLI command.

(a) Enable
(b) config t
(c) interface <port>
(d) ip address <ip address> <subnet mask>
(e) no shut
(f) exit

→ Using command line interface
ip route 0.0.0.0 0.0.0.0 0.0.0.0 <destination ip>

→ Ping from one end devices to another.

Eg:- IP route 0.0.0.0 0.0.0.0 0.0.0.0 40.0.0.1

Result

Pinging 40.0.0.1 with 32 bytes of data:

Reply from 40.0.0.1 bytes=32 time=2ms TTL=125
Reply from 40.0.0.1 bytes=32 time=9ms TTL=125
Reply from 40.0.0.1 bytes=32 time=2ms TTL=125
Reply from 40.0.0.1 bytes=32 time=10ms TTL=125

Ping statistics for 40.0.0.1:
Packets: sent=4 recieved=4, lost=0 (0% loss)

Approximate round trip time in milli seconds

Minimum=2ms Maximum=10ms Average=5ms

Date
Page

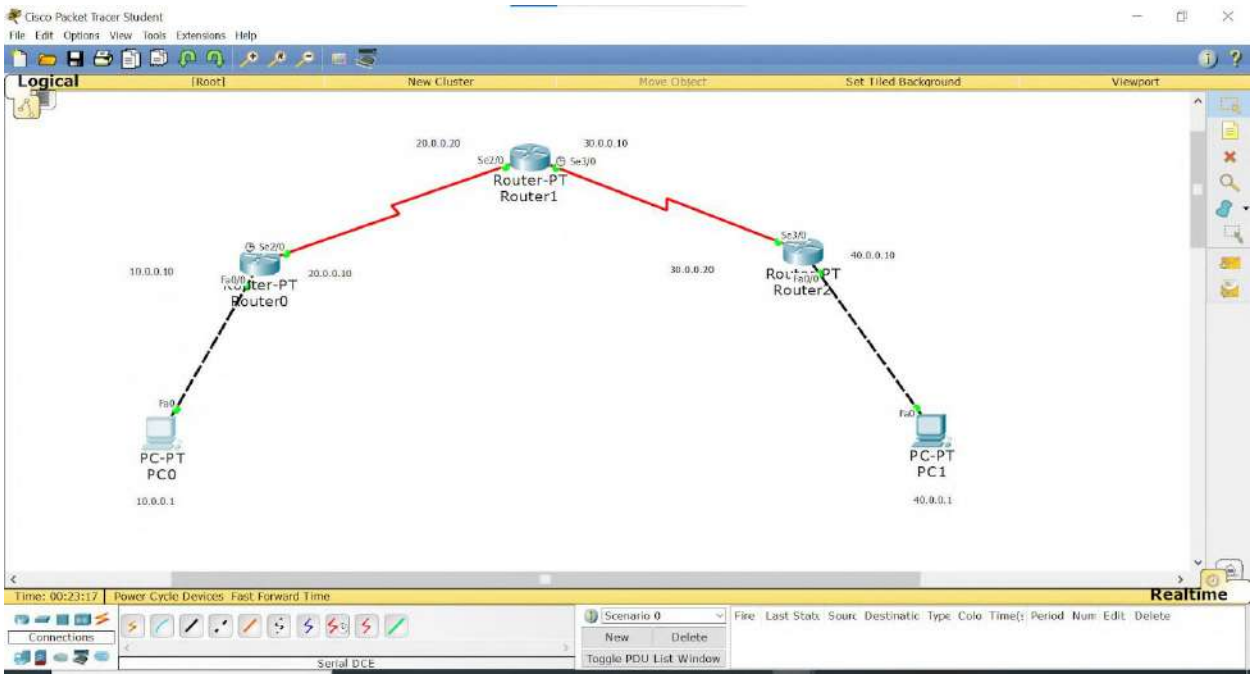
OBSERVATION

→ Routers are seen to connect 2 different networks together

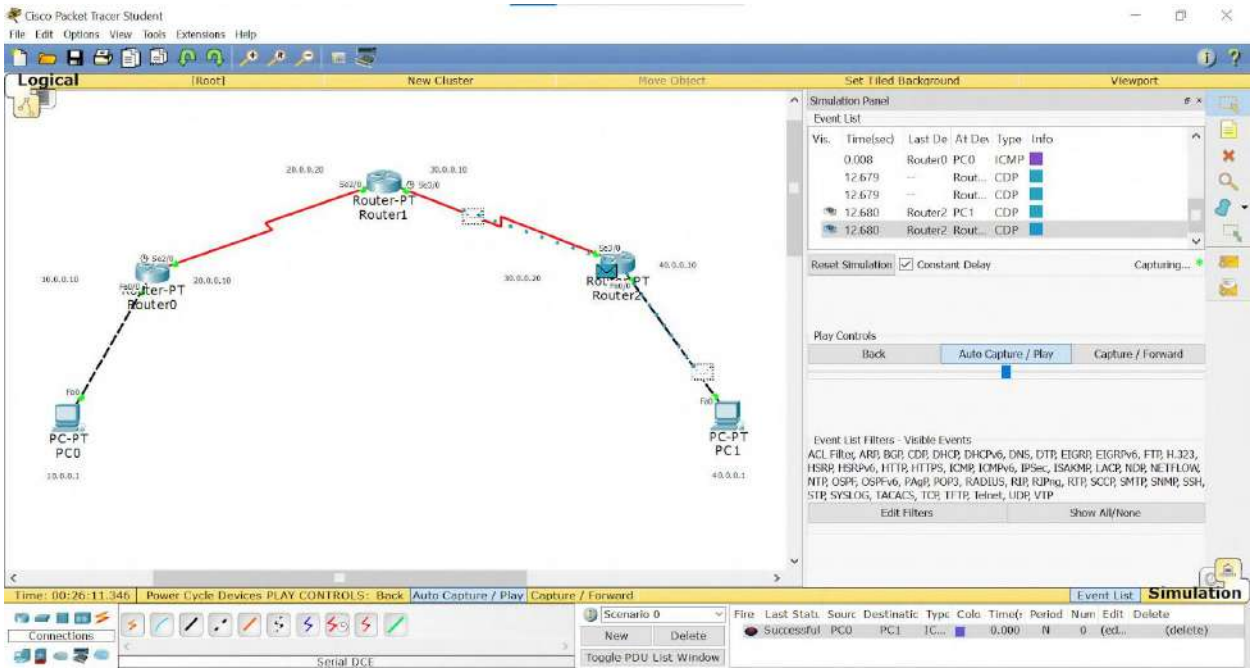
→ If a router has only one path to traverse default routing to send packets of any destination, to its adjacent device. Router 0 & Router 1

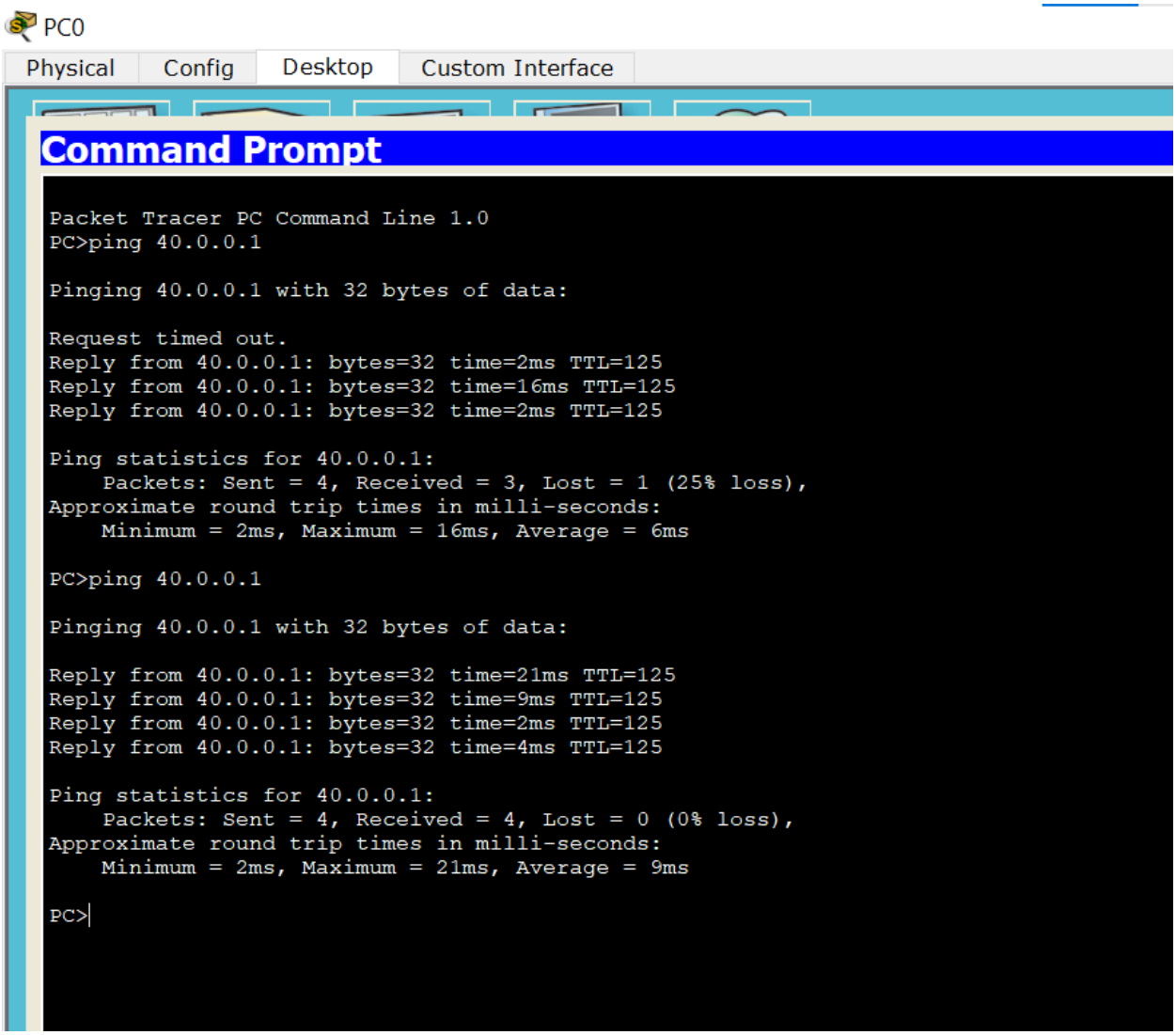
→ End device send the packet to the routers which then redirect it to the appropriate destination.

TOPOLOGY:



OUTPUT:




PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=16ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 16ms, Average = 6ms
PC>ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data:
Reply from 40.0.0.1: bytes=32 time=21ms TTL=125
Reply from 40.0.0.1: bytes=32 time=9ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=4ms TTL=125
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 21ms, Average = 9ms
PC>

WEEK 4

Configure DHCP within a LAN and outside LAN.

OBSERVATION:

13.07.2023

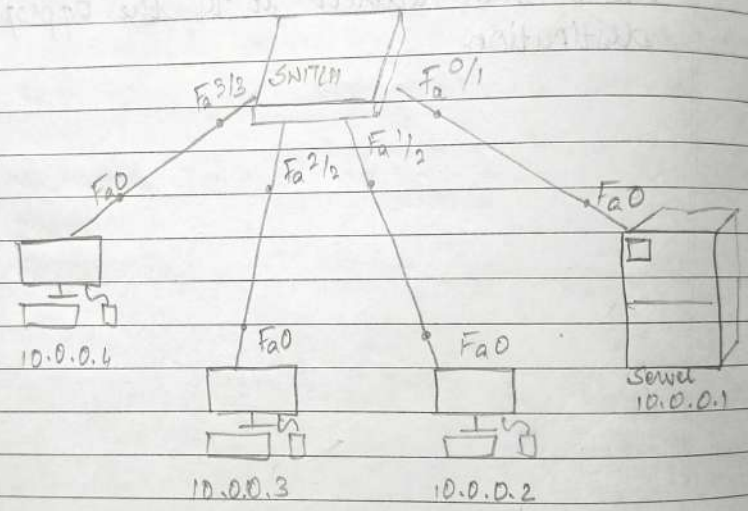
EXP-4

AIM

Configure DHCP within a LAN & outside LAN

① Within a LAN

Topology



PROCEDURE

- Create a LAN network (10.0.0.0) by selecting 3 PC's a server and connect them to a switch.
- Set the server's IP address to 10.0.0.1 & set the default gateway to 10.0.0.20
- Set the server to DHCP mode
  (Services → DHCP → service ON)

Date
Page

:) Put down the gateway & the start IP address (10.0.0.2)

:) Change all the other PC's IP configuration to DHCP.

RESULT

PC > ping 10.0.0.4

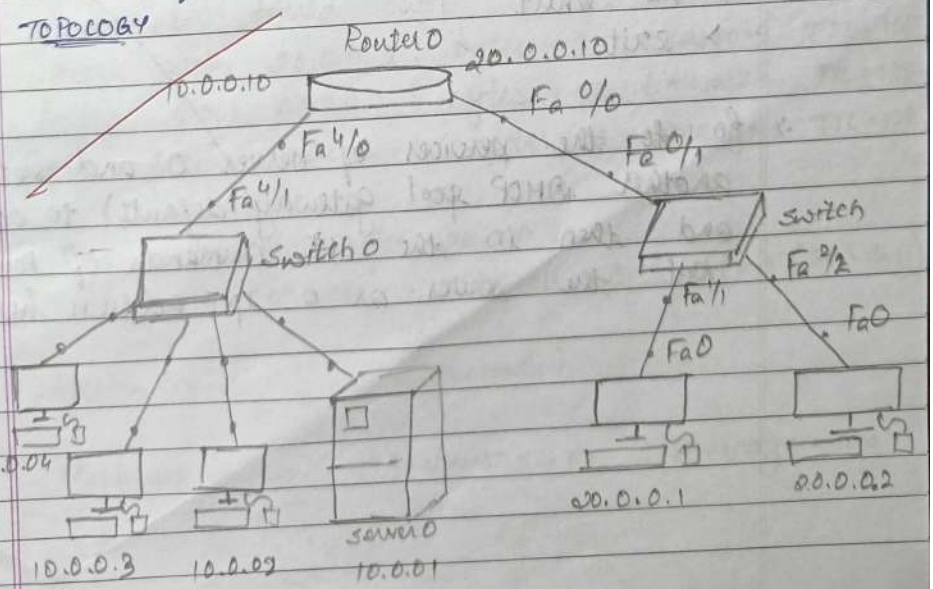
Pinging 10.0.0.4 with 32 bytes of data

Reply from 10.0.0.4 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.4 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.4 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.4 bytes = 32 time = 0ms TTL = 128

Ping statistics for 10.0.0.4
Packet : sent = 4, recieved = 4, lost = 0 (0% loss)
Approximate round trip times in millisecond.
minimum = 0 ms, Maximum = 1 ms, Average = 0 ms

② Outside of LAN

TOPOLOGY



PROCEDURE

1) Follow the same steps as in case of inside LAN, by creating 10.0.0.0 network with the server IP address - 10.0.0.1 and the gateway 10.0.0.10
2) Create another network with 2 PC's and a switch and connect the 2 networks using a Router.
3) Configure the router to connect the 2 networks through the gateway.
   > enable
   > config t
   > interface fa 4/0
   > ip addres 10.0.0.0 255.0.0.0
   > no shut
   > exit
   > interface fa 0/0
   > ip addres 20.0.0.20 255.0.0.0
   > no shut
   > exit

4) Go to the services of server 0 and set another DHCP pool gateway (default) to 20.0.0.10 and then in the CLI commands of router set the server as a ip-addres helper.

The following are the 2 pools

PoolName	Default Gateway	DNS Server	Start IP address	Subnet Mask	Max User
ServerPool	10.0.0.10	0.0.0.0	10.0.0.2	255.0.0.0	512
ServerPool	20.0.0.10	0.0.0.0	20.0.0.1	255.0.0.0	512

> config t
> interface fa 0/0
> ip helper address <server ip-address>
> no shut
exit

Ping from 10.0.0.2 to 20.0.0.2

RESULT

PC > Ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data
Request timed out.
Reply from 20.0.0.2 : bytes = 32 time=0ms TTL=128
Reply from 20.0.0.2 : bytes = 32 time = 2ms TTL = 128
Reply from 20.0.0.2 : bytes = 32 time = 1ms TTL = 128

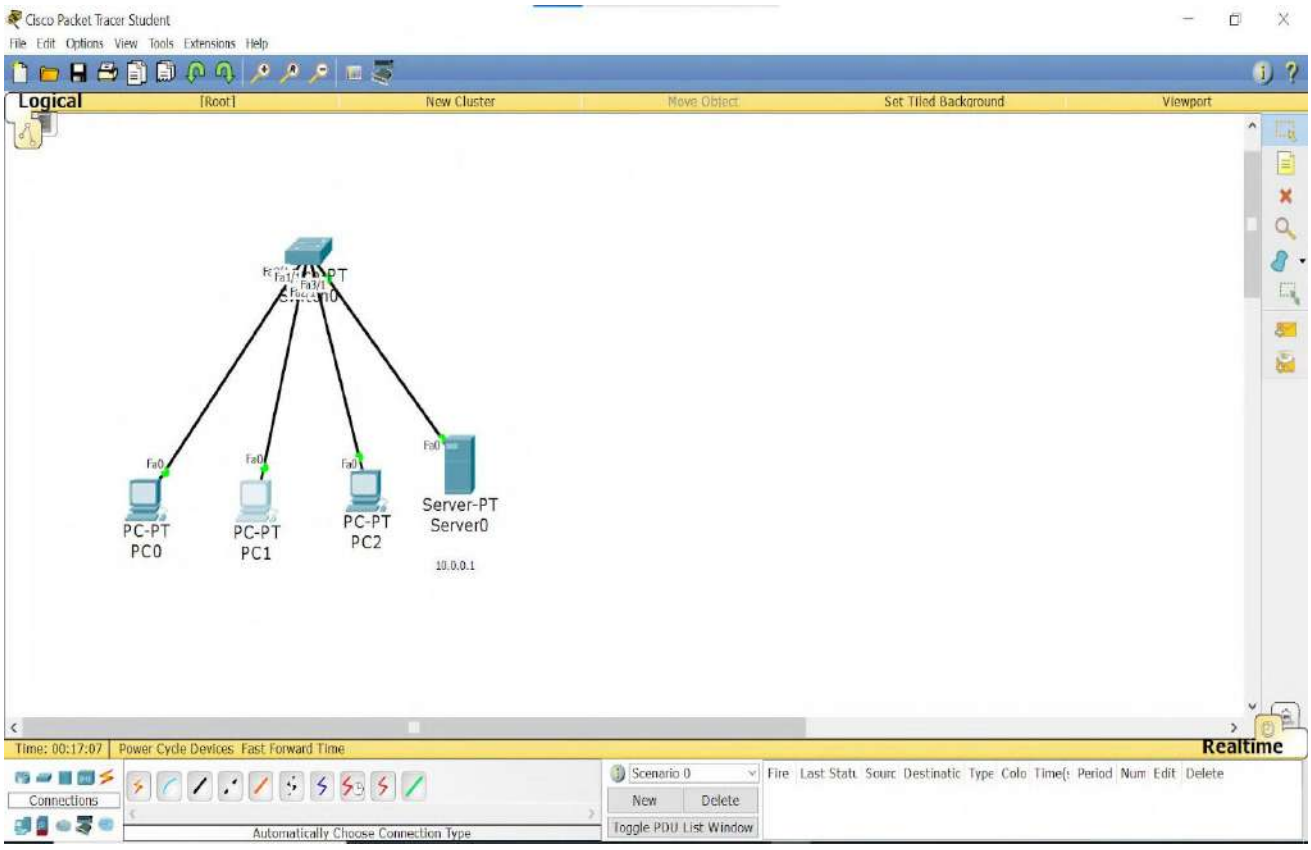
Ping statistics for 20.0.0.2
Packet: Sent=4 recieved = 3, lost = 1 (25% loss)

Approx time (in milliseconds)

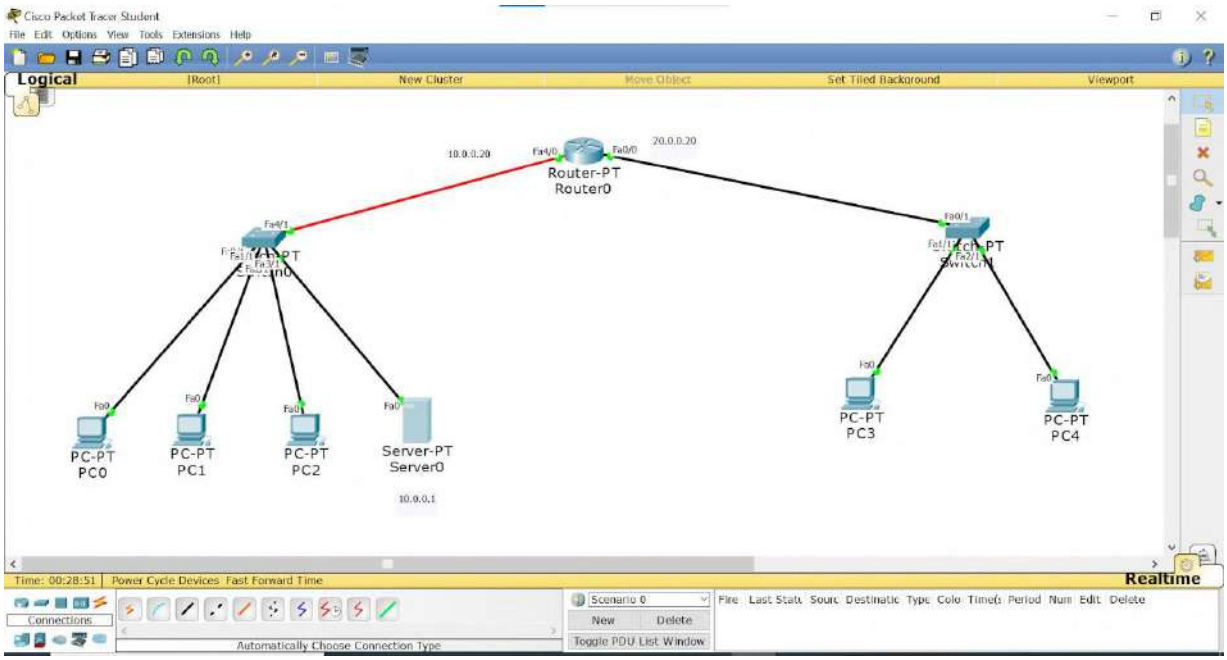
Minimum = 0ms Maximum = 2 ms Average = 1ms

TOPOLOGY:

PROGRAM 4.1:

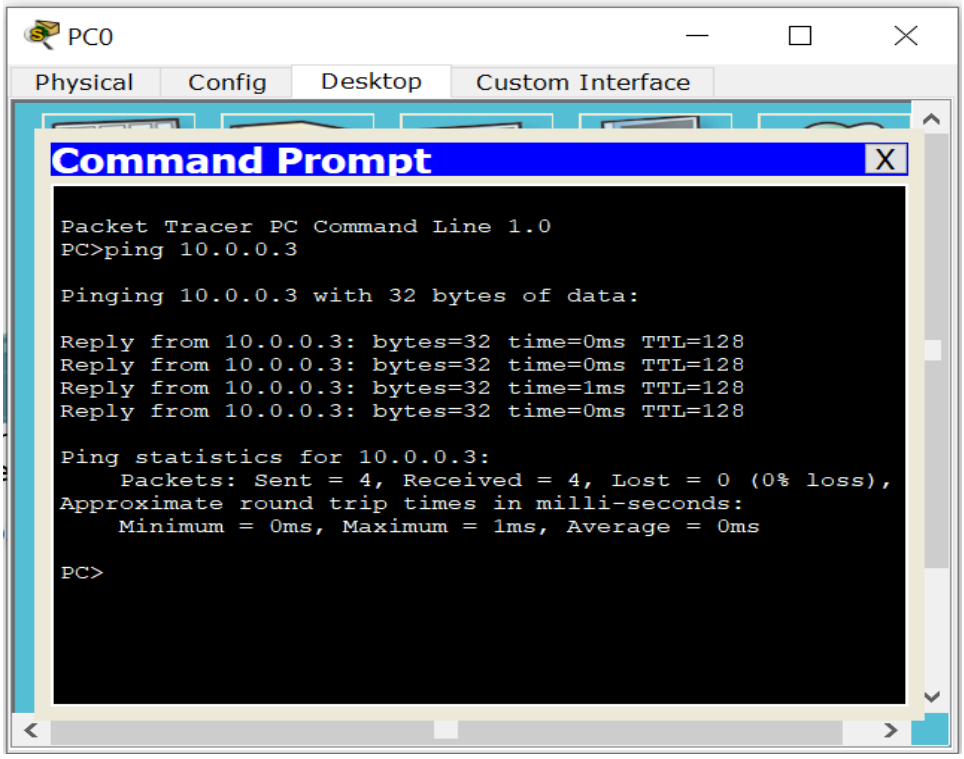


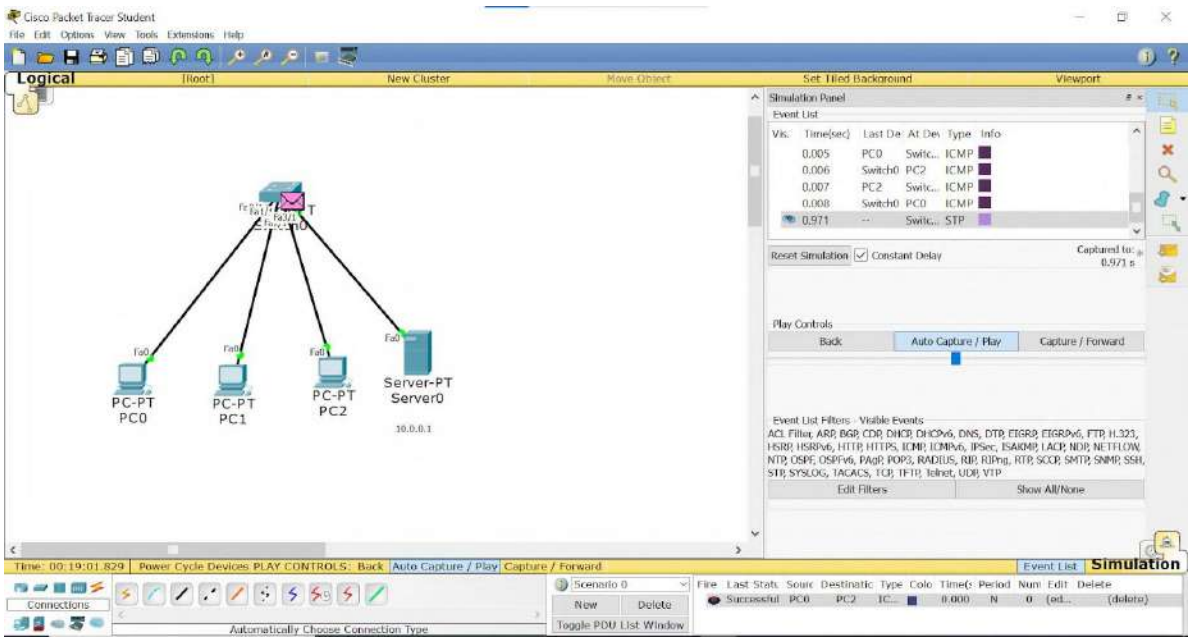
PROGRAM 4.2:


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
10.0.0.20
20.0.0.20
Router-PT
Router0
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
Server-PT
Server0
10.0.0.1
PC-PT
PC3
PC-PT
PC4
Time: 00:28:51
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(s)
Period
Num
Edit
Delete

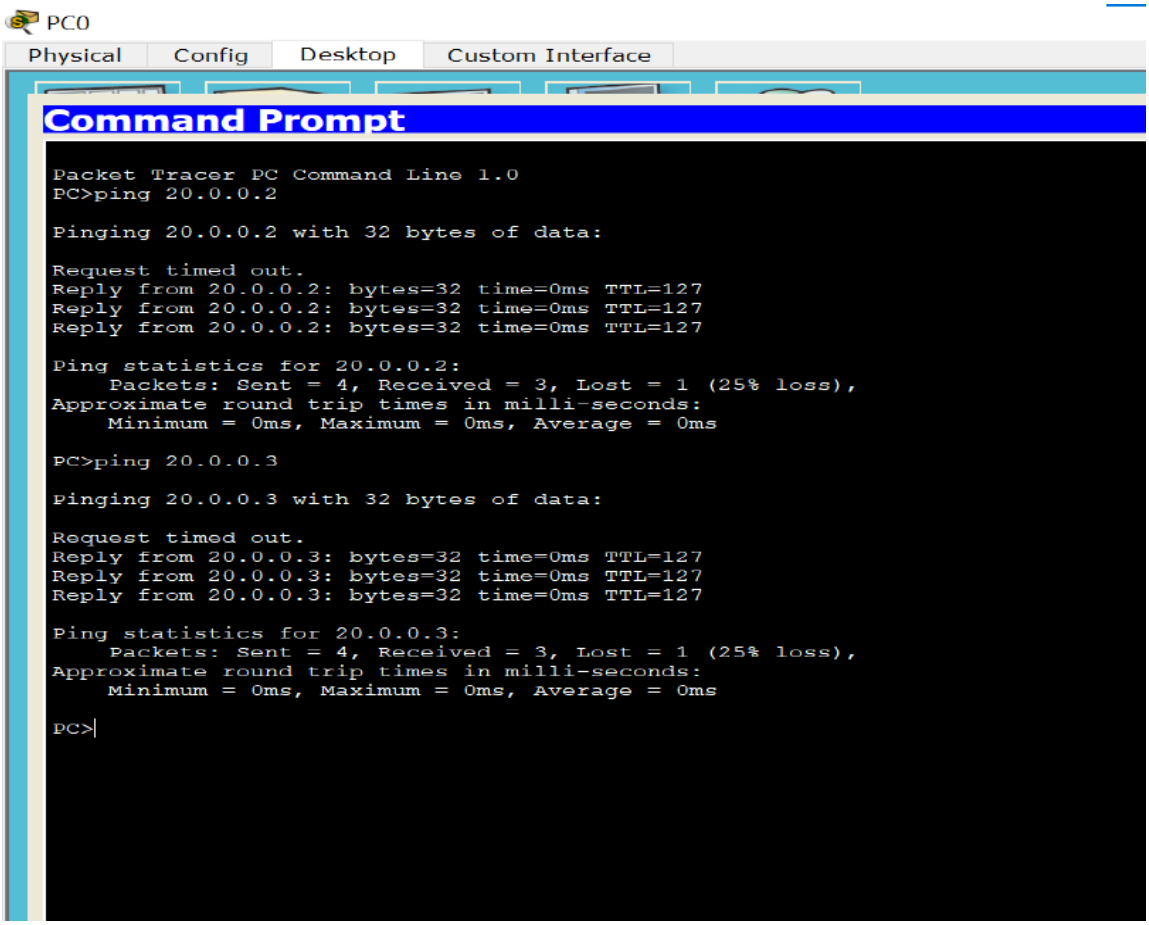
OUTPUT:

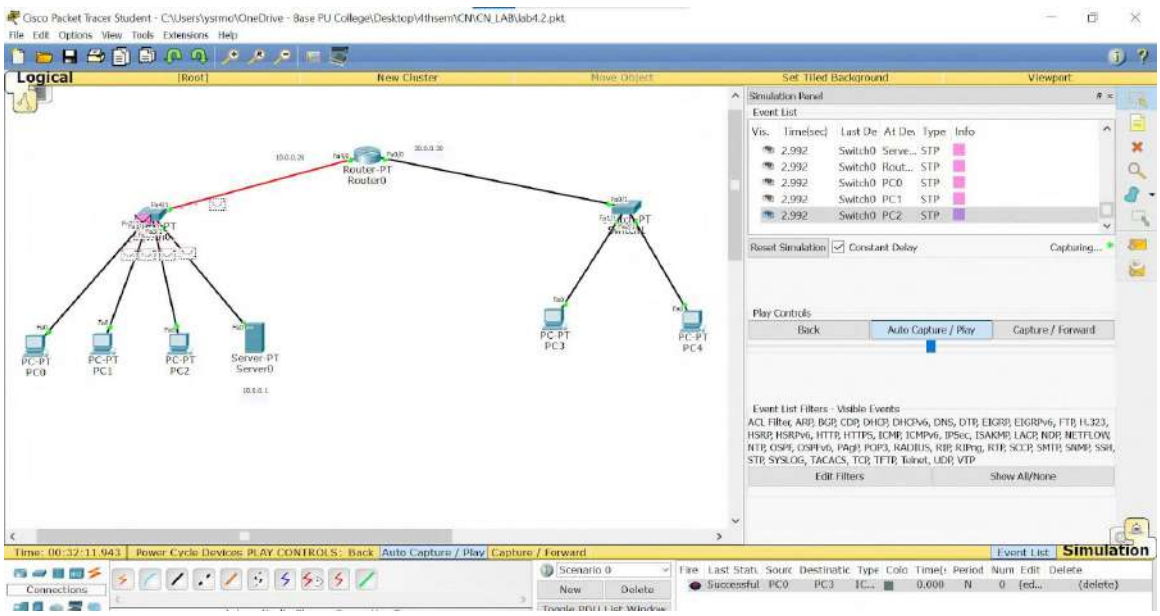
PROGRAM 4.1:





PROGRAM 4.2:

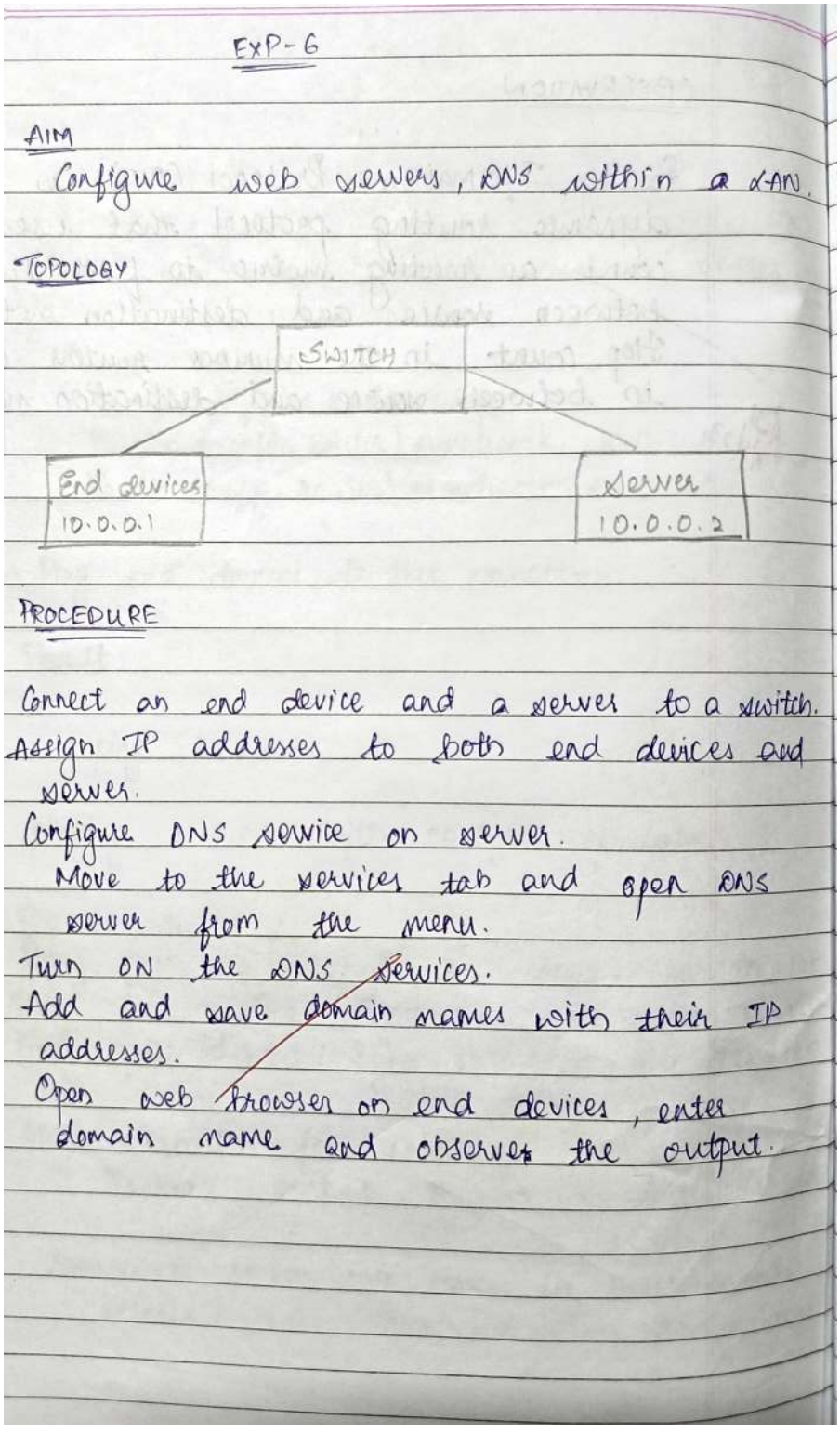

PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.2
Pinging 20.0.0.2 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Ping statistics for 20.0.0.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>ping 20.0.0.3
Pinging 20.0.0.3 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127
Ping statistics for 20.0.0.3:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>


Cisco Packet Tracer Student - C:\Users\ysrmc\OneDrive - Base PU College\Desktop\4thsem\CN\CN_LAB\lab4.2.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT
Router0
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
Server-PT
Server0
PC-PT
PC3
PC-PT
PC4
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
2.992 Switch0 Serve... STP
2.992 Switch0 Rout... STP
2.992 Switch0 PC0 STP
2.992 Switch0 PC1 STP
2.992 Switch0 PC2 STP
Reset Simulation
Constant Delay
Capturing...
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
Edit Filters
Show All/None
Time: 00:32:11.943
Power Cycle Devices PLAY CONTROLS: Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Connections
Scenario 0
New
Delete
Fire Last Statu Sourc Destinatic Type Colo Time(s Period Num Edit Delete
Successful PC0 PC3 IC... 0.000 N 0 (ed... (delete)

WEEK 5

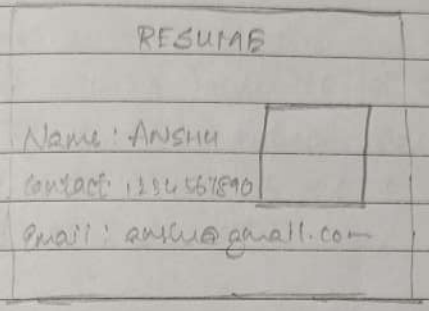
Configure Web Server, DNS within a LAN.

OBSERVATION:



Date
Page

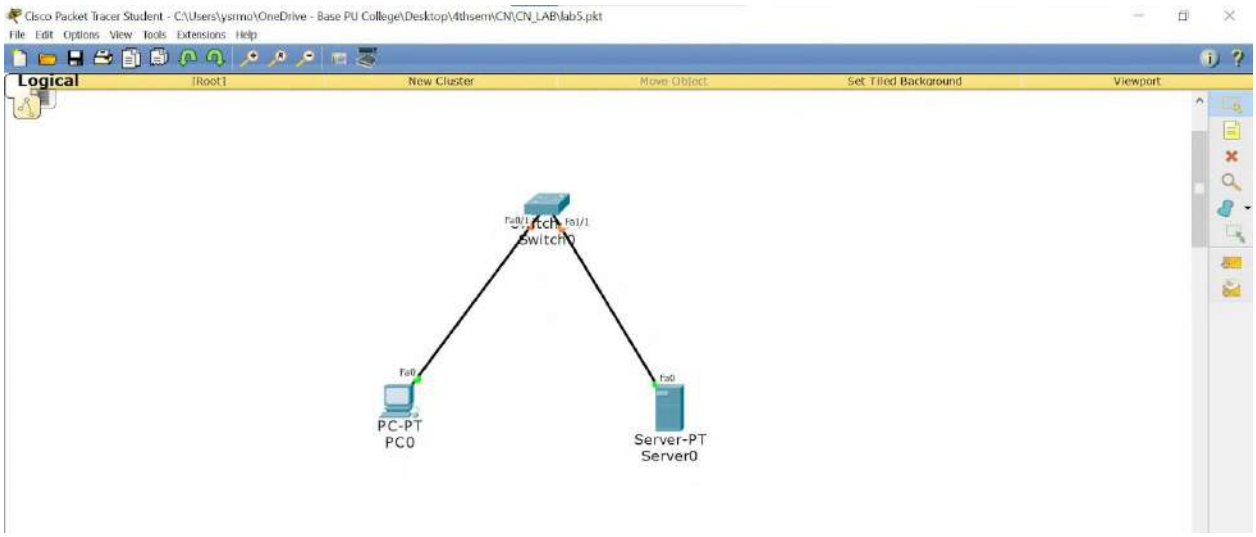
RESULT



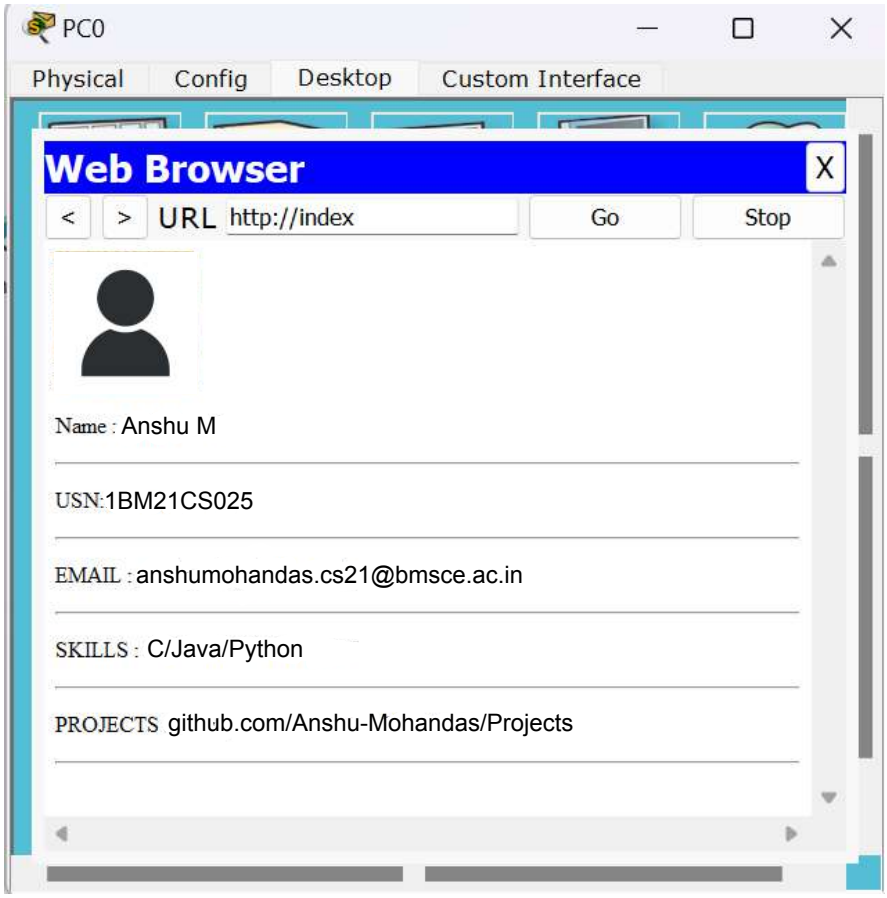
OBSERVATION

On entering domain name on web browser, we obtain stared web page. Domain Name services (DNS) translates domain names to ~~their~~ respective IP addresses, enabling system communication even when user doesn't know the IP address.

TOPOLOGY:



OUTPUT:



WEEK 6

Configure RIP routing Protocol in Routers.

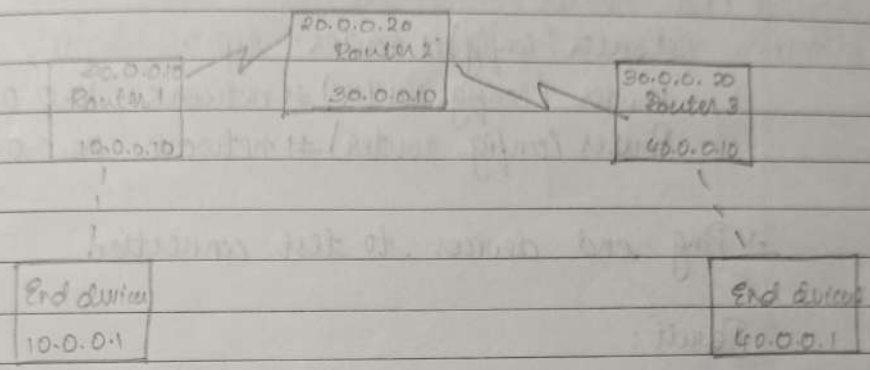
OBSERVATION:

EXP-5

AIM

Configure RIP routing protocol in routers

TOPOLOGY :-



PROCEDURE

- Convert 3 routers and 2 end devices.
- Assign IP addresses to both end devices
- Assign IP addresses to all routers. Use the following commands.
  - Router> enable
  - Router# config t
  - Router(config)# interface <port>
  - Router (config-if)# ip address <ip address> <subnet mask>
  - Router (config-if)# no shut
  - Router (config-if)# exit
- Set gateways to end devices
  - End device 1. 10.0.0.10
  - End device 2. 40.0.0.10

> Assign router to all routers. Move to configure mode of router and use the following commands.

Router(config)# router rip
Router(config-router)# network <network address>
Router(config-router)# network <network address>

For Router 1.

Router(config)# router rip
Router(config-router)# network 10.0.0.0
Router(config-router)# network 20.0.0.0

> Ping end devices to test connection.

Result:

> ping 20.0.0.1

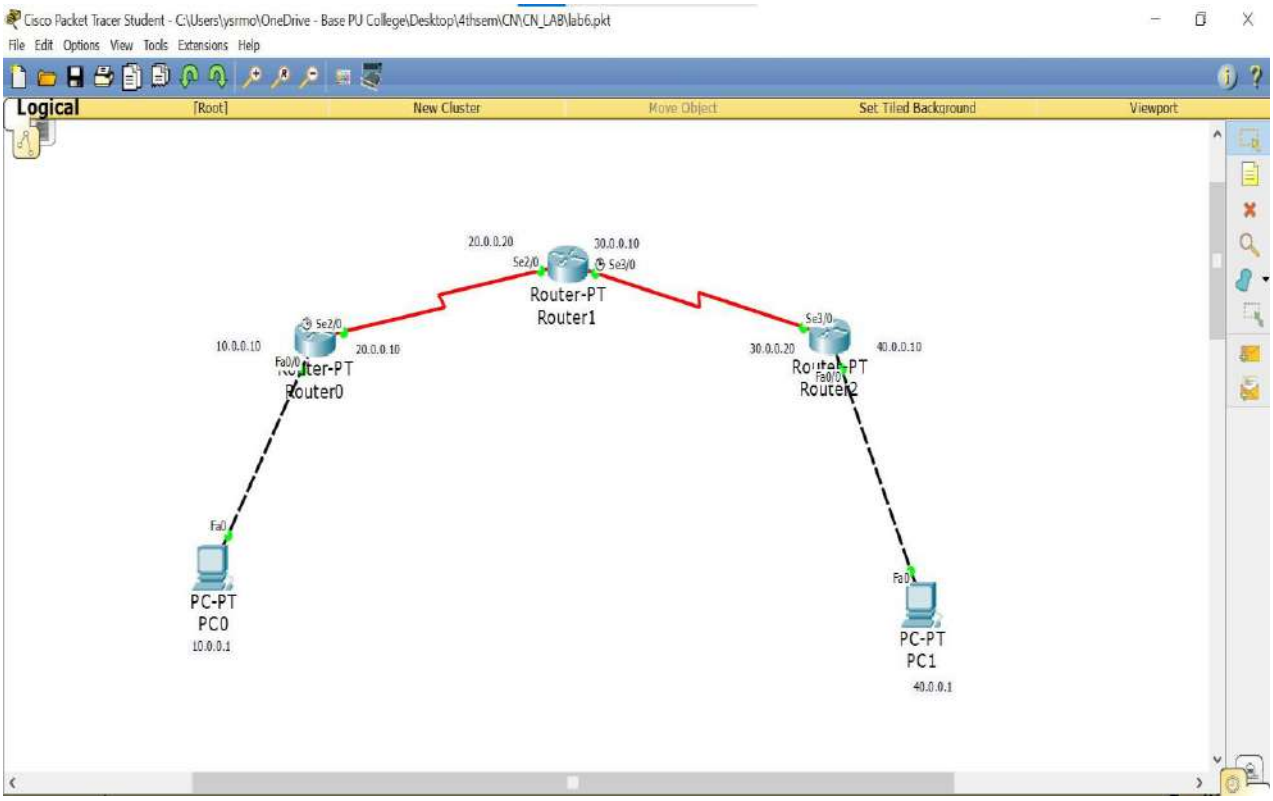
Pinging 20.0.0.1 with 32 bytes of data:

Request timed out
Reply from 10.0.0.1: bytes = 32 time = 5ms TTL = 125
Reply from 10.0.0.1: bytes = 32 time = 21ms TTL = 125
Reply from 10.0.0.1: bytes = 32 time = 2ms TTL = 125

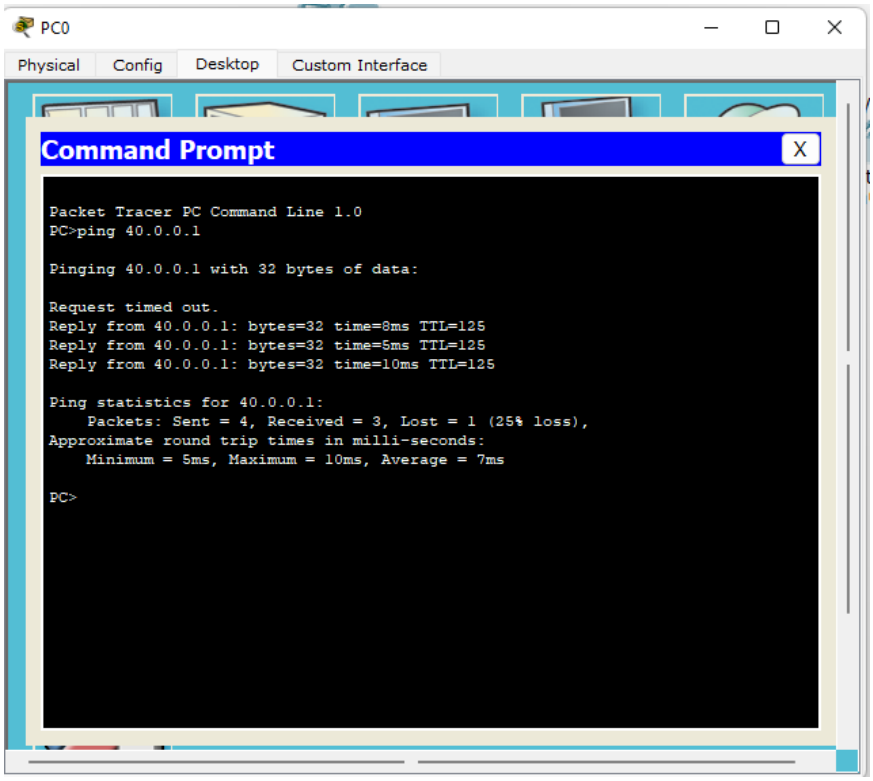
Ping statistics for 20.0.0.1:
Packets: Sent = 4 Recieved = 3 lost = 1 (25% loss)

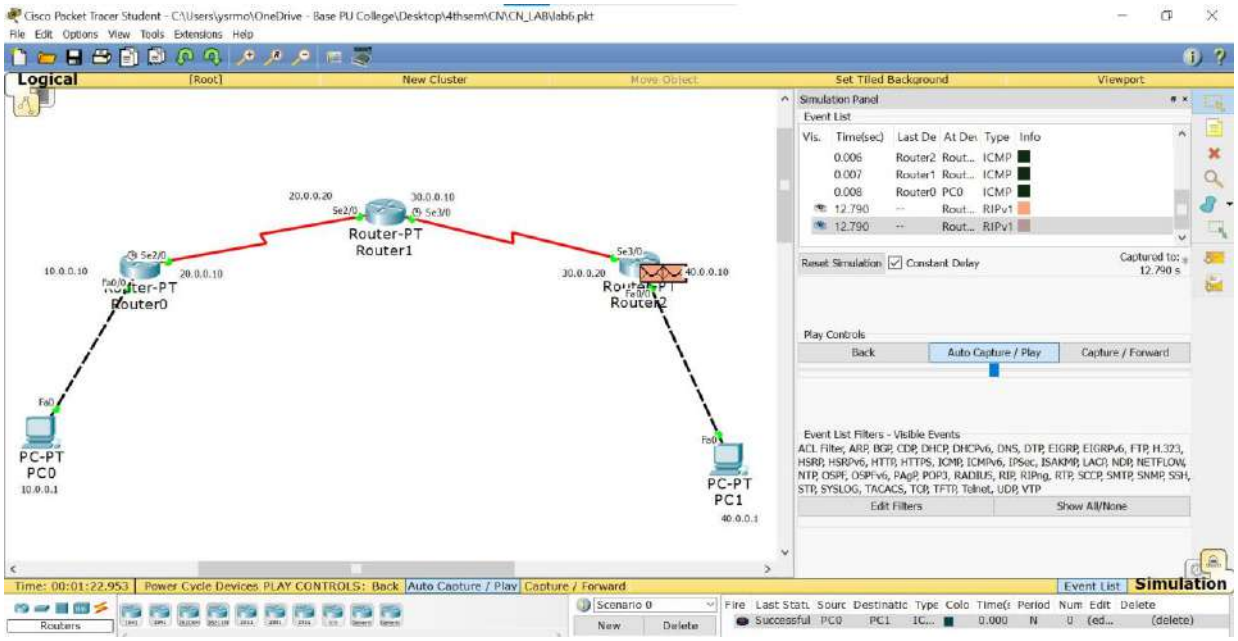
Approximate round trip times in milli-seconds
Minimum = 2ms Maximum = 21ms Average = 10ms

TOPOLOGY:


Cisco Packet Tracer Student - C:\Users\ysrmo\OneDrive - Base PU College\Desktop\4thsem\CN\CN_LAB\lab6.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
20.0.0.20
Se2/0
30.0.0.10
Se3/0
Router-PT
Router1
Se2/0
10.0.0.10
20.0.0.10
Fa0/0
Router0
Se3/0
30.0.0.20
40.0.0.10
Fa0/0
Router2
Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
40.0.0.1

OUTPUT:

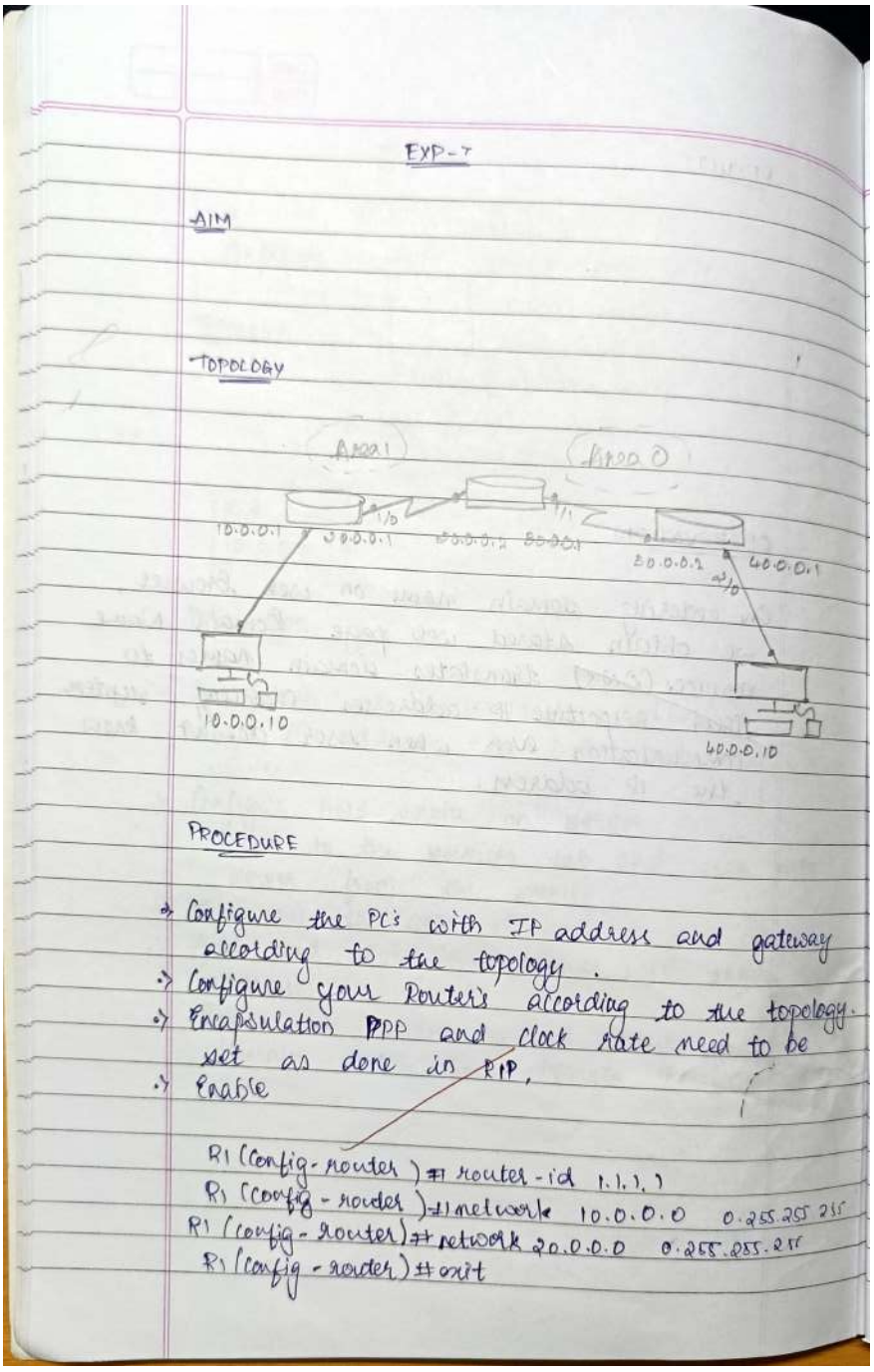

PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1
Pinging 40.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 40.0.0.1: bytes=32 time=8ms TTL=125
Reply from 40.0.0.1: bytes=32 time=5ms TTL=125
Reply from 40.0.0.1: bytes=32 time=10ms TTL=125
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 5ms, Maximum = 10ms, Average = 7ms
PC>


Cisco Packet Tracer Student - C:\Users\ysrmo\OneDrive - Base PU College\Desktop\4thsem\CN\CN_LAB\lab6.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router-PT
Router1
Router-PT
Router0
Router-PT
Router2
PC-PT
PC0
10.0.0.1
PC-PT
PC1
40.0.0.1
20.0.0.20
30.0.0.10
10.0.0.10
20.0.0.10
30.0.0.20
40.0.0.10
Simulation Panel
Event List
Vis. Time(sec) Last De At Dev Type Info
0.006 Router2 Rout... ICMP
0.007 Router1 Rout... ICMP
0.008 Router0 PC0 ICMP
12.790 -- Rout... RIPv1
12.790 -- Rout... RIPv1
Reset Simulation
Constant Delay
Captured to: 12.790 s
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters
Show All/None
Time: 00:01:22.953
Power Cycle Devices PLAY CONTROLS: Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Routers
Scenario 0
New
Delete
Fire Last Statu Sourc Destinatic Type Colo Time(s Period Num Edit Delete
Successful PC0 PC1 IC... 0.000 N 0 (ed... (delete)

WEEK 7

Configure OSPF routing protocol.

OBSERVATION:



In Router R2,

```
R2(config)# router ospf 1
R2(config-router)# router-id 2.2.2.2
R2(config-router)# network 20.0.0.0 0.255.255.255 area 1
R2(config-router)# network 30.0.0.0 0.255.255.255 area 0
R2(config-router)# exit
```

In Router R3,

```
R3(config)# router ospf 1
R3(config-router)# router-id 3.3.3.3
R3(config-router)# network 90.0.0.0 0.255.255.255 area 0
R3(config-router)# network 40.0.0.0. 0.255.255.255 area 2
```

* Set the interface loopback

```
R1(config-if)# interface loopback 0
R1(config-if)# ip add 172.16.1.252 255.255.0.0
R1(config-if)# no shutdown.
```

```
R2(config-if)# interface loopback 0
R2(config-if)# ip add 172.16.1.253 255.255.0.0
R2(config-if)# no shutdown.
```

```
R3(config-if)# interface loopback 0
R3(config-if)# ip add 172.16.1.254. 255.255.0.0
R3(config-if)# no shutdown.
```

* In Router R1,

```
R1(config)# router ospf 1
R1(config-router)# areas virtual link 2.2.2.2
```

In Router R2,

R2(config)# router ospf 1

R2(config-router)# area 1 virtual link 1.1.1.1

R2(config-router)# exit

> After this show IP route, it show all 4.

Router 1:

show ip route

O IA 10.0.0.0/8 [110/65] via 20.0.0.1 00:00:11, serial 2/0

20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

C 20.0.0.0/8 is directly connected, serial 2/0

C 20.0.0.1/32 is directly connected / serial 2/0

30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks

C 30.0.0.0/8 is directly connected, serial 3/0

C 30.0.0.2/32 is directly connected, serial 3/0

O IA 40.0.0.0/8 [110/65] via 30.0.0.2, 00:00:44, serial 3/0

C 172.16.0.0/16 is directly connected, loopback 0

RESULT:

PC> ping 40.0.0.10

pinging 40.0.0.10 with 32 bytes of data:

Request timed out

Reply from 40.0.0.10 bytes=32 time=10ms TTL=125

Reply from 40.0.0.10 bytes=32 time=2ms TTL=125

Reply from 40.0.0.10 bytes=32 time=9ms TTL=125

ping statistics for 40.0.0.10:

Packets: Sent=4, Recieved=3, lost=1 (25% loss)

Approximate round trip times in milli-seconds:

minimum=2ms, maximum=10ms, average=7ms

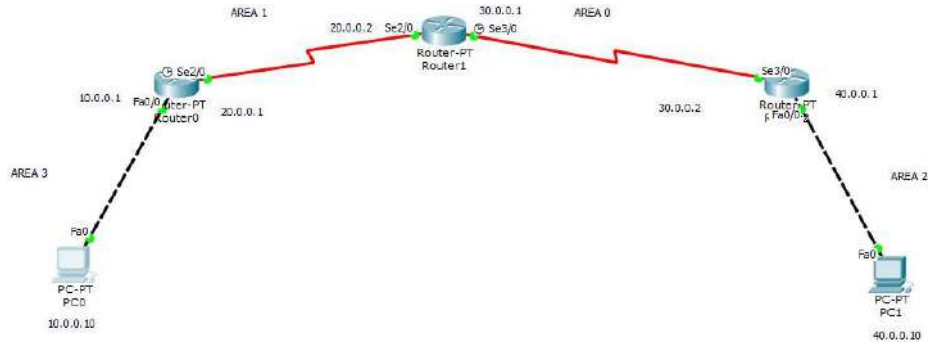
Date
Page

OBSERVATION

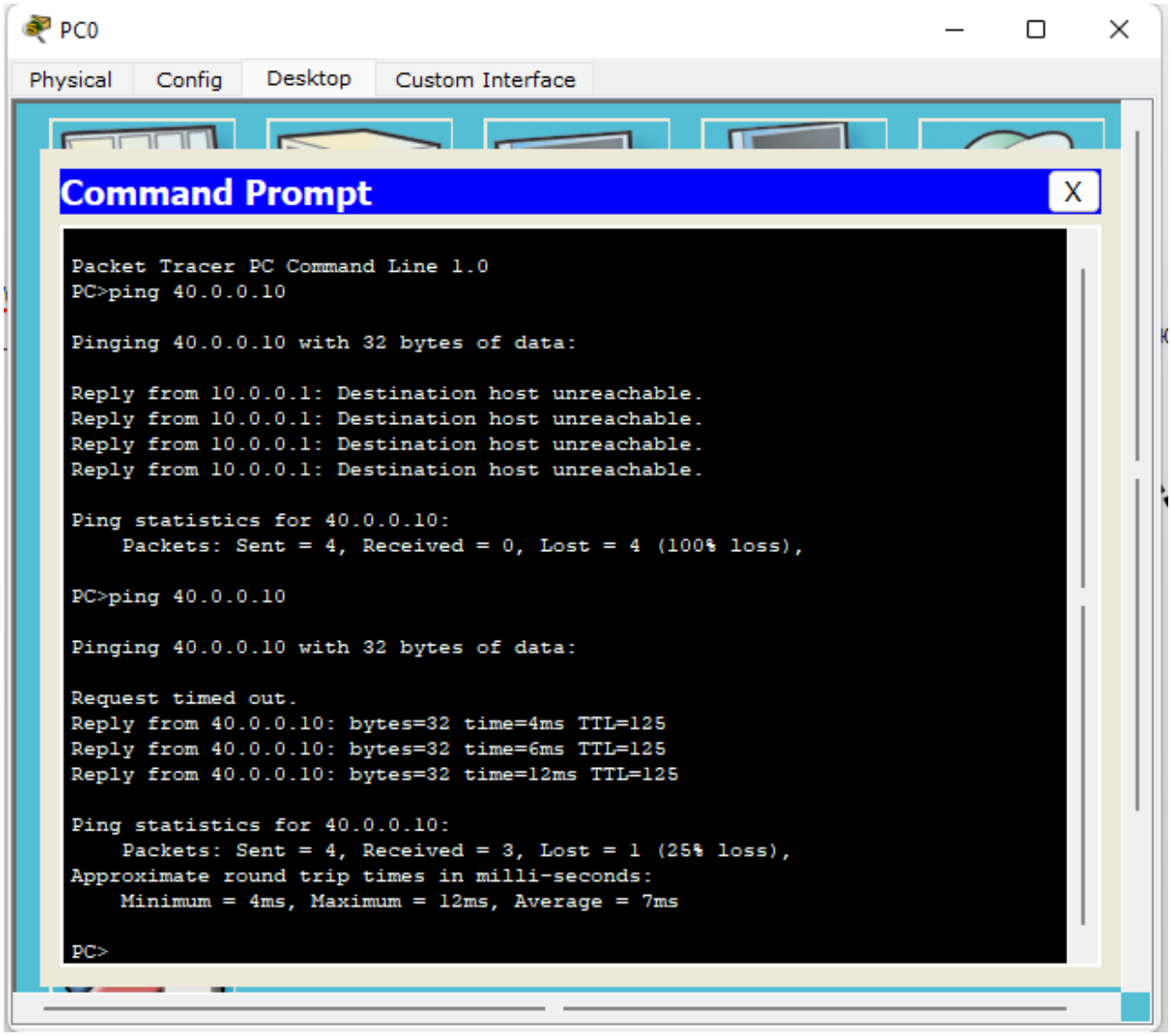
OSPF is open shortcut path first. It is a protocol which finds the best routing path between source and destination routers. It uses its own shortcut path algorithm.

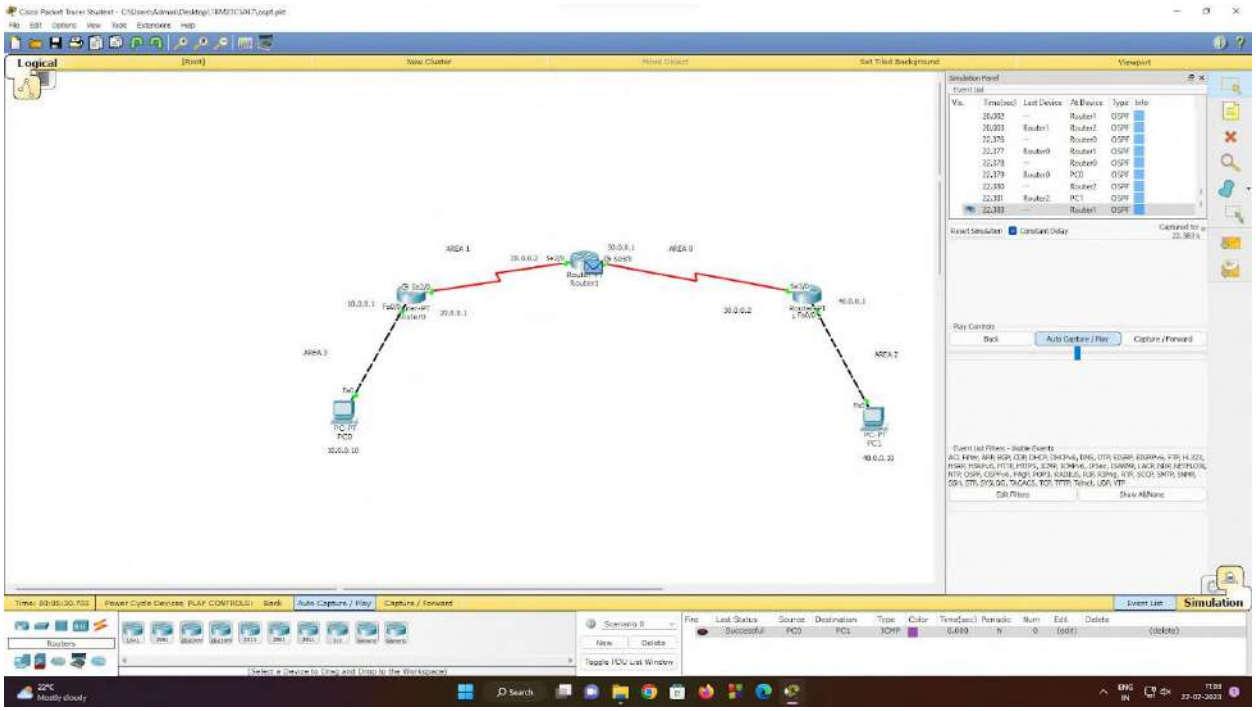
Networks are divided into areas. Backbone (area 0) forms core of the OSPF network. Other network are connected to the backbone.

TOPOLOGY:



OUTPUT:

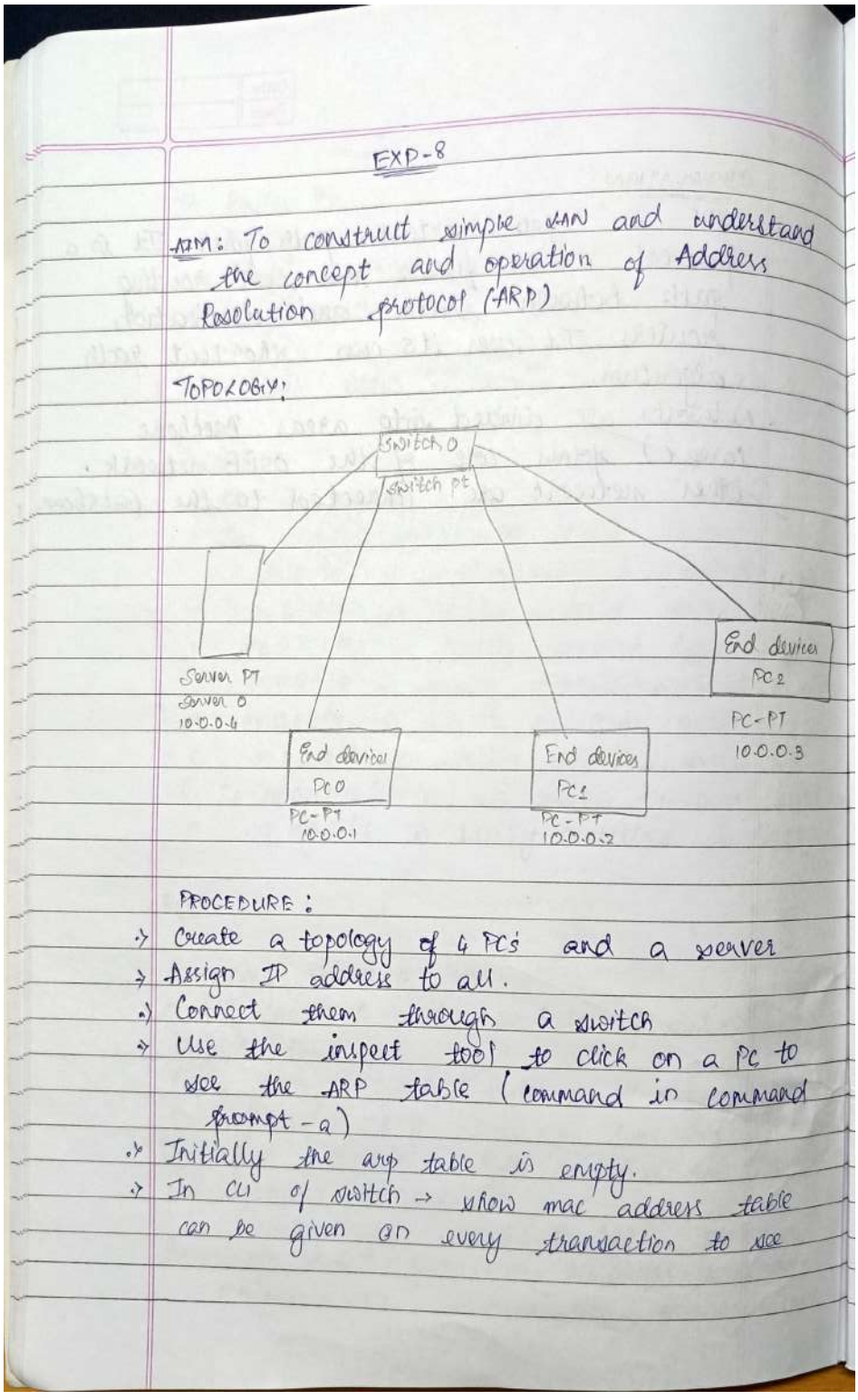



Logical
AREA 1
AREA 0
AREA 2
Router1
PC0
PC1
Simulation

WEEK 8

To construct a simple LAN and understand the concept and operation of Address Resolution Protocol (ARP).

OBSERVATION:



Date
Page

How the switch learns from transactions and build the address table.

∴ Use the capture button to see the process step by step.

Result:

PC > arp -a

Internet Address	Physical Address	Type
10.0.0.2	000d.bd15.3a18	dynamic
10.0.0.3	00e0.8fb7.b7e8	dynamic
10.0.0.4	00d0.bc97.aa38	dynamic

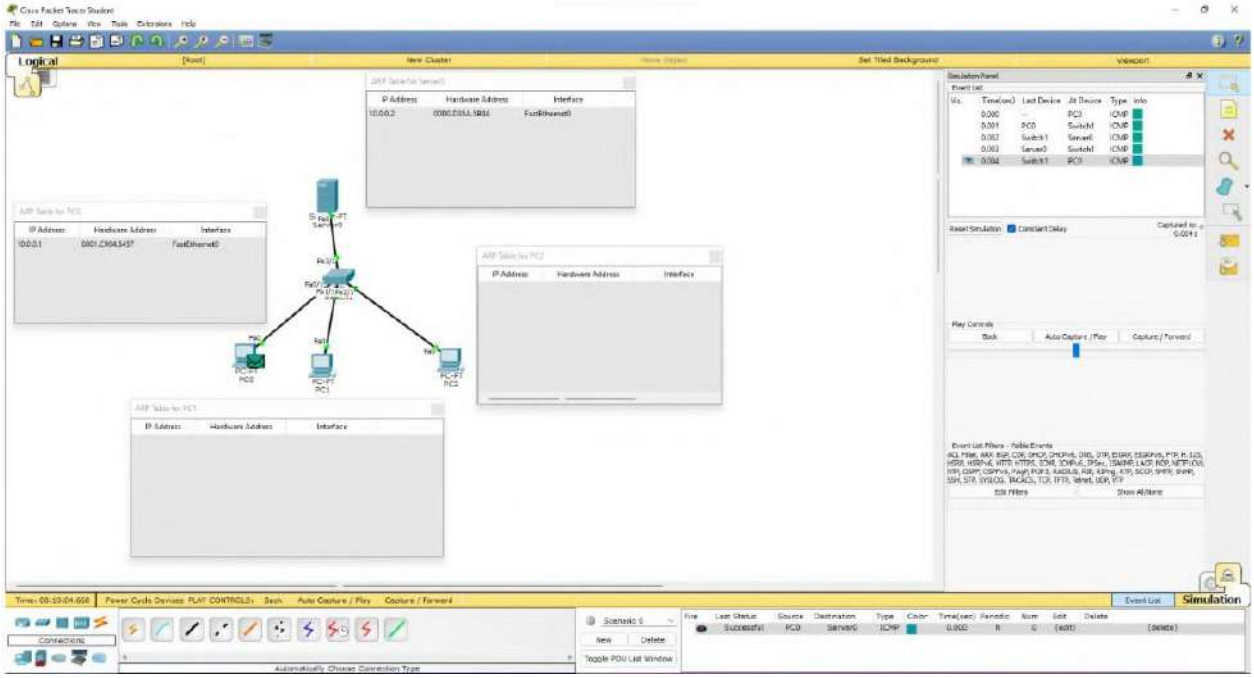
Mac Table for Switch 0

VLAN	Mac Address	Port
1	0005.5EDA.1C25	FastEthernet 0/1
1	000D.BD15.3A18	FastEthernet 2/1
1	00D0.BC57.AA38	FastEthernet 1/1
1	00E0.8FB7.B7E8	FastEthernet 3/1

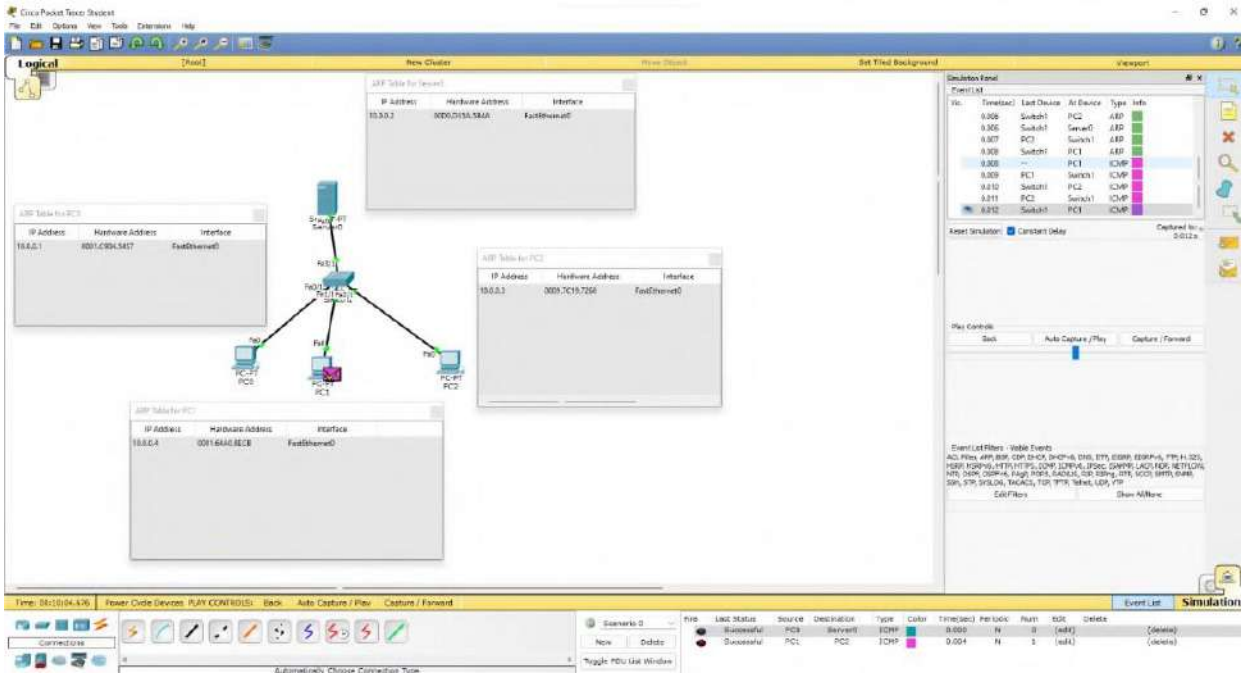
OBSERVATION

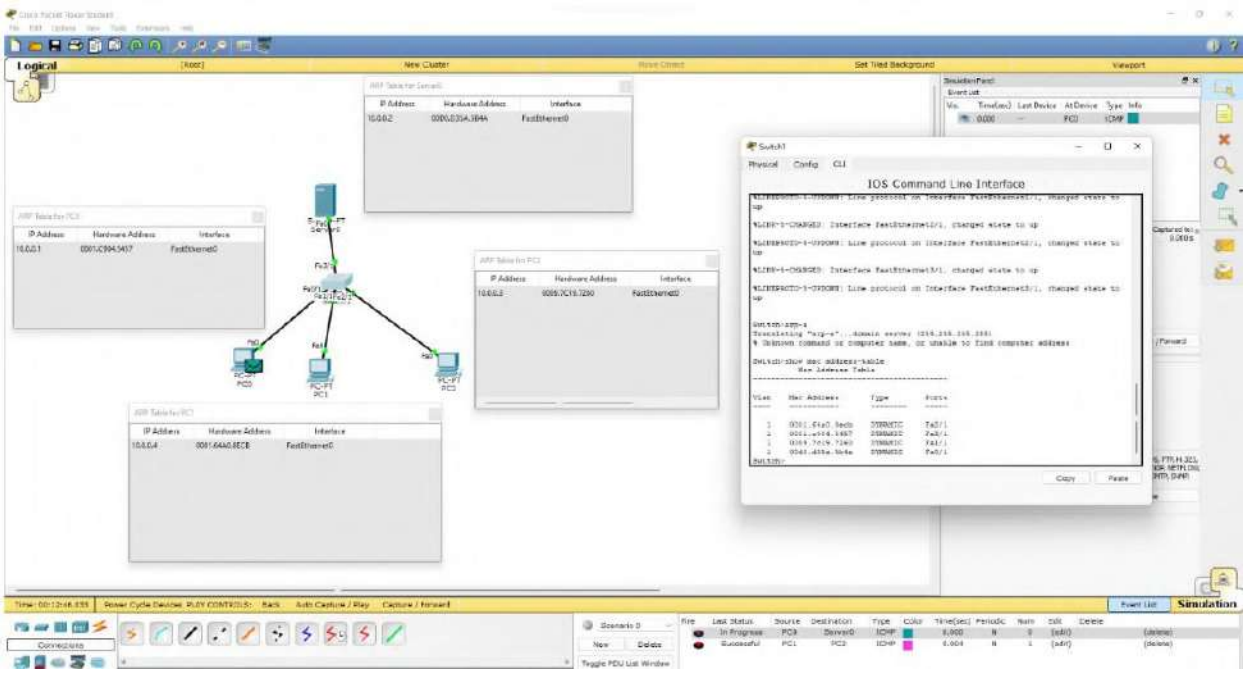
- ARP is a protocol that uses the IP address to find out the physical address/ MAC address.

TOPOLOGY:



OUTPUT:

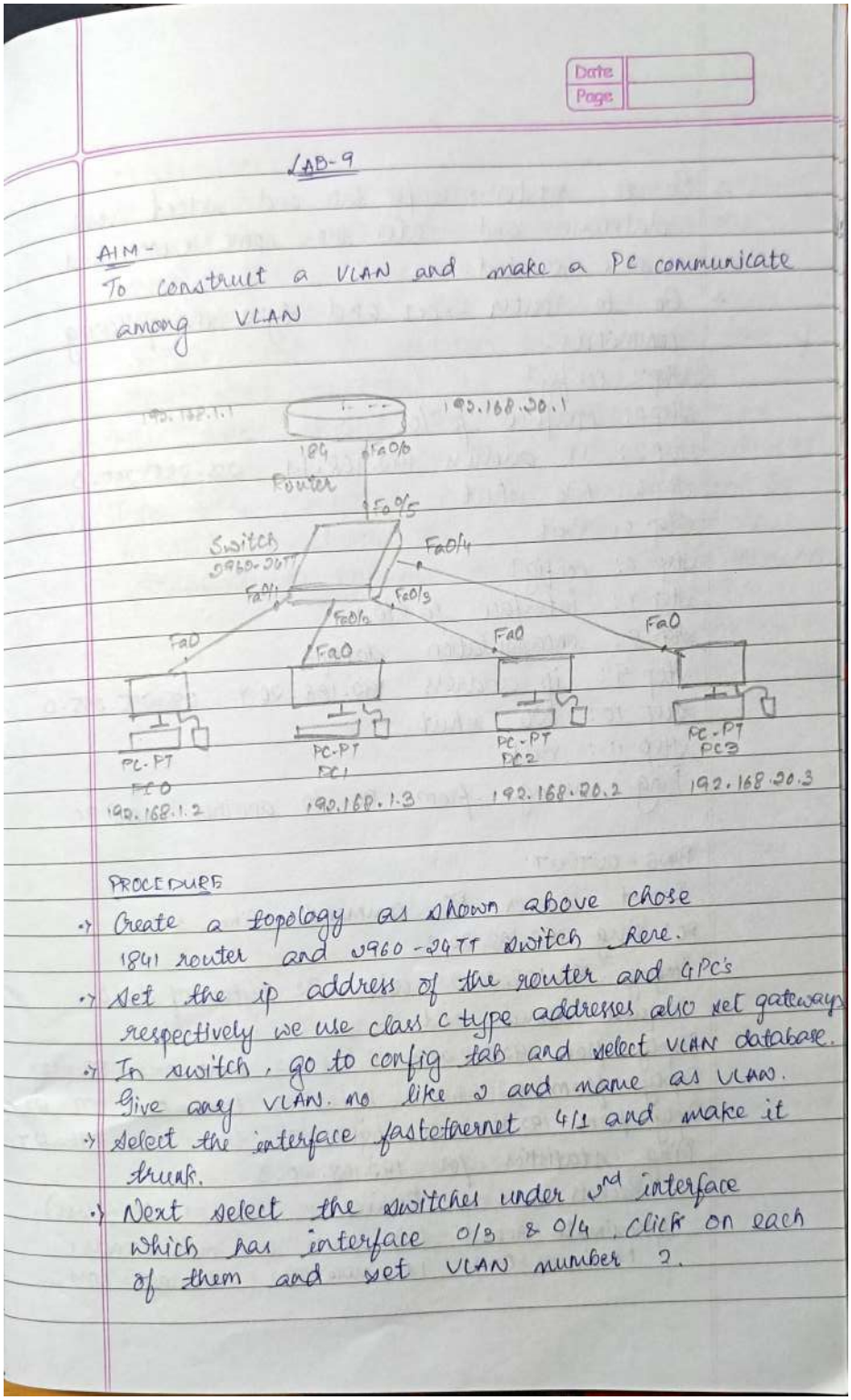



Logical
IOS Command Line Interface

WEEK 9

To construct a VLAN and make a pc communicate among VLAN.

OBSERVATION:



Date
Page

LAB-9

AIM -
To construct a VLAN and make a PC communicate among VLAN

PROCEDURE

- Create a topology as shown above chose 1841 router and 2960-24TT switch here.
- Set the ip address of the router and 4PC's respectively we use class c type addresses also set gateways
- In switch, go to config tab and select VLAN database. Give any VLAN. no like 2 and name as VLAN.
- Select the interface fastethernet 4/1 and make it trunk.
- Next select the switches under 2nd interface which has interface 0/3 & 0/4. Click on each of them and set VLAN number 2.

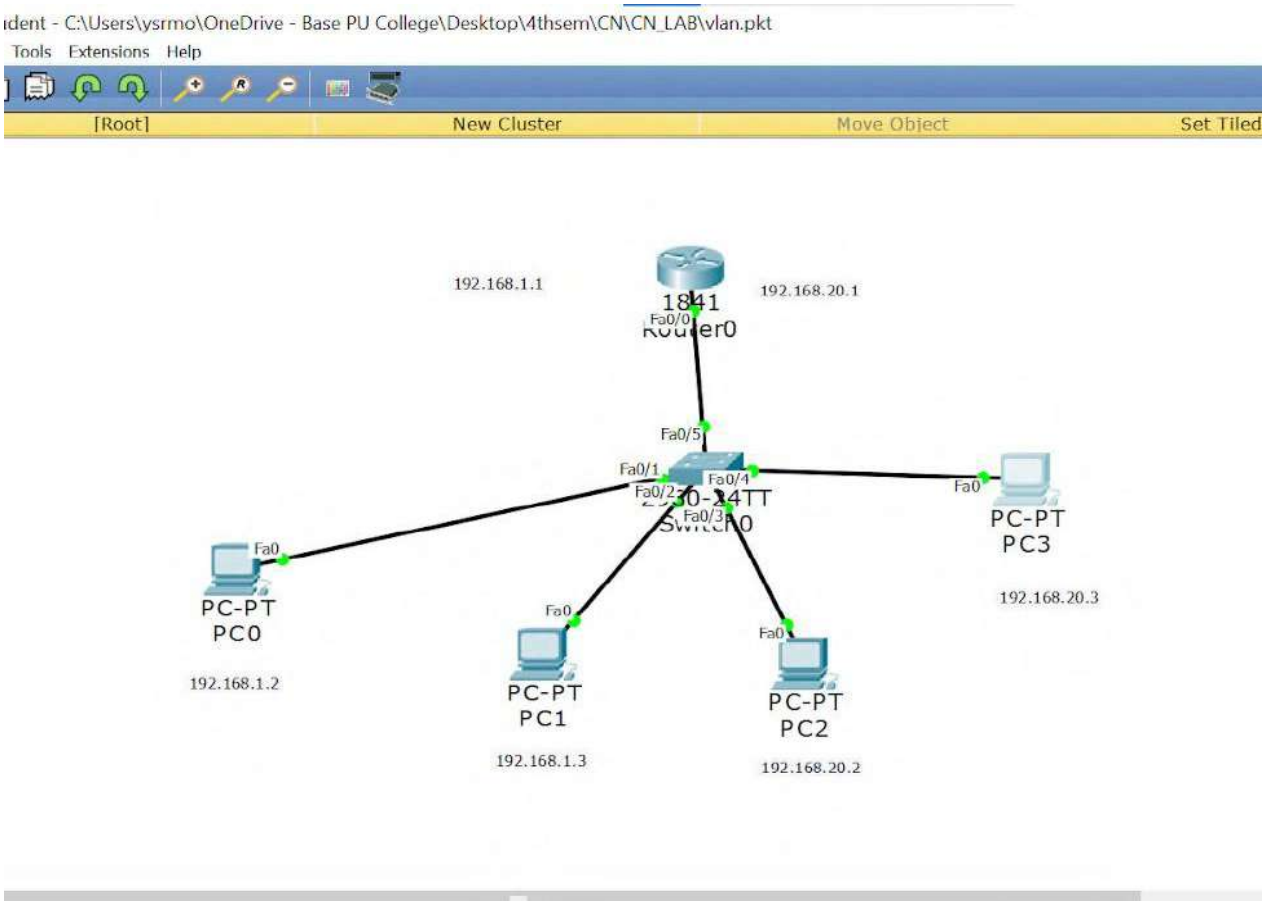
- Go to router → config tab and select VLAN database and enter the name VLAN and no.2 created.
- Go to router → CLI and type the following commands.

Step1: configT
Step2: interface fa0/0
Step3: IP address 192.168.1.1 255.255.255.0
Step4: No shut
Step5: Exit
Step6: configT
Step7: interface fa0/0.1
Step8: encapsulation dot1q 2
Step9: ip address 192.168.20.7 255.255.255.0
Step10: No shut
Step11: Exit
Ping message from PC to another VLAN PC.

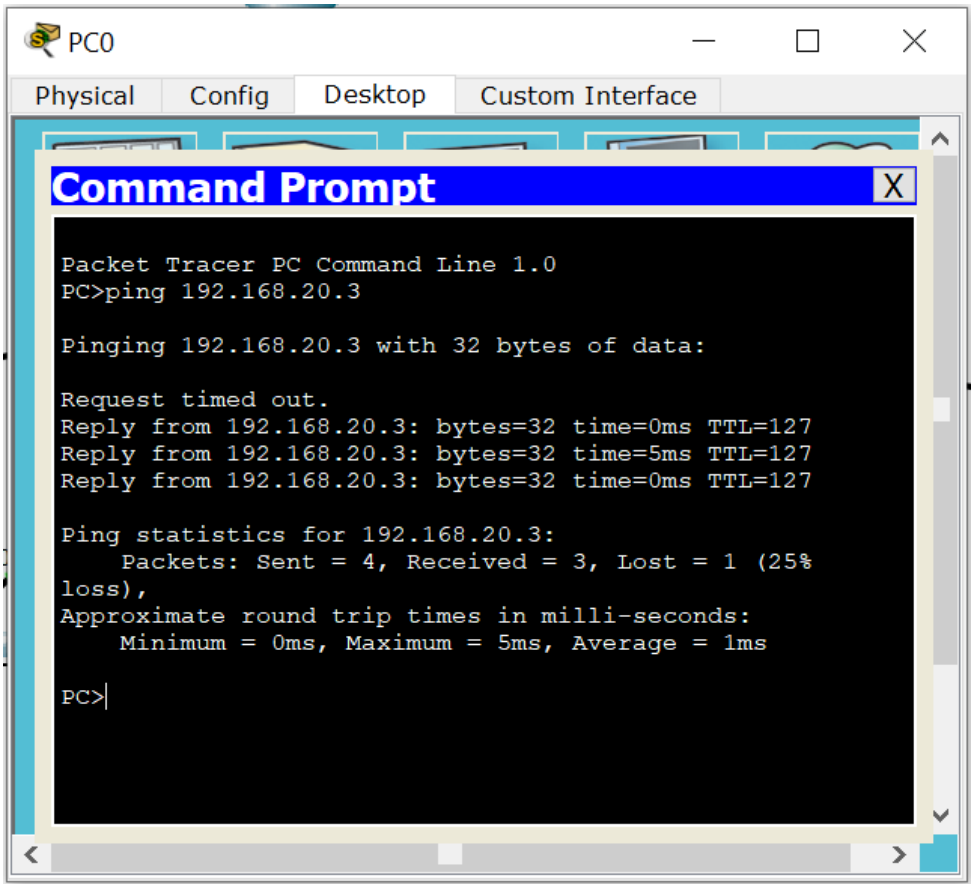
PING - OUTPUT:

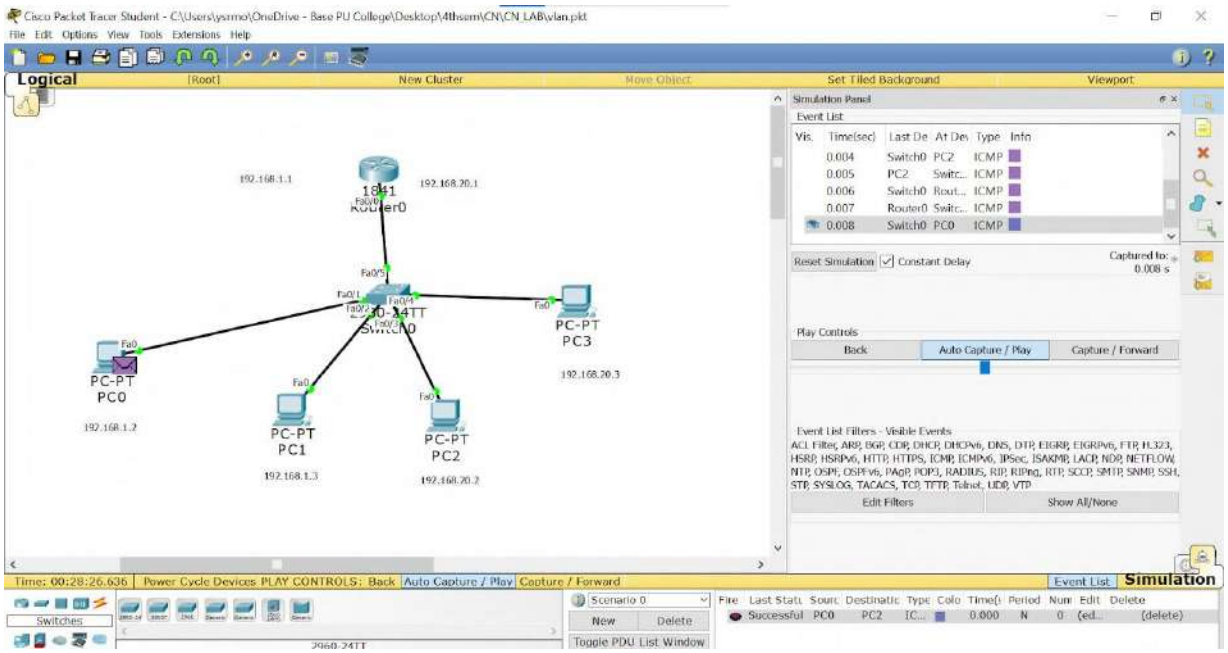
Packet tracer PC Command line 1.0
PC> Ping 192.168.20.3
Pinging 192.168.20.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Reply from 192.168.20.3: bytes=32 time=5ms TTL=127
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Ping statistics for 192.168.20.3
Packets sent=4, Recieved=3, lost=1 (25% loss),
Approximate round trip times in milliseconds:
Minimum=0ms, Maximum=5ms, Average=1ms

TOPOLOGY:


ident - C:\Users\ysrmo\OneDrive - Base PU College\Desktop\4thsem\CN\CN_LAB\vlan.pkt
Tools Extensions Help
[Root]
New Cluster
Move Object
Set Tiled
192.168.1.1
1841
Fa0/0
192.168.20.1
Fa0/5
Fa0/1
Fa0/4
Fa0/3
Fa0
PC-PT
PC0
192.168.1.2
Fa0
PC-PT
PC1
192.168.1.3
Fa0
PC-PT
PC2
192.168.20.2
Fa0
PC-PT
PC3
192.168.20.3

OUTPUT:

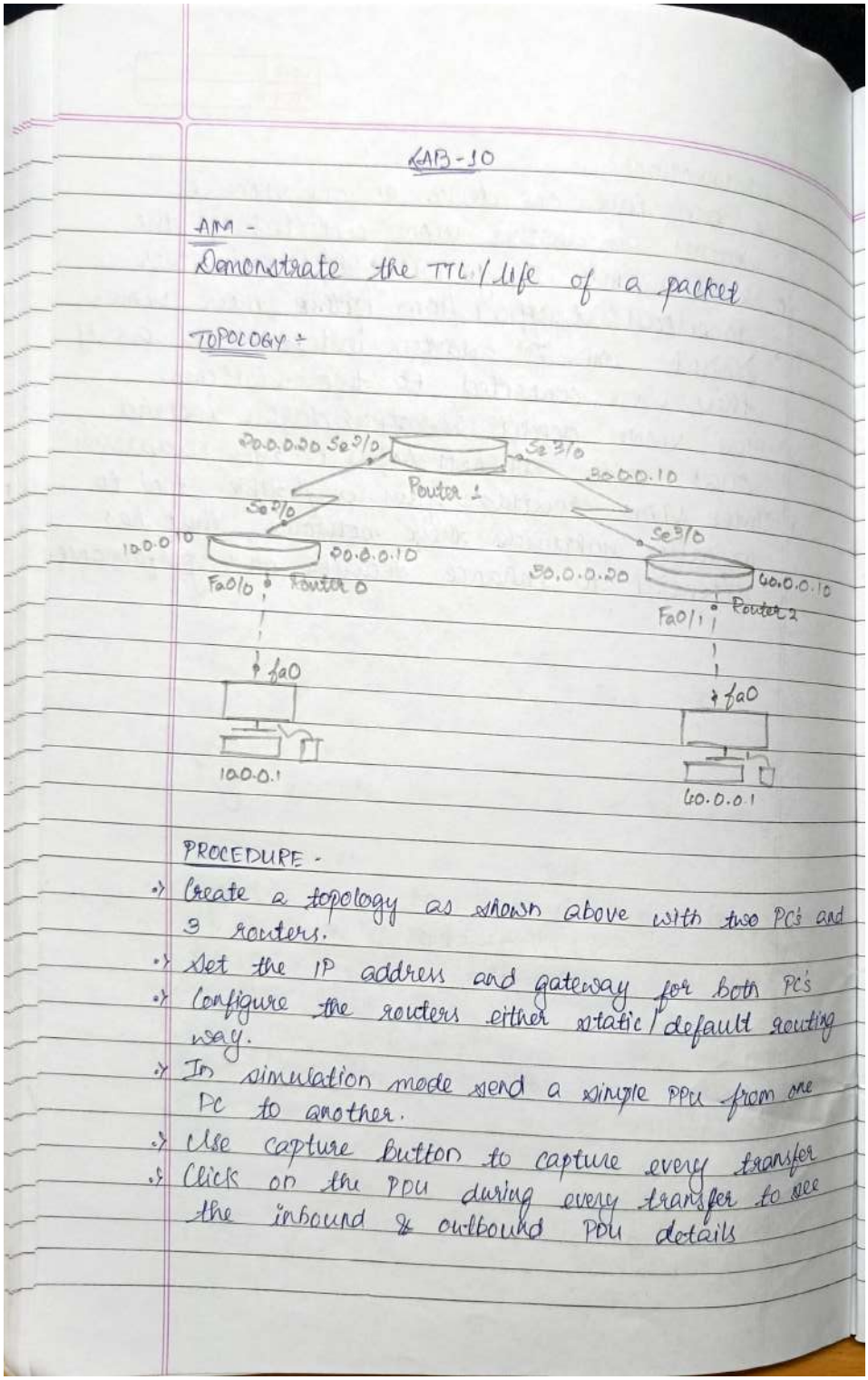

PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 192.168.20.3
Pinging 192.168.20.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Reply from 192.168.20.3: bytes=32 time=5ms TTL=127
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Ping statistics for 192.168.20.3:
Packets: Sent = 4, Received = 3, Lost = 1 (25%
loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 5ms, Average = 1ms
PC>


Logical
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
Simulation

WEEK 10

Demonstrate the TTL/ Life of a Packet.

OBSERVATION:



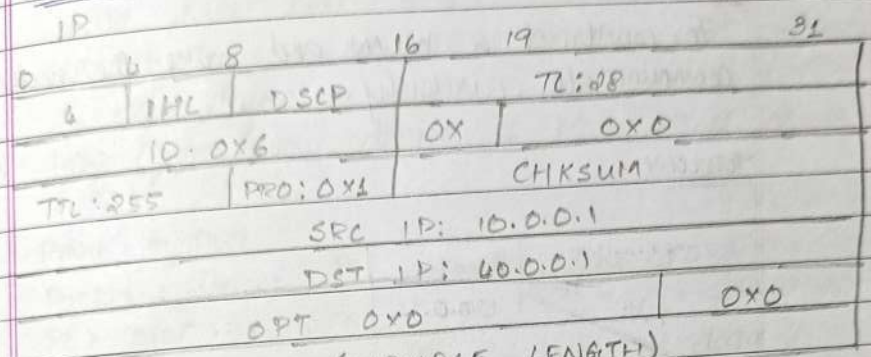
PROCEDURE -

- Create a topology as shown above with two PC's and 3 routers.
- Set the IP address and gateway for both PC's
- Configure the routers either static / default routing way.
- In simulation mode send a simple PDU from one PC to another.
- Use capture button to capture every transfer
- Click on the PDU during every transfer to see the inbound & outbound PDU details

Date
Page

OUTPUT:

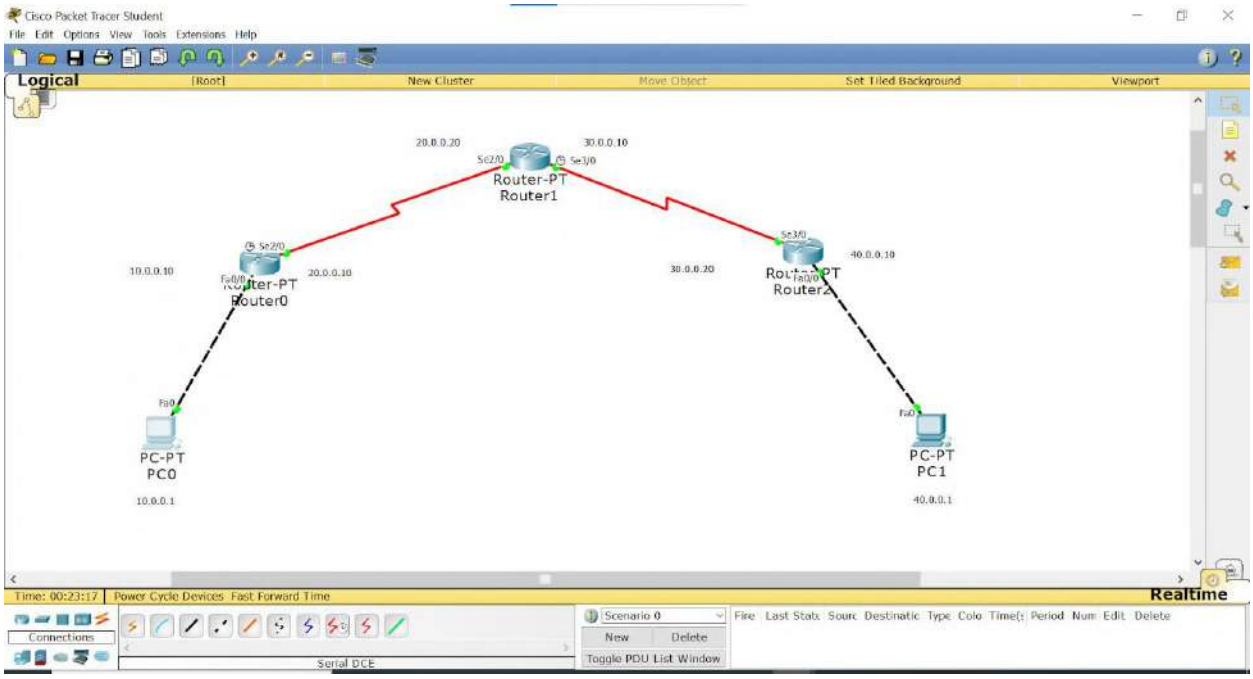
IP



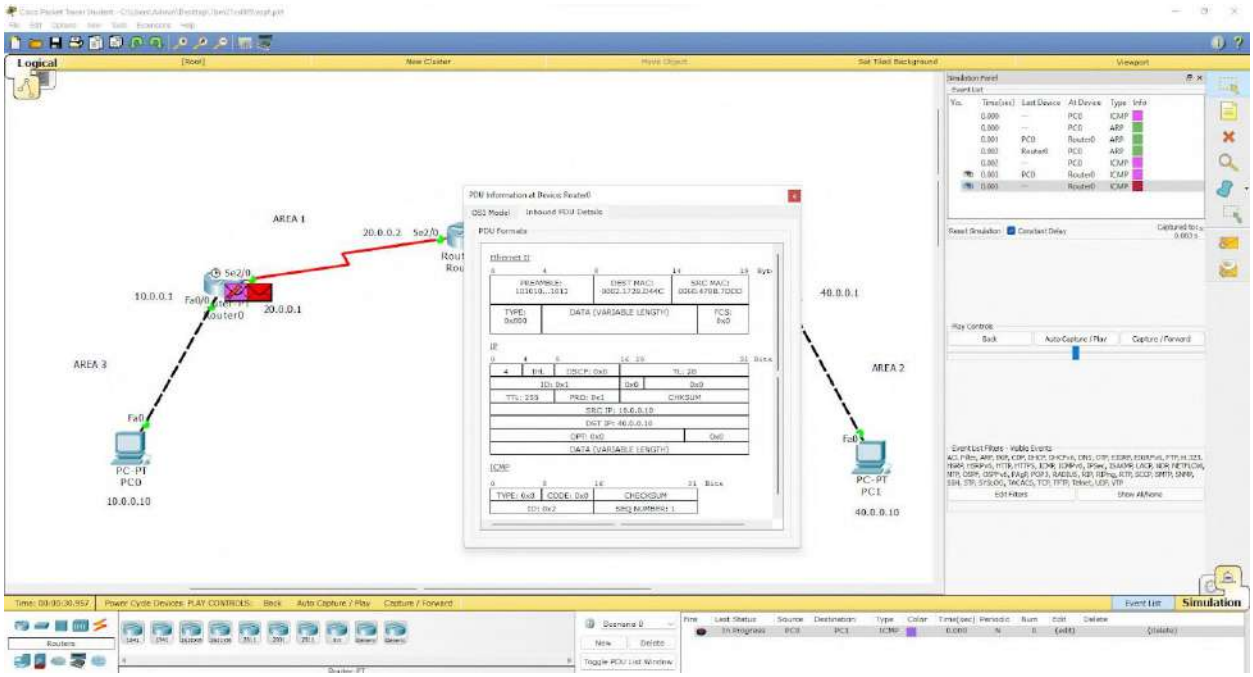
OBSERVATION-

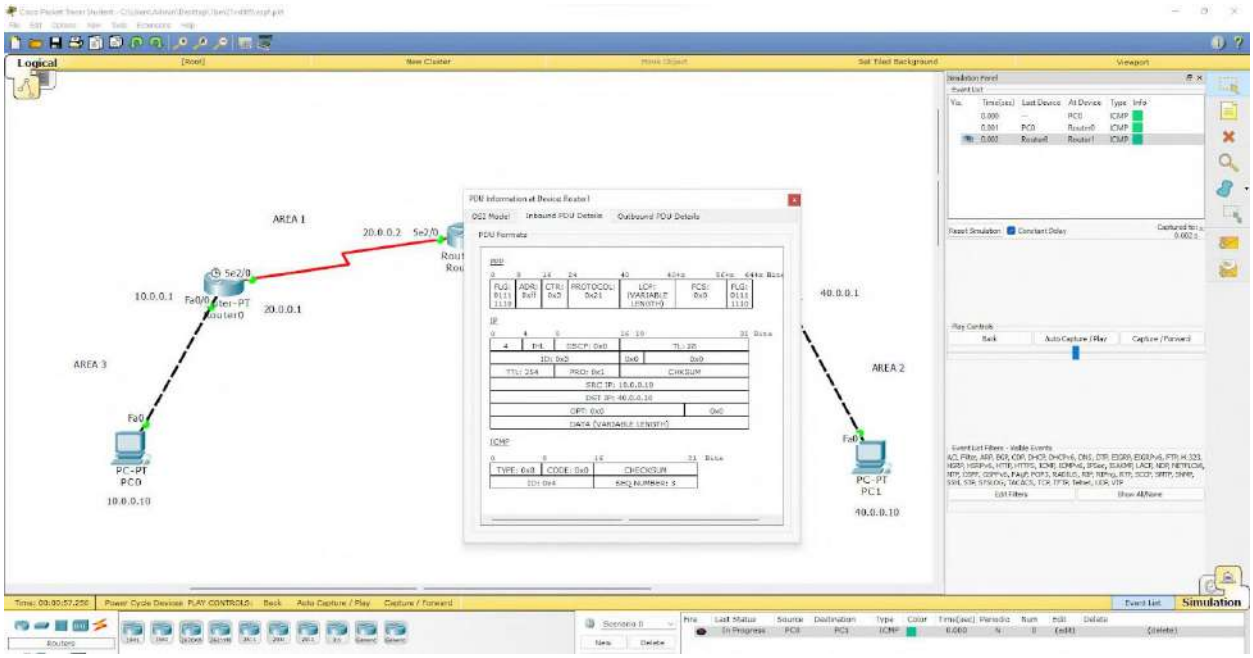
- The no. of hops the packet travel before being discarded as TTL
- Datagrams TTL field is set by the sender & reduced by each router along the path to its destination.
- The router reduces TTL value by one while forwarding the packets
- When the TTL value is 0, the router discards it & sends and ICMP message.

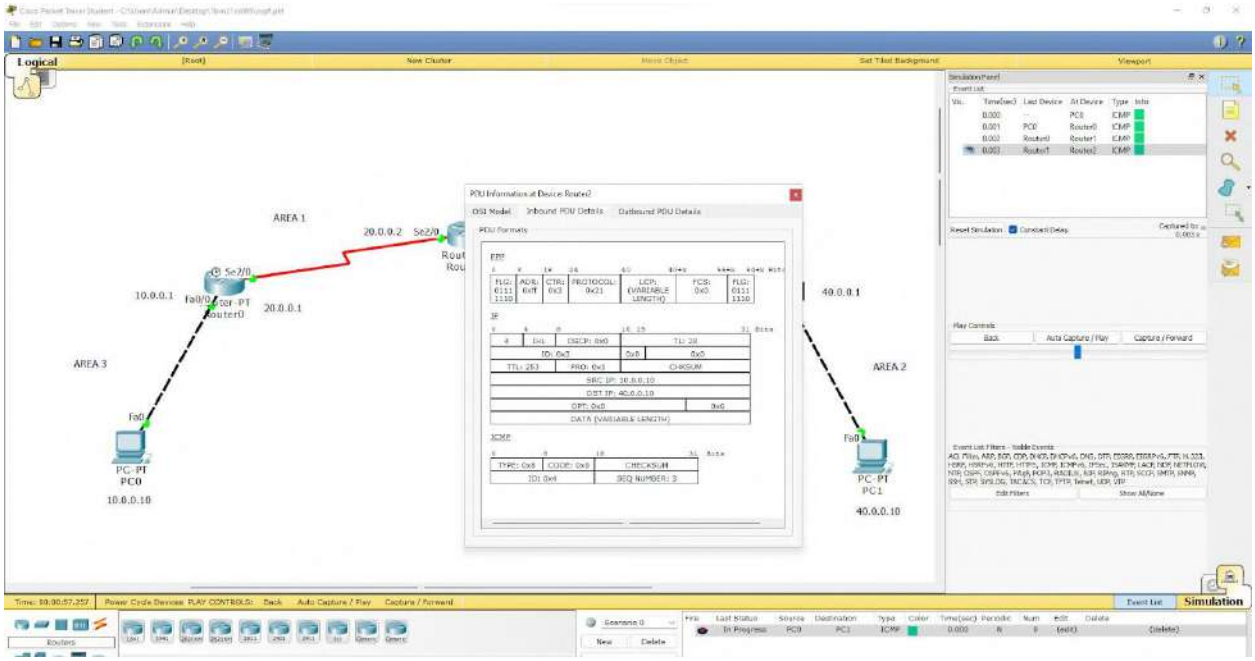
TOPOLOGY:

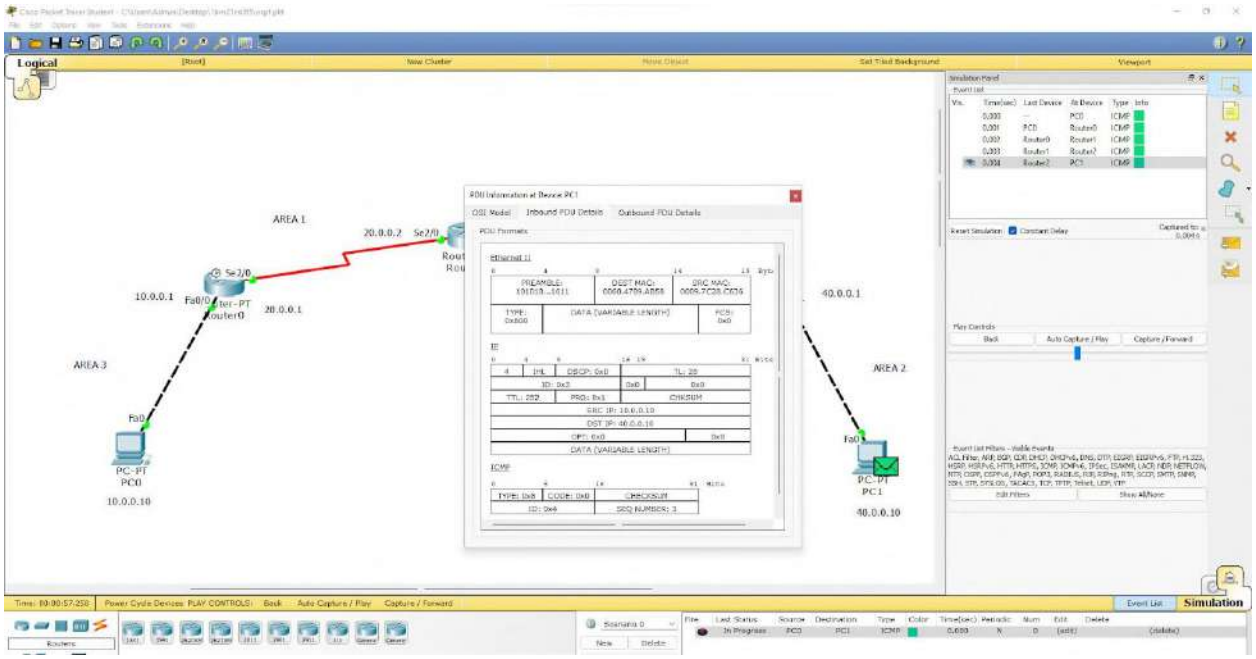


OUTPUT:




Logical
AREA 1
AREA 2
AREA 3
20.0.0.2
Se2/0
10.0.0.1
Fa0/0
Router-PT
Router0
20.0.0.1
40.0.0.1
Fa0
PC-PT
PC0
10.0.0.10
PC-PT
PC1
40.0.0.10
PDU Information at Device: Router1
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
PPP
IP
ICMP
Simulation

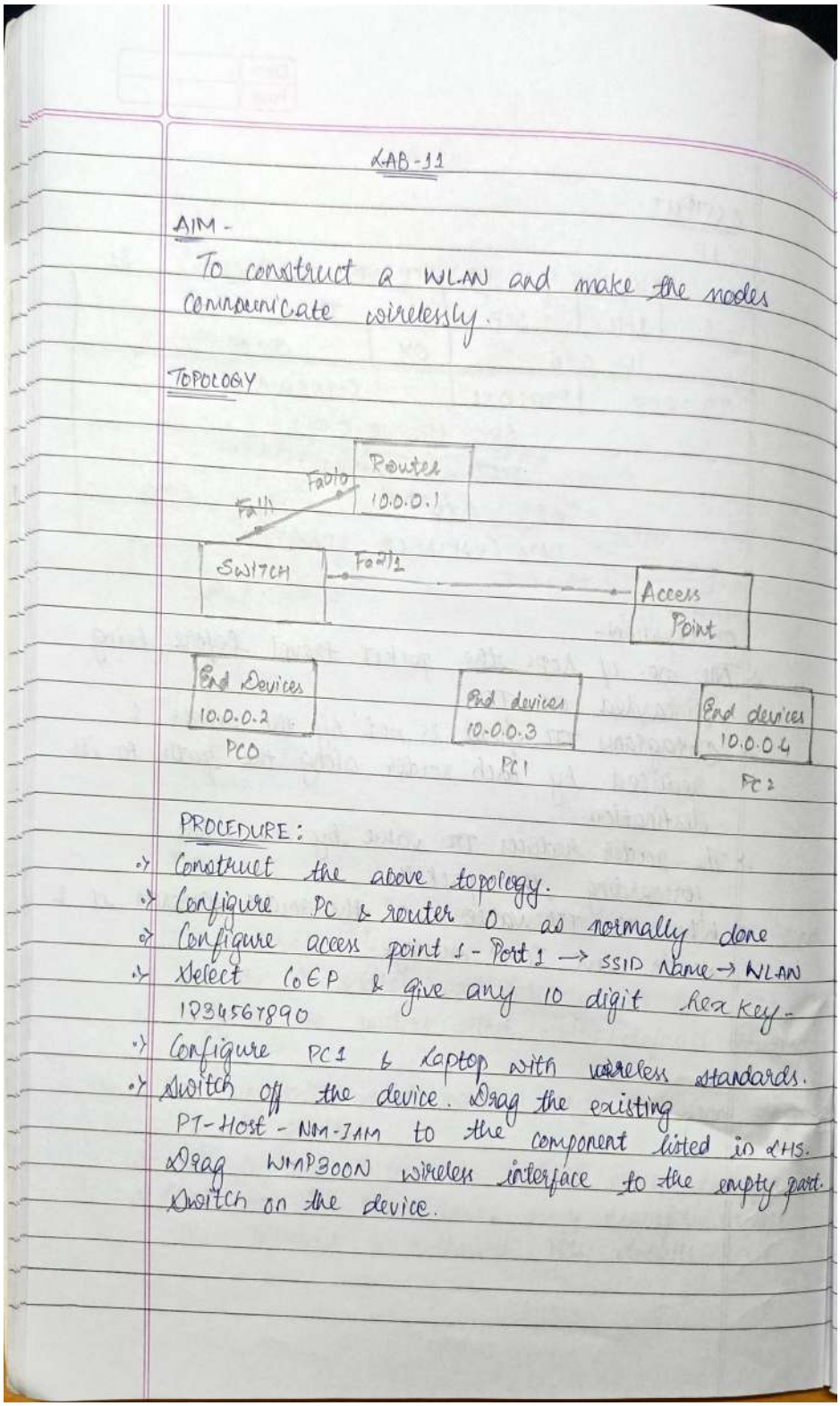

Logical
AREA 1
AREA 2
AREA 3
20.0.0.2
Se2/0
10.0.0.1
Fa0/0
Router-PT
Router0
20.0.0.1
40.0.0.1
Fa0
PC-PT
PC0
10.0.0.10
PC-PT
PC1
40.0.0.10
PDU Information at Device: Router2
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
PPP
IP
ICMP
Simulation


Logical
AREA 1
20.0.0.2
Se2/0
10.0.0.1
Fa0/0
Router-PT
Router0
20.0.0.1
AREA 3
AREA 2
40.0.0.1
Fa0
PC-PT
PC0
10.0.0.10
PC-PT
PC1
40.0.0.10
Simulation

WEEK 11

To construct a WLAN and make the nodes communicate wirelessly

OBSERVATION:



LAB-11

AIM -

To construct a WLAN and make the nodes communicate wirelessly.

TOPOLOGY

PROCEDURE:

- Construct the above topology.
- Configure PC & router 0 as normally done
- Configure access point 1 - Port 1 → SSID Name → NLAN
- Select CoEP & give any 10 digit hex key - 1234567890
- Configure PC1 & Laptop with wireless standards.
- Switch off the device. Drag the existing PT-Host - NM-1AM to the component listed in LHS. Drag WMP300N wireless interface to the empty port. Switch on the device.

Date
Page

- In the config table a new wireless interface would have been added. Now configure SSID, WEP, WEP key, IP address and gateway to the device.
- Ping from every device to every other device

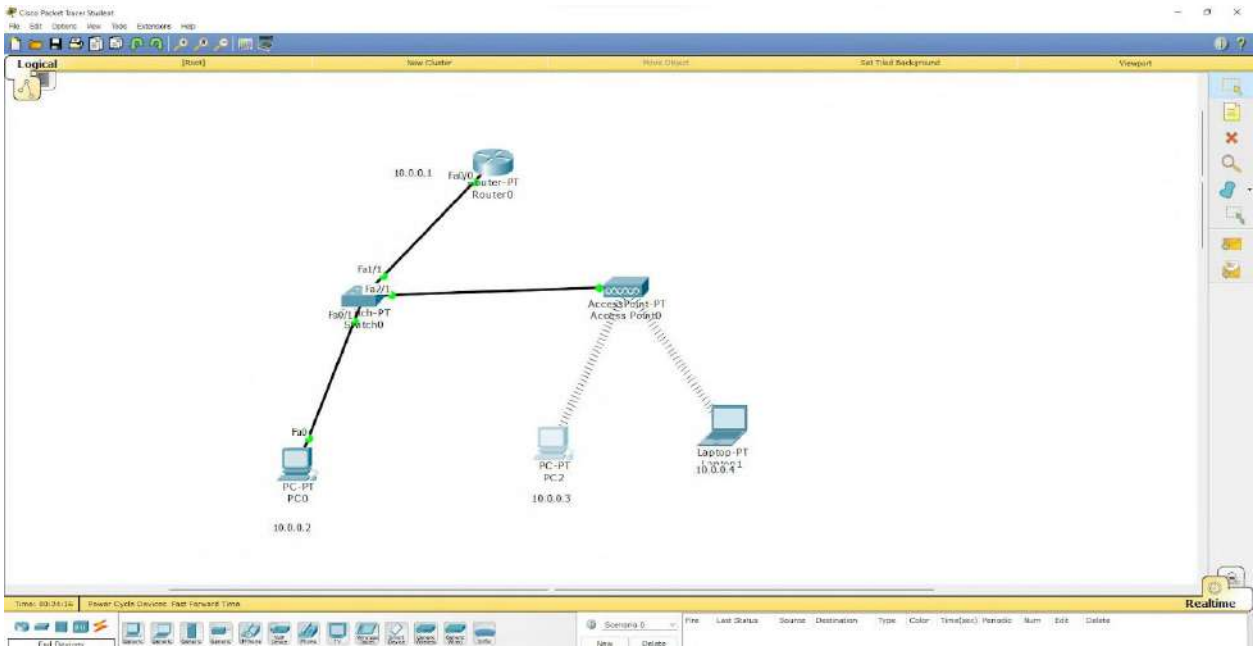
PING OUTPUT

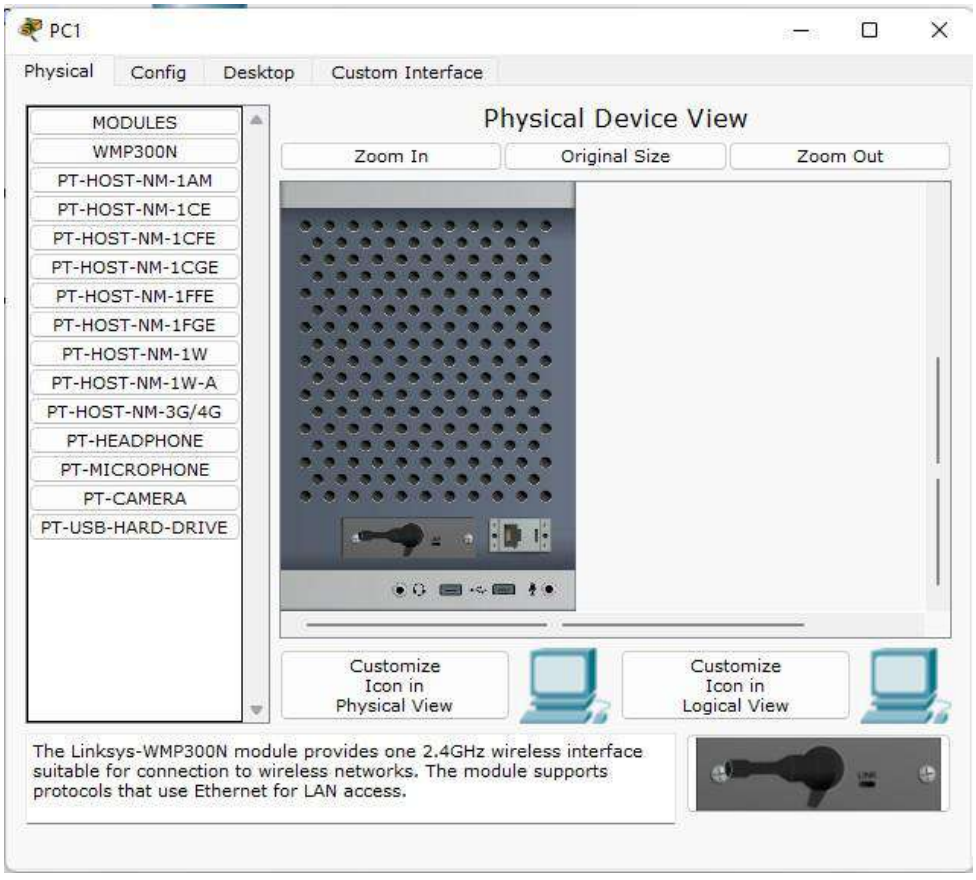
Packet Tracer PC command line 1.0
PC> ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data.
Request timed out.
Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL = 127
Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL = 127
Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL = 127
Ping statistics for 10.0.0.3
Packets : Sent = 4, Recieved = 3, Lost = 1 (25% Loss)
Approximate Round trip times in milliseconds
Minimum = 0ms, Maximum = 1ms, Average = 0ms

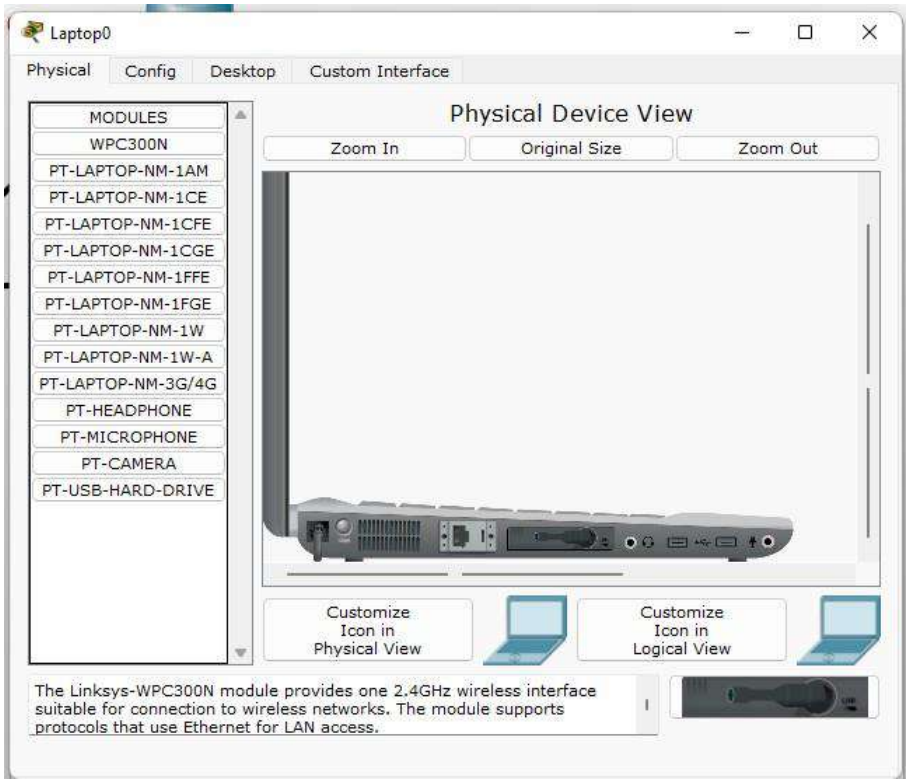
OBSERVATION

- A WLAN is a group of device that form a network based on radio transmission.
- Data sent in packets contain layers with labels and instructions. MAC address to endpoints for routing.
- With one access point we can connect to multiple devices wirelessly & transmit data.

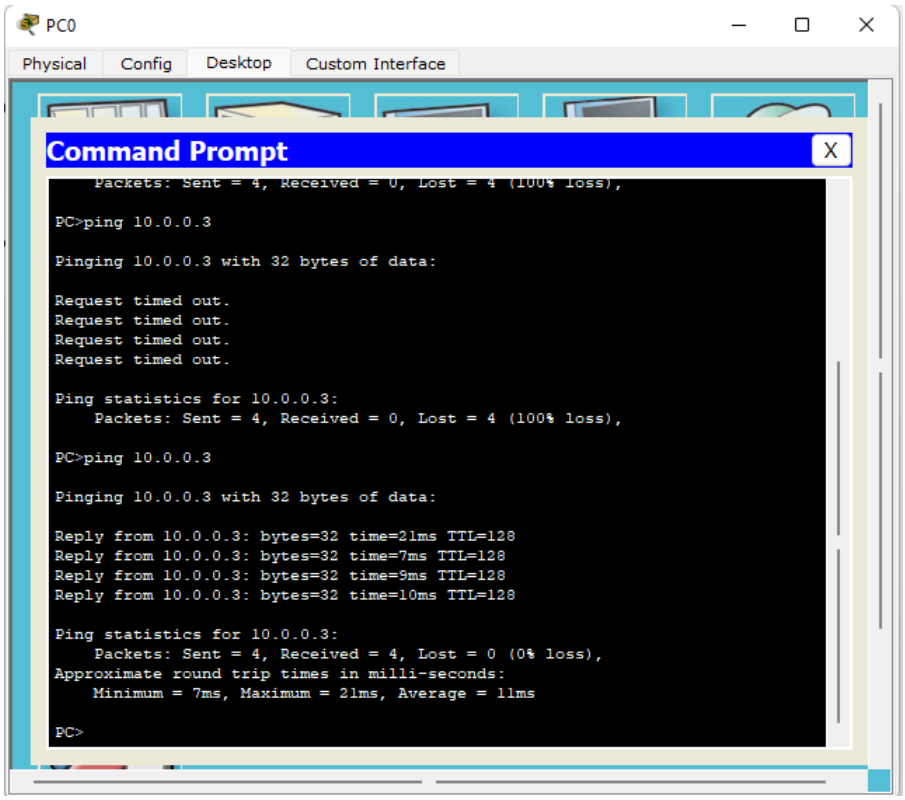
TOPOLOGY:


Logical
10.0.0.1
Router-PT
Router0
Fa1/1
Fa0/1
Switch0
Access Point-PT
Access Point0
Fa0
PC-PT
PC0
10.0.0.2
PC-PT
PC2
10.0.0.3
Laptop-PT
10.0.0.4
Realtime


PC1
Physical
Config
Desktop
Custom Interface
MODULES
WMP300N
PT-HOST-NM-1AM
PT-HOST-NM-1CE
PT-HOST-NM-1CFE
PT-HOST-NM-1CGE
PT-HOST-NM-1FFE
PT-HOST-NM-1FGE
PT-HOST-NM-1W
PT-HOST-NM-1W-A
PT-HOST-NM-3G/4G
PT-HEADPHONE
PT-MICROPHONE
PT-CAMERA
PT-USB-HARD-DRIVE
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The Linksys-WMP300N module provides one 2.4GHz wireless interface suitable for connection to wireless networks. The module supports protocols that use Ethernet for LAN access.


Laptop0
Physical
Config
Desktop
Custom Interface
MODULES
WPC300N
PT-LAPTOP-NM-1AM
PT-LAPTOP-NM-1CE
PT-LAPTOP-NM-1CFE
PT-LAPTOP-NM-1CGE
PT-LAPTOP-NM-1FFE
PT-LAPTOP-NM-1FGE
PT-LAPTOP-NM-1W
PT-LAPTOP-NM-1W-A
PT-LAPTOP-NM-3G/4G
PT-HEADPHONE
PT-MICROPHONE
PT-CAMERA
PT-USB-HARD-DRIVE
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The Linksys-WPC300N module provides one 2.4GHz wireless interface suitable for connection to wireless networks. The module supports protocols that use Ethernet for LAN access.

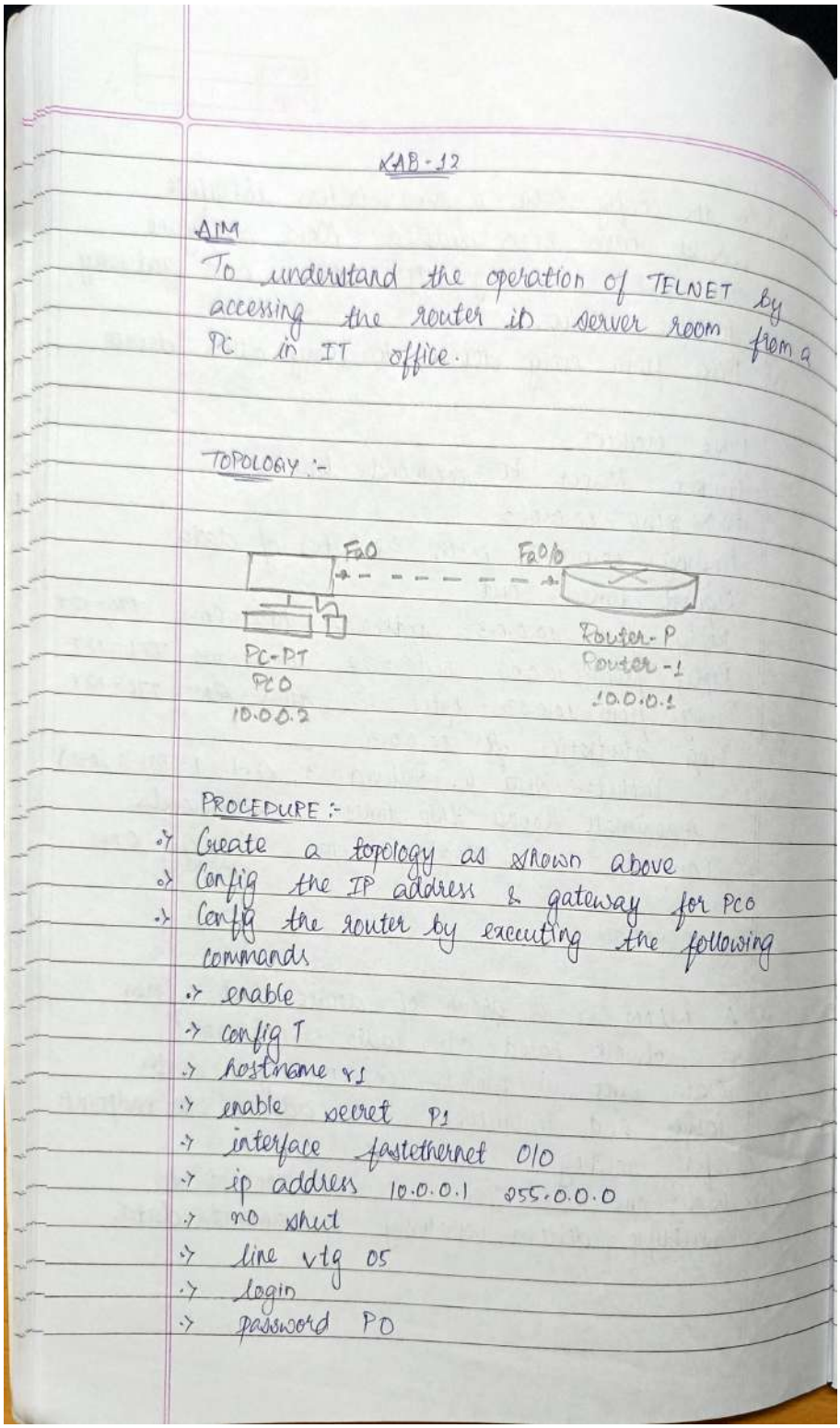
OUTPUT:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 10.0.0.3:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data:
Reply from 10.0.0.3: bytes=32 time=21ms TTL=128
Reply from 10.0.0.3: bytes=32 time=7ms TTL=128
Reply from 10.0.0.3: bytes=32 time=9ms TTL=128
Reply from 10.0.0.3: bytes=32 time=10ms TTL=128
Ping statistics for 10.0.0.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 7ms, Maximum = 21ms, Average = 11ms
PC>

WEEK 12

To understand the operation of TELNET by accessing the router in server room from a PC in IT office.

OBSERVATION:



LAB-12

AIM

To understand the operation of TELNET by accessing the router in server room from a PC in IT office.

TOPOLOGY :-

PROCEDURE :-

-> Create a topology as shown above
-> Config the IP address & gateway for PC0
-> Config the router by executing the following commands
-> enable
-> config T
-> hostname r1
-> enable secret P1
-> interface fastethernet 0/0
-> ip address 10.0.0.1 255.0.0.0
-> no shut
-> line vty 05
-> login
-> password P0

-> Exit : Exit
-> no
-> Ping message to router
Password for User access verification is P0
Password for enable is P1
Accessing router CLI from PC.
show IP route

Ping output :-
Packet tracer PC command line 1.0
PC> ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data.

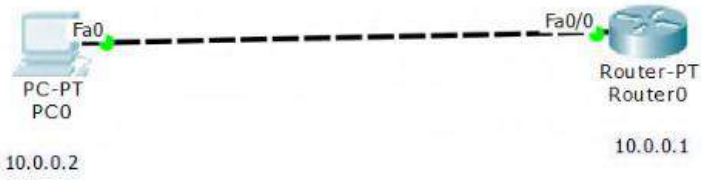
Reply from 10.0.0.1 : bytes = 32 time = 0ms TTL = 255
Reply from 10.0.0.1 : bytes = 32 time = 0ms TTL = 255
Reply from 10.0.0.1 : bytes = 32 time = 0ms TTL = 255
Reply from 10.0.0.1 : bytes = 32 time = 0ms TTL = 255

Packets: Sent = 4 Recieved = 4 Lost = 0 (0% loss)
Approximate round trip times in milliseconds
minimum = 0ms, maximum = 0ms, average = 0ms

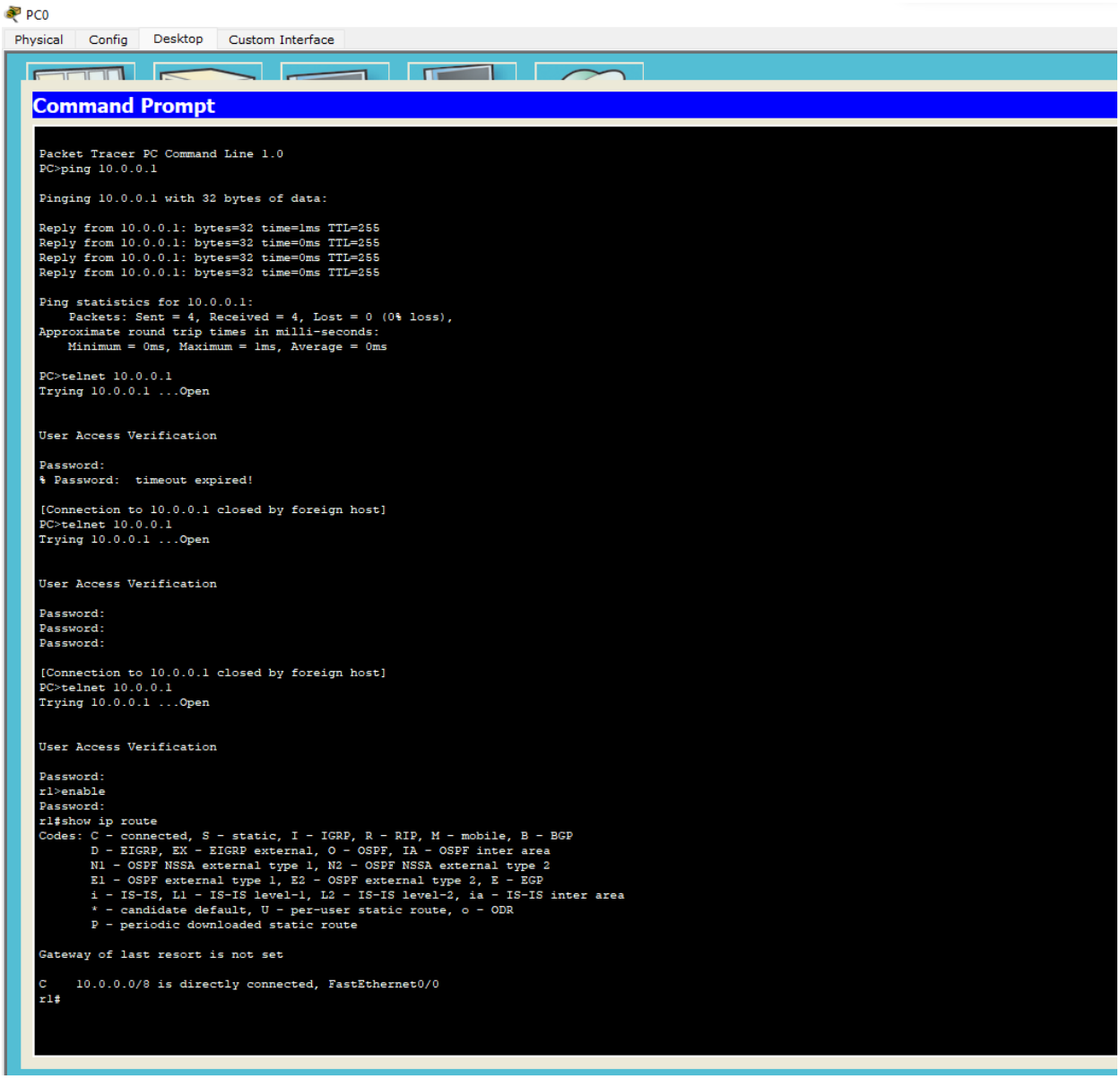
PC> telnet 10.0.0.1
Typing 10.0.0.1 .... open
User Access Verification
Password : P0
-> enable
Password : P1
1# # show ip route

C 10.0.0.0/8 is directly connected, Fastethernet 0/

TOPOLOGY:



OUTPUT:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255
Reply from 10.0.0.1: bytes=32 time=0ms TTL=255
Reply from 10.0.0.1: bytes=32 time=0ms TTL=255
Reply from 10.0.0.1: bytes=32 time=0ms TTL=255
Ping statistics for 10.0.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>telnet 10.0.0.1
Trying 10.0.0.1 ...Open
User Access Verification
Password:
% Password: timeout expired!
[Connection to 10.0.0.1 closed by foreign host]
PC>telnet 10.0.0.1
Trying 10.0.0.1 ...Open
User Access Verification
Password:
Password:
Password:
[Connection to 10.0.0.1 closed by foreign host]
PC>telnet 10.0.0.1
Trying 10.0.0.1 ...Open
User Access Verification
Password:
rl>enable
Password:
rl#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
C 10.0.0.0/8 is directly connected, FastEthernet0/0
rl#

LAB-14

AIM:- Write a program for congestion control using baby bucket algorithm.

```
#include <stdio.h>
#include <conio.h>
void main()
{
 int bucket_size, dr;
 printf("Enter bucket size and data rate \n");
 scanf("%d", &dr);
 int emp = bucket_size;
 while (1) {
        int ch, ps;
        printf("Enter the packet size");
        scanf("%d", &ps);
        if (ps <= bucket_size)
        {
          if (ps <= emp)
          { printf("Packet of size %d transmitted", ps);
          }
        else
        {
          printf("Packet dropped");
          emp = emp - ps + dr;
        }
        else
        {
          printf("Packet dropped");
        }
```

```
printf("Continue? 1 or 0 ? : ");
scanf("%d", &ch);
if (ch == 0)
    break;
}
}
```

OUTPUT

Enter bucket size and data rate:
5000
200
Enter the packet size
6000
packed dropped
Continue? 1 or 0? : 1
Enter the packet size:
3000
packet of size 3000 transmitted
Continue? 1 or 0? 1
Enter the packet size
2000
Packet of size 3000 transmitted
Continue? 1 or 0? 1
Enter the packet size
1000
packet dropped
Continue? 1 or 0? : 0

```
Enter the packet size = 3000
The Packet of size 3000 is added and in the bucket

Enter 1 to Continue or 0 to Stop: 1

Enter the packet size = 2000
The Packet of size 2000 is added and in the bucket

Enter 1 to Continue or 0 to Stop: 1

Enter the packet size = 1500
The Packet of size 1500 is dropped due to lack of space in the bucket

Enter 1 to Continue or 0 to Stop: 0
PS D:\BMSCE\Academics\Semester IV\Computer networks\Lab\Leaky bucket>
```

LAB-15

AIM: Using TCP/IP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.

Client.py

```
from socket import *
serverName = '127.0.0.1'
serverPort = 12000
clientSocket = socket (AF_INET, SOCK_STREAM)
clientSocket.connect ((serverName, serverPort))
sentence = input ("\n Enter file name: ")

clientSocket.send (sentence.encode ())
filecontents = clientSocket.recv(1024).decode()
print ("\n From Server: \n");
print (file contents)
clientSocket.done()
```

Server.py

```
from socket import *
serverName = '127.0.0.1'
serverPort = 12000
clientSocket = socket (AF_INET, SOCK_STREAM)
serverSocket.bind ((serverName, serverPort))
serverSocket.listen (1)
while 1:
    print ("The server is ready to recieve")
    connectionSocket, addr = serverSocket.accept();
```

```
sentence = connectionSocket.recv(1024).decode();
file = open(sentence, 'r')
l = file.read(1024)
connectionSocket.send(l.encode())
print("\n Sent contents "+ sentence + "to"+ addr)
file.close()
connectionSocket.close()
```

OUTPUT

Client

Enter file name : Server.py
Reply from server
Contents of Server.py

Server

Sent contents 0: server.py

ServerTCP.py - C:/Users/sanja/OneDrive/Documents/ServerTCP.py (3.9.13)

File Edit Format Run Options Window Help

```
from socket import *
serverName='127.0.0.1'
serverPort = 12000
serverSocket = socket(AF_INET,SOCK_STREAM)
serverSocket.bind((serverName,serverPort))
serverSocket.listen(1)
while 1:
    print("The server is ready to receive")
    connectionSocket, addr = serverSocket.accept()
    sentence = connectionSocket.recv(1024).decode()

    file=open(sentence,"r")
    l=file.read(1024)

    connectionSocket.send(l.encode())
    print ("\nSent contents of " + sentence)
    file.close()
    connectionSocket.close()
```

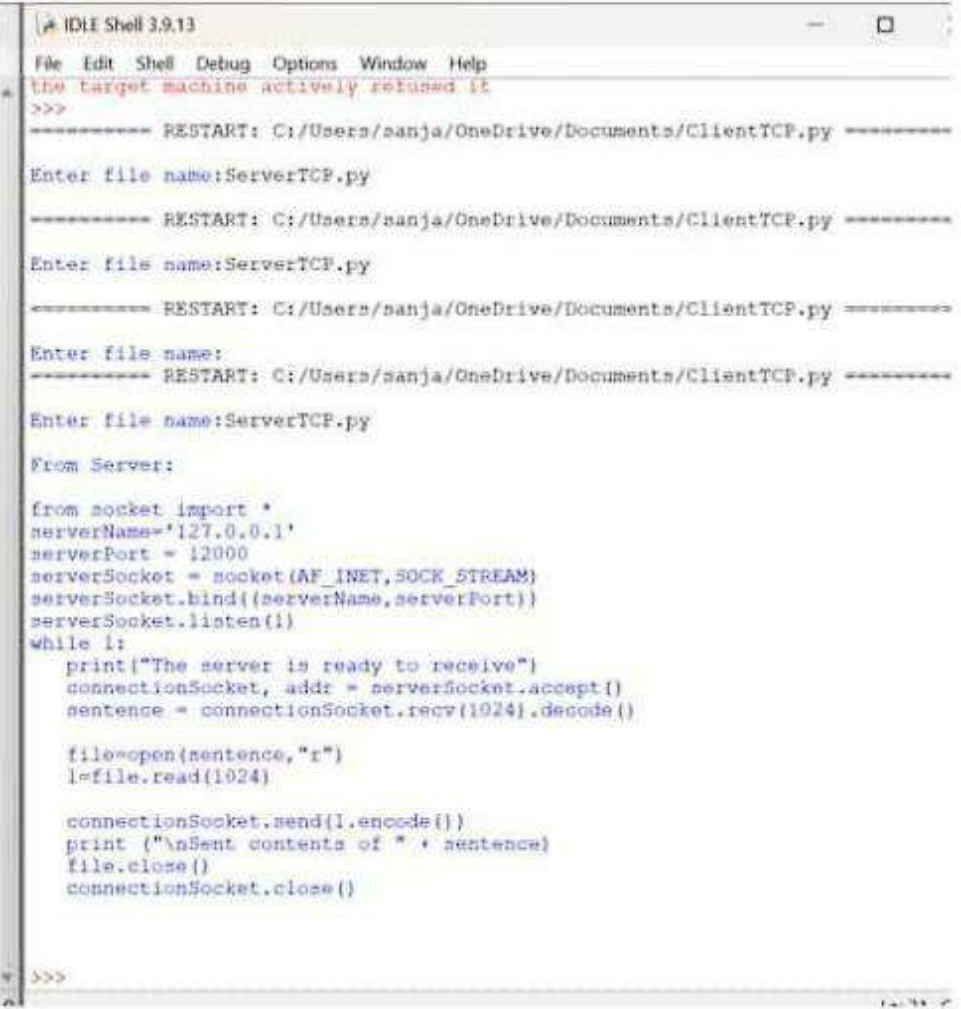
ClientTCP.py - C:/Users/sanja/OneDrive/Documents/ClientTCP.py (3.9.13)

File Edit Format Run Options Window Help

```
from socket import *
serverName = "127.0.0.1"
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName,serverPort))
sentence = input("\nEnter file name:")

clientSocket.send(sentence.encode())
filecontents = clientSocket.recv(1024).decode()
print ("\nFrom Server:\n")
print(filecontents)
clientSocket.close()
```


IDLE Shell 3.9.13
File Edit Shell Debug Options Window Help
Python 3.9.13 (tags/v3.9.13:6de2ca5, May 17 2022, 16:36:42) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/sanja/OneDrive/Documents/ServerTCP.py ==========
The server is ready to receive
The server is ready to receive
The server is ready to receive
========== RESTART: C:/Users/sanja/OneDrive/Documents/ServerTCP.py ==========
The server is ready to receive
Sent contents of ServerTCP.py
The server is ready to receive


IDLE Shell 3.9.13
File Edit Shell Debug Options Window Help
the target machine actively refused it
>>>
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientTCP.py ==========
Enter file name:ServerTCP.py
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientTCP.py ==========
Enter file name:ServerTCP.py
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientTCP.py ==========
Enter file name:
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientTCP.py ==========
Enter file name:ServerTCP.py
From Server:
from socket import *
serverName='127.0.0.1'
serverPort = 12000
serverSocket = socket(AF_INET,SOCK_STREAM)
serverSocket.bind((serverName,serverPort))
serverSocket.listen(1)
while 1:
print("The server is ready to receive")
connectionSocket, addr = serverSocket.accept()
sentence = connectionSocket.recv(1024).decode()
file=open(sentence,"r")
l=file.read(1024)
connectionSocket.send(l.encode())
print ("\nSent contents of " + sentence)
file.close()
connectionSocket.close()
>>>

LAB-16

AIM: Using UDP sockets, write client server program to make client send file name and server send back the contents of requested file.

Client UDP.py

```
from socket import *
serverName = '127.0.0.1'
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_DGRAM)
sentence = input("\n Enter file name");
clientSocket.sendto(bytes(sentence, "utf-8"), (serverName, serverPort))
fileContents, serverAddress = clientSocket.recvfrom(2048)
print("\n Reply from Server").
print(fileContents.decode("UTF-8"))
for i in fileContents:
        print(str(i), end '')
clientSocket.close()
clientSocket.close()
```

Server UDP.py

```
from socket import *
serverPort = 12000
serverSocket = socket(AF_INET, SOCK-DGRAM)
serverSocket.bind(("127.0.0.1", serverPort))
print("The server is ready to recieve")
while 1:
    sentence, clientAddress = serverSocket.recvfrom(2048)
    sentence = sentence.decode("UTF-8")
```

```
file = open (sentence, "r")
con = file.read (2048)
serverSocket.sendto (bytes (con, "UTF-8"), clientAddr)
print ("In Sent Contents of ", end = '')
print (sentence)
for i in sentence
    print (str(i), end = '')
    file.done ()
```

OUTPUT:

Server Side

Server ready to recieve
Sent contents of server.UDPpy
The server is reddy to reciede

Client Side

Enter file name : ServerUDP.py

Reply from server:
from socket import

(Code of serverudp.py written is priority)

ClientUDP.py - C:/Users/sanja/OneDrive/Documents/ClientUDP.py (3.9.13)

File Edit Format Run Options Window Help

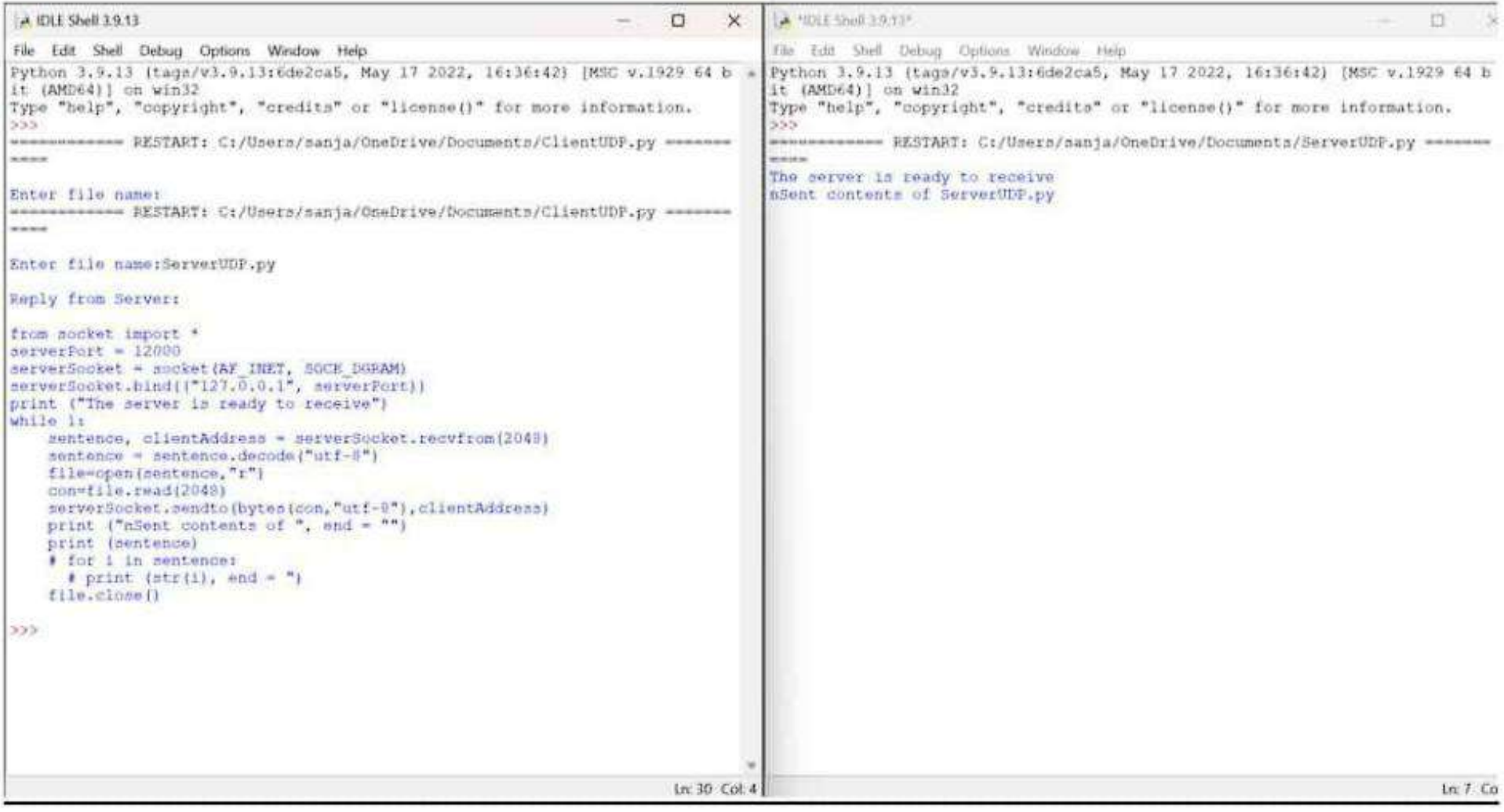
```
from socket import *
serverName = "127.0.0.1"


serverPort = 12000
clientSocket = socket(AF_INET, SOCK_DGRAM)
sentence = input("\nEnter file name:")
clientSocket.sendto(bytes(sentence,"utf-8"),(serverName, serverPort))
filecontents,serverAddress = clientSocket.recvfrom(2048)
print ("\nReply from Server:\n")
print (filecontents.decode("utf-8"))
#for i in filecontents:
  #print(str(i), end ="")
clientSocket.close()
clientSocket.close()
```

ServerUDP.py - C:/Users/sanja/OneDrive/Documents/ServerUDP.py (3.9.13)

File Edit Format Run Options Window Help

```
from socket import *
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_DGRAM)
serverSocket.bind(("127.0.0.1", serverPort))
print ("The server is ready to receive")
while 1:
    sentence, clientAddress = serverSocket.recvfrom(2048)
    sentence = sentence.decode("utf-8")
    file=open(sentence,"r")
    con=file.read(2048)
    serverSocket.sendto(bytes(con,"utf-8"),clientAddress)
    print ("\nSent contents of ", end = "")
    print (sentence)
    # for i in sentence:
      # print (str(i), end = "")
    file.close()
```


IDLE Shell 3.9.13
File Edit Shell Debug Options Window Help
Python 3.9.13 (tags/v3.9.13:6de2ca5, May 17 2022, 16:36:42) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientUDP.py ==========
Enter file name:
========== RESTART: C:/Users/sanja/OneDrive/Documents/ClientUDP.py ==========
Enter file name:ServerUDP.py
Reply from Server:
from socket import *
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_DGRAM)
serverSocket.bind(("127.0.0.1", serverPort))
print ("The server is ready to receive")
while 1:
sentence, clientAddress = serverSocket.recvfrom(2048)
sentence = sentence.decode("utf-8")
file=open(sentence,"r")
con=file.read(2048)
serverSocket.sendto(bytes(con,"utf-8"),clientAddress)
print ("nSent contents of ", end = "")
print (sentence)
# for i in sentence:
# print (str(i), end = '')
file.close()
>>>
Ln: 30 Col: 4
IDLE Shell 3.9.13
File Edit Shell Debug Options Window Help
Python 3.9.13 (tags/v3.9.13:6de2ca5, May 17 2022, 16:36:42) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/sanja/OneDrive/Documents/ServerUDP.py ==========
The server is ready to receive
nSent contents of ServerUDP.py
Ln: 7 Co

LAB-17

Tool Exploration - Wireshark

Wireshark is an open source packet analyses which is used for education analysis, software development communication protocol development and network troubleshooting. It is used to track packets so that each are filtered to meet our specific wears. It is also used by network analysis.

Wireshark is a for applications used to apprehend data back and forth. It is also called as for packet sniffer computer applications, put through website card into a unselective mode, i.e to accept all packet.

User :-

1) It is used by network security engines to examine security problem.
2) It is used by network engines to troubleshoot network ~~pro~~ ises.
3) It is used to analyse dropped packets.
4) It helps to troubleshoot multiple activities on the network. It helps to all like laptop, mobile phones, router communicate as the rest of the world.

Date
Page

Functionality of Wireshark

It is similar to a TCP develop in networking.
It has a graphics end and fitting functions.
It also monitors the traffic which is not sent to networks. MAC address interface the narrowing is a method to monitor.
Switch sends copies of all networks packets present at one port to another port.