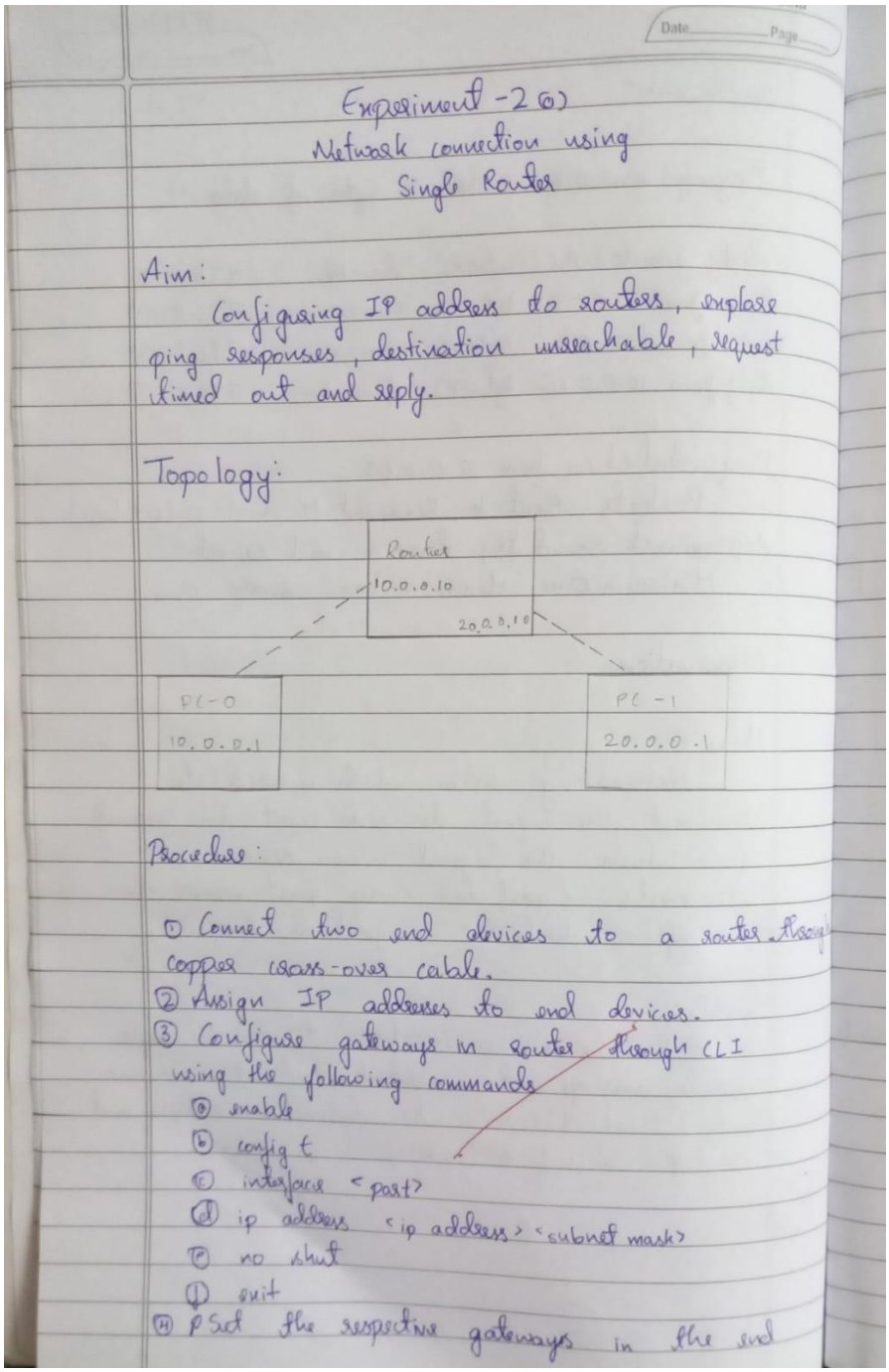
EXPERIMENT-2

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

Observation:



Date Page

Experiment -2 (a)

Network connection using Single Router

Aim:

Configuring IP address to routers, explore ping responses, destination unreachable, request timed out and reply.

Topology:

Procedure:

① Connect two end devices to a router through copper cross-over cable.
② Assign IP addresses to end devices.
③ Configure gateways in router through CLI using the following commands
  ⓐ enable
  ⓑ config t
  ⓒ interface <port>
  ⓓ ip address <ip address> <subnet mask>
  ⓔ no shut
  ⓕ exit
④ 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=127
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=1ms, Average=0ms

Observation:

Router is a device used to connect multiple networks. Router is capable of transfessing packets ~~from~~ from one network to another.

End device 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.

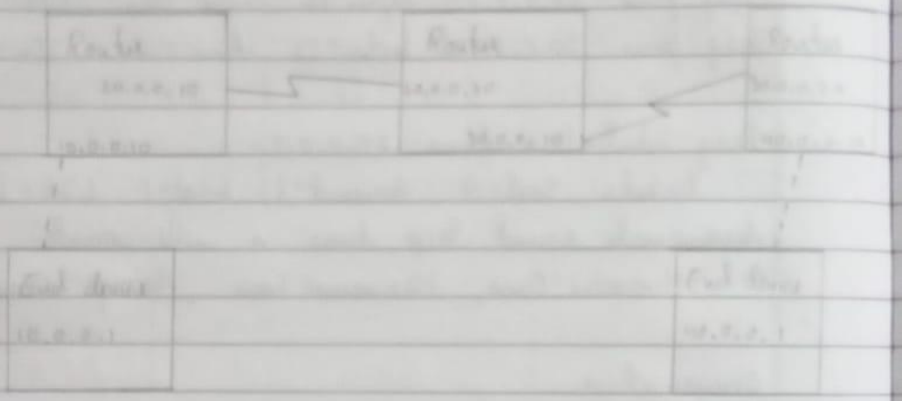
Experiment - 2 (b)

Network with multiple routers

Aim:

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

Topology:



Procedure:

① Add two end devices and three routers to work space.
② Connect routers to through serial DTE cable and end devices to routers through copper cross-over cable.
③ Assign IP addresses to all devices and gateways.
④ Configure gateways through CLI using following commands.
   ⓐ enable
   ⓑ config t
   ⓒ interface <port>
   ⓓ ip address <ip address> <subnet mask>

⑩ no shut
⑪ exit

⑤ Using command ip route <destination ip> <next routing ip>, set path for each routes.

⑥ Ping from one end device 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=12ms 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, Recieved=3, Lost=1 (25% loss)
Approximate round trip times in milli-seconds
Minimum=12ms Maximum=14ms Average=12ms

Observation:
Destination host Unreachable:
For each router, we need to define a route for packets to be moved to different networks. Unless route is defined, packet will not reach destination. Following result is obtained when gateway isn't set

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
Reply from 10.0.0.10: Destination host unreachable

The above message signifies gateway 10.0.0.10 does not know where to redirect the packet to.

Request timed out:

On successful transmission from source to destination, an acknowledgement is sent from destination host to source host in the form of ICMP packets. If the acknowledgement ICMP message does not reach source, a 'Request timed out' message is shown. It may be due to packet loss, physical issue in transmission or incorrect gateway assignment.

Successful Ping Testing and Static Routing Command

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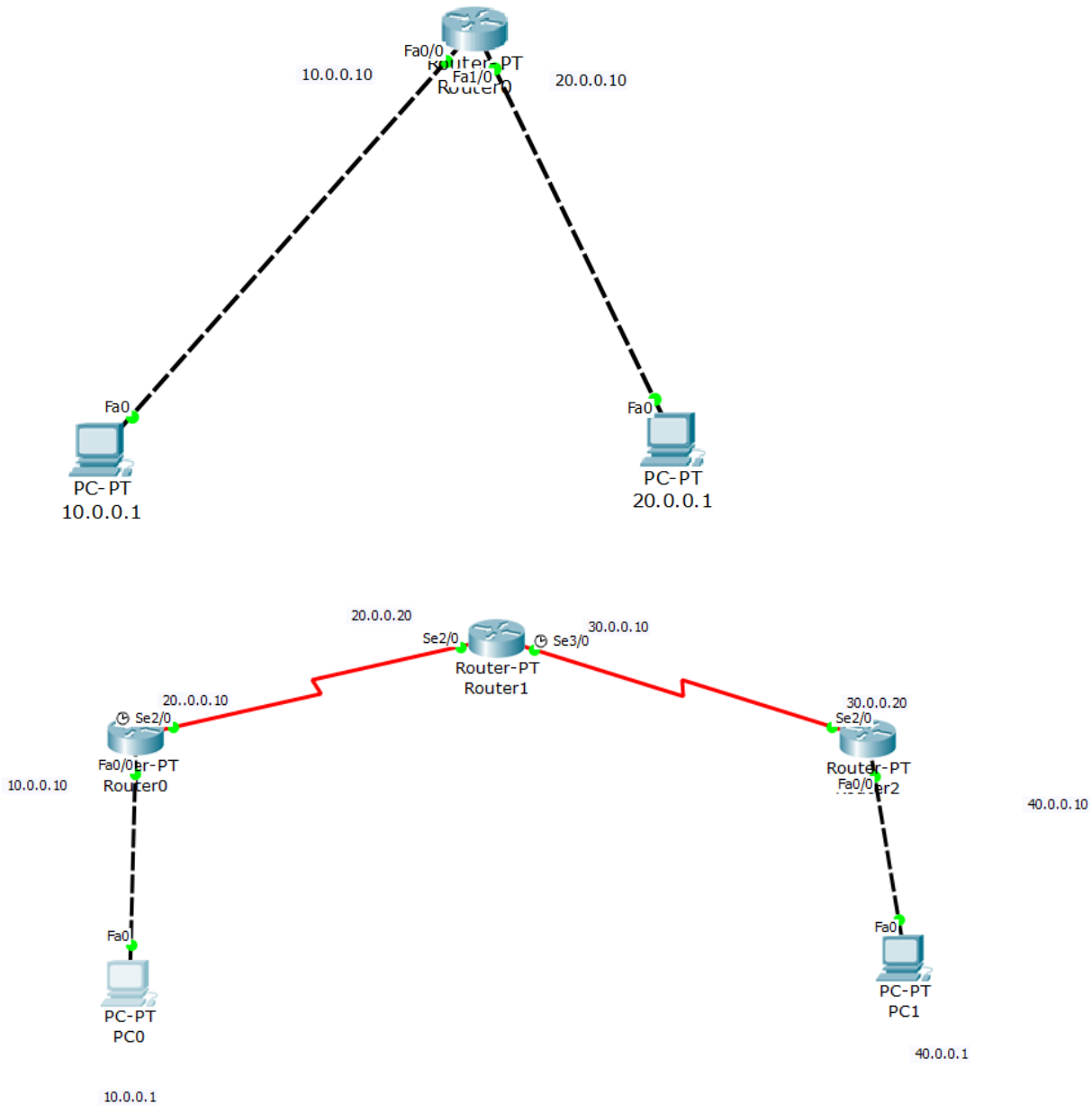
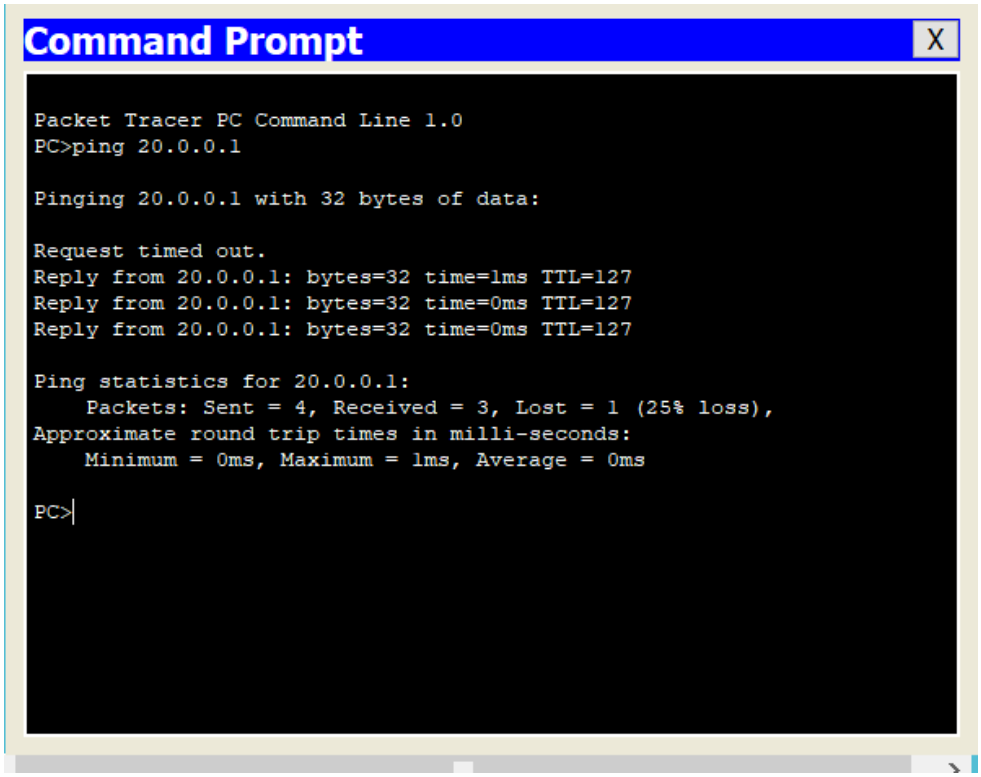
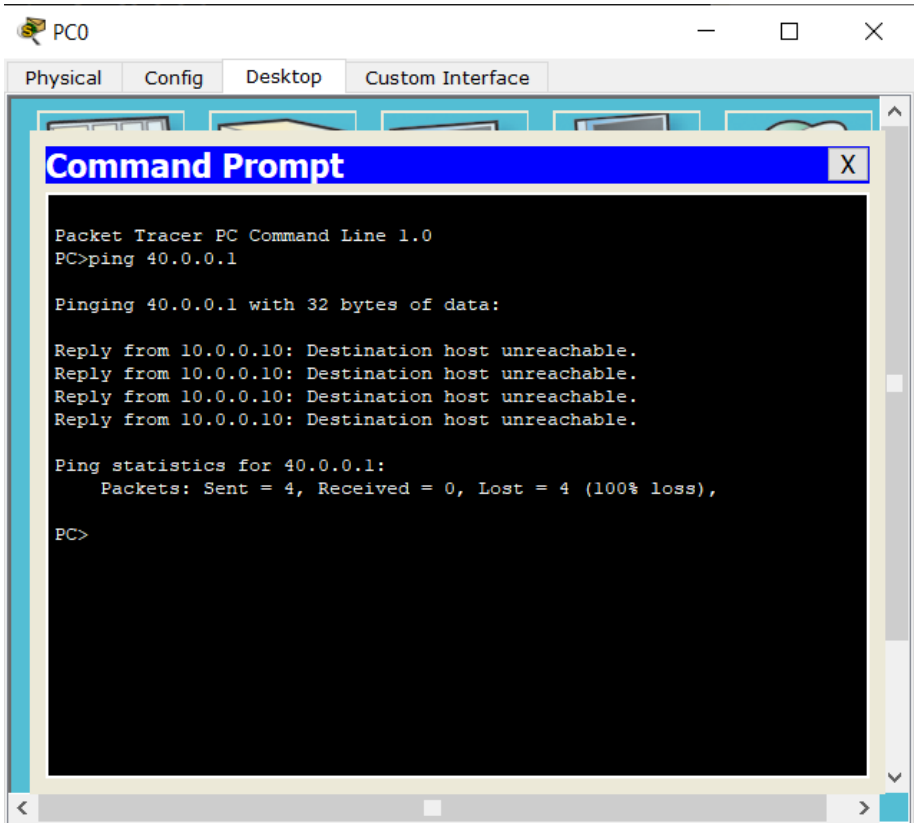
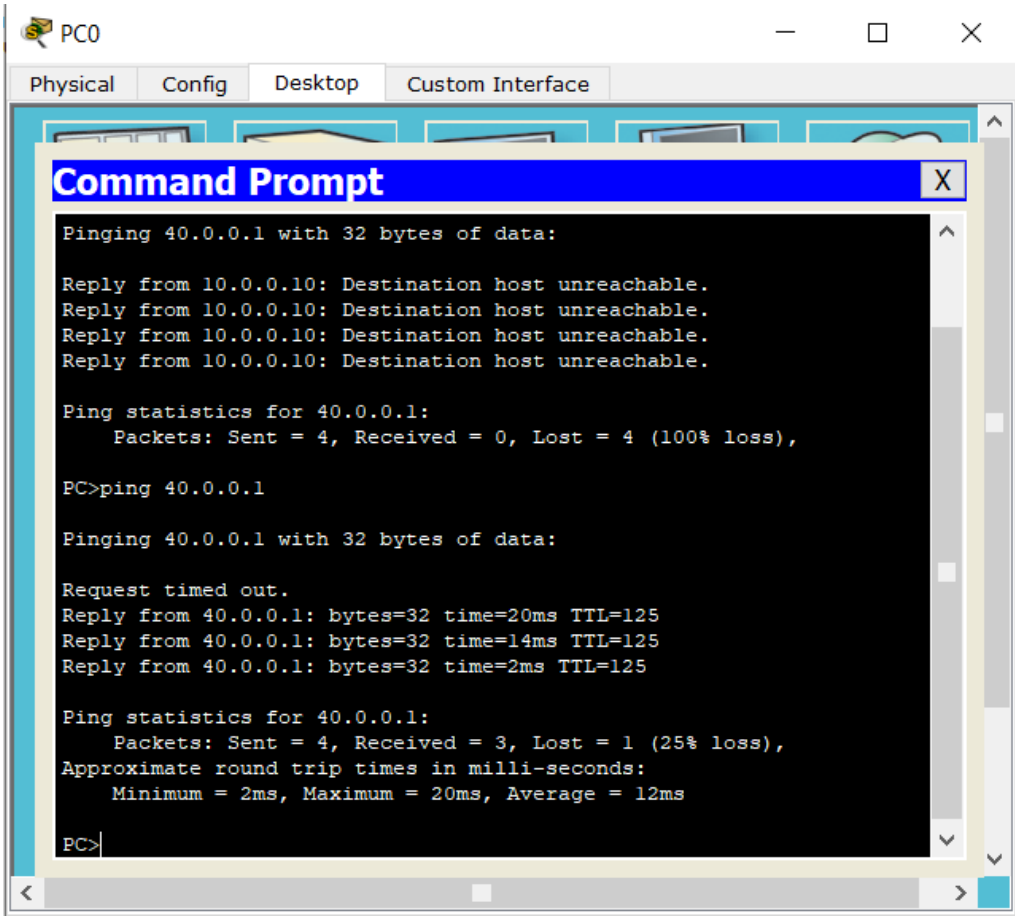
Topology:


Fa0/0
Fa1/0
10.0.0.10
20.0.0.10
Fa0
Fa0
PC-PT
10.0.0.1
PC-PT
20.0.0.1
20.0.0.20
Se2/0
Se3/0
30.0.0.10
Router-PT
Router1
20..0.0.10
Se2/0
30.0.0.20
Se2/0
Fa0/0
Router0
Fa0/0
10.0.0.10
40.0.0.10
Fa0
Fa0
PC-PT
PC0
PC-PT
PC1
40.0.0.1
10.0.0.1

Result:


Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.1
Pinging 20.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.1: bytes=32 time=1ms TTL=127
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 for 20.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>


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:
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.
Reply from 10.0.0.10: Destination host unreachable.
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
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.
Reply from 10.0.0.10: Destination host unreachable.
Ping statistics for 40.0.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
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=20ms TTL=125
Reply from 40.0.0.1: bytes=32 time=14ms 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 = 20ms, Average = 12ms
PC>