**ASSIGNMENT # 01**

Subject: Computer network

Topic: lab task



Submitted by    =  Ammar sheharyar

Submitted to    =  SIR  bhakhtwar Rehman

Reg no        =  2121-323012

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# DEPARTMENT OF COMPUTER SCIENCE

# PRESTON UNIVERSITY KOHAT

# Unicast Communication

Unicast is one-to-one communication in networking, where data is sent from a single sender to a single receiver using unique IP addresses.

## Unicast Protocols

1. TCP: Reliable, connection-oriented. Example: File downloads.

2. UDP: Lightweight, connectionless. Example: Online gaming.

3. HTTP: Web data transmission. Example: Browsing websites.

## Advantages

- Direct and reliable communication.

- Simple to implement.

## Disadvantages

- Inefficient for multiple receivers.

- High bandwidth usage for each connection.

Real-World Examples

- Sending an email.

- Loading a website.

- Video calls.

Multicast Communication

Multicast is one-to-many communication where data is sent to multiple receivers in a group using a single stream, saving bandwidth compared to unicast.

Multicast Protocols

1. IGMP: Manages group memberships in a network. Example: Joining a live video stream.

2. PIM: Routes multicast traffic efficiently across networks. Example: Delivering IPTV channels.

3. RTP: Handles real-time delivery of audio and video. Example: Live video conferencing.

How Multicast Routing Works

Routers send data only to devices that join a multicast group. This avoids duplicate data and efficiently delivers information.

Benefits

- Saves bandwidth.

- Scales well for large audiences.

- Perfect for real-time applications like video streaming.

Real-World Examples

- Watching IPTV channels.

- Streaming live sports events.

- Delivering financial market data

Answer No 3:

- Take **screenshots** of:

  - Routing table (show ip route)

  - Successful **ping results**

  - Network topology in Packet Tracer

# Routing

```
O    192.168.2.0/24 [110/65] via 10.0.0.6, 00:00:10, Serial0/0/1
C    192.168.100.0/24 is directly connected, Loopback0
```

# Successful ping results

```
Router#ping 192.168.2.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.10, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

Router#
```
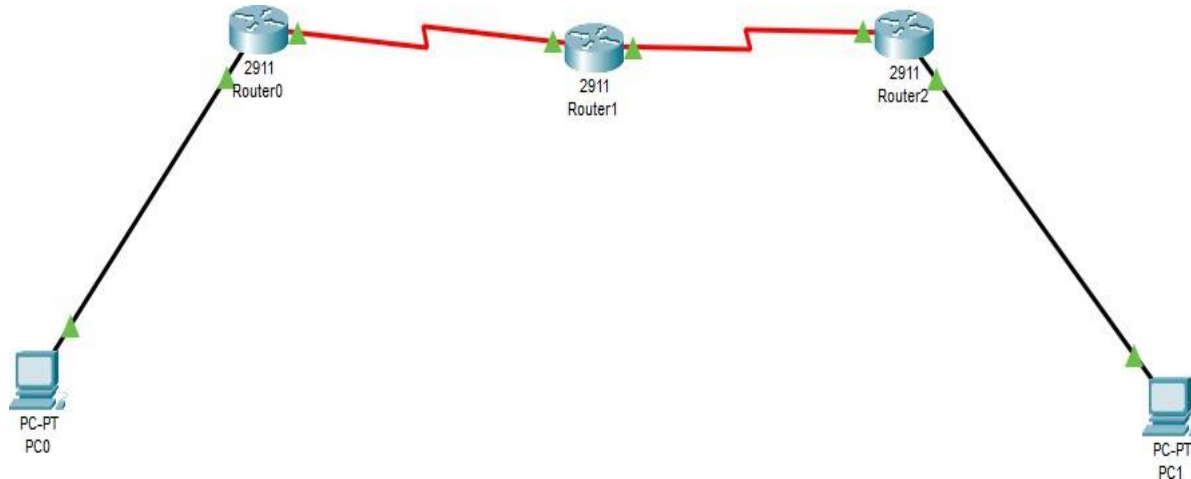
Ctrl+F6 to exit CLI focus                    Copy        Paste

# Network topology in Packet Tracer



# Assign ip Address to routers

Step=2 for router 1    Router> enable   Router# configure terminal

Router(config)#  interface GigabitEthernet0/0

Router(config-if)#     ip    address 192.168.1.1 255.255.255.0

Router(config-if)# no shutdown Router(config-if)# exit Router(config)# interface Serial0/2/0

Router(config-if)# ip address 10.0.0.1 255.255.255.252

Router(config-if)# no shutdown Router(config-if)# exit

Router 2 Router> enable

Router# configure terminal Router(config)# interface Serial0/2/0

Router(config-if)# ip address 10.0.0.2 255.255.255.252

Router(config-if)# no shutdown Router(config-if)# exit

Router(config)# interface Serial0/2/1

Router(config-if)# ip address 10.0.0.5
255.255.255.252

Router(config-if)# no shutdown Router(config-if)# exit

Router 3

Router> enable

Router# configure terminal

Router(config)#  interface GigabitEthernet0/0

Router(config-if)#    ip   address 192.168.2.1
255.255.255.0

Router(config-if)# no shutdown Router(config-if)# exit

Router(config)# interface Serial0/2/1

Router(config-if)# ip address 10.0.0.6 255.255.255.252

Router(config-if)# no shutdown Router(config-if)# exit