Register No:	**99220040570**
Name	**K. Hanumaan**
Class/Section	**8501 A/S06**
Ex. No:	**4**
Name of the Experiment	**Configuration of intra VLAN network**
Drive link	https://drive.google.com/drive/folders/1x_AZnzMtxU3bNbyWcDyRehAxhaMwzn-_?usp=drive_link

Ex.No:04	**Configuration of Intra VLAN network**
Date : **02/01/2025**	

Objective(s):

To design and implement Intra VLAN using switch configuration

Introduction:

A VLAN is a group of devices on one or more LANs that are configured to communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.

VLANs define broadcast domains in a Layer 2 network. A broadcast domain is the set of all devices that will receive broadcast frames originating from any device within the set. Broadcast domains are typically bounded by routers because routers do not forward broadcast frames. Layer 2 switches create broadcast domains based on the configuration of the switch. Switches are multiport bridges that allow you to create multiple broadcast domains. Each broadcast domain is like a distinct virtual bridge within a switch. Design the above mentioned topologies and verify the connectivity.

1. **Device Requirements:**
   1. PC0,PC01,PC02,PC03,PC04,PC05,PC06.
   2. Switch0,Switch1.
   3. Laptop0.
   4. Wire(Copper Straight -Through)
   5. Wire(Copper Cross Over)
2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0	192.168.10.1	255.255.255.0
PC1	Fa0	192.168.10.2	255.255.255.0

PC2	Fa0	192.168.20.2	255.255.255.0
PC3	Fa0	192.168.20.3	255.255.255.0
PC4	Fa0	192.168.10.3	255.255.255.0
PC5	Fa0	192.168.20.5	255.255.255.0
PC6	Fa0	192.168.20.4	255.255.255.0
Laptop0	Fa0	192.168.10.4	255.255.255.0
Switch0	Fa03		
Switch1	Fa01		

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

1. Create VLANs

❼ configure terminal

❼ vlan10

❼ name HR

❼ exit

❼ vlan20

❼ do show vlan

2. Configure interfaces

❼ interface FastEthernet0/1

❾ switchport mode access

❾ switchport access vlan 10

❾ exit

❾ do show vlan

3. Configure trunking

❾ Interface fastEtherenet0/23-24

❾ switchport mode trunk

6. Output Diagram (Minimum 3 screenshot):

99220040570
K. Hanumaan

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1x_AZnzMtxU3bNbyWcDyRehAxhaMwzn-_?usp=drive_link

CONCLUSION (provide conclusion about this experiment):

The study concludes that Cisco Packet Tracer is a robust and user-friendly tool for Configuration of Intra vlan Network. It plays a critical role in preparing individuals for industry certifications and real-world network management challenges. Its capabilities, combined with its accessibility, make it a cornerstone in the toolkit of network engineers and educators.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuration of Intra VLAN network has been done successfully.

Register No:	**99220040570**
Name	**K. Hanumaan**
Class/Section	**8501 A/S06**
Ex. No:	**4 (a)**
Name of the Experiment	**Configuration of Intra VLAN network(one switch)**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1x_AZnzMtxU3bNbyWcDyRehAxhaMwzn-_?usp=drive_link

Ex.No:04	**Configuration of Intra VLAN network**
Date :	

Objective(s):

To design and implement Intra VLAN using switch configuration

Introduction:

A VLAN is a group of devices on one or more LANs that are configured to communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.

VLANs define broadcast domains in a Layer 2 network. A broadcast domain is the set of all devices that will receive broadcast frames originating from any device within the set. Broadcast domains are typically bounded by routers because routers do not forward broadcast frames. switch create broadcast domains based on the configuration of the switch. Switch are multiport bridges that allow you to create multiple broadcast domains. Each broadcast domain is like a distinct virtual bridge within a switch. Design the above mentioned topologies and verify the connectivity.

1. **Device Requirements:**
   1. PC0,PC01,PC02,PC03,PC04,PC05,PC06.
   2. Switch0
   3. Laptop0.
   4. Wire(Copper Straight -Through)
2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0	192.168.10.1	255.255.255.0
PC1	Fa0	192.168.10.2	255.255.255.0
PC2	Fa0	192.168.10.3	255.255.255.0
PC3	Fa0	192.168.10.4	255.255.255.0

PC4	Fa0	192.168.20.1	255.255.255.0
PC5	Fa0	192.168.20.2	255.255.255.0
PC6	Fa0	192.168.20.3	255.255.255.0
Laptop0	Fa0	192.168.20.4	255.255.255.0
Switch0			

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

1. Create VLANs

❼ configure terminal

❼ vlan10

❼ name HR

❼ exit

❼ vlan20

❼ do show vlan

2. Configure interfaces

❼ interface FastEthernet0/3-4

❾ switchport mode access

❾ switchport access vlan 10

❾ exit

6. **Output Diagram (Minimum 3 screenshot):**

Cisco Packet Tracer - C:\Users\jalad\Cisco Packet Tracer 8.2.2\saves\harsha_0.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.1
Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time=3ms TTL=128
Reply from 192.168.10.1: bytes=32 time=2ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 3ms, Average = 1ms
C:\>ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.20.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Reply from 192.168.10.2: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
Top
VLAN 10
VLAN 20
Realtime
Simulation
Delete
(Select a Device to Drag and Drop to the Workspace)

PC4
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time<1ms TTL=128
Reply from 192.168.20.1: bytes=32 time=11ms TTL=128
Reply from 192.168.20.1: bytes=32 time<1ms TTL=128
Reply from 192.168.20.1: bytes=32 time=11ms TTL=128
Ping statistics for 192.168.20.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 11ms, Average = 5ms
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 192.168.20.4
Pinging 192.168.20.4 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.20.4:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
Top
Root
VLAN 20
Delete

99220040570
K.Hanuman

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1x_AZnzMtxU3bNbyWcDyRehAxhaMwzn-_?usp=drive_link

CONCLUSION (provide conclusion about this experiment):
The study concludes that Cisco Packet Tracer is a robust and user-friendly tool for Configuration of Intra vlan Network. It plays a critical role in preparing individuals for industry certifications and real-world network management challenges. Its capabilities, combined with its accessibility, make it a cornerstone in the toolkit of network engineers and educators.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: The Configuration of Intra VLAN network(one switch) has been implemented and successfully verified.

Register No:	**99220040570**
Name	**KAPILAVAI HANUMAAN**
Class/Section	**8501A/S06**
Ex.No:	**5a**
Date of Submission	**30.1.2025**
Name of the Experiment	**Configuration of Inter VLAN network using L3 switch**
Google Drive link of the packet tracer file (give view permission):	**https://drive.google.com/drive/folders/1I_8ZkmO7MM-Ldjr6i418KiKQMEP8Gnb0?usp=drive_link**

Objective(s):

To design and implement Inter VLAN using switch configuration

Introduction:

Normally, Routers are used to divide the broadcast domain and switches (at layer 2) Operate in a single broadcast domain but Switches can also divide the broadcast domain by using the concept of **VLAN (Virtual LAN)**.

VLAN is the logical grouping of devices in the same or different broadcast domains. By default, all the switch ports are in VLAN 1. As the single broadcast domain is divided into multiple broadcast domains, Routers or layer 3 switches are used for intercommunication between the different VLANs.The process of intercommunication of the different Vlans is known as Inter Vlan Routing (IVR).
Suppose we have made 2 logical groups of devices (VLAN) named sales and finance. If a device in the sales department wants to communicate with a device in the finance department, inter-VLAN routing has to be performed. These can be performed by either router or layer 3 switches.

Switch Virtual Interface (SVI): SVI is a logical interface on a multilayer switch that provides layer 3 processing for packets to all switch ports associated with that VLAN. A single SVI can be created for a VLAN. SVI on the layer 3 switch provides both management and routing services while SVI on layer 2 switch provides only management services like creating VLANs or telnet/SSH services.

Process of Inter Vlan Routing by Layer 3 Switch: The SVI created for the respective VLAN acts as a default gateway for that VLAN just like the sub-interface of the router (in the process of Router On a stick). If the packet is to be delivered to different VLANs i.e inter VLAN Routing is to be performed on the layer 3 switch then first the packet is delivered to the layer 3 switch and then to the destination just like in the process of the router on a stick.

1. **Device Requirements:**
   1.L3 Switch
2. PC0
   3.PC1
   4.PC2
   5.PC3
   6.Cable

7. Switch 0

8.Switch 1

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. **Network Diagram (Packet Tracer diagram before configuration):**

4. **Configuration details:**

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/2	192.168.10.1	255.255.255.0
PC1	Fa0/1	192.168.20.2	255.255.255.0
PC2	Fa0/1	192.168.10.2	255.255.255.0
PC3	Fa0/2	192.168.20.2	255.255.255.0
Switch 0	Fa0/1		
Switch 1	Fa0/2		
L3 switch			

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

   1.Create VLANs

   2.Configure interfaces

   3. Configure trunking

6. **Output Diagram (Minimum 3 screenshot):**

99220040570

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

RESULT: The configuration of Inter VLAN NETWORK using L3 switch has been implemented and it has been verified.

Register No:	**99220040570**
Name:	**K.Hanuman**
Class/Section:	**8501/S06**
Ex.No:	**5b**
Date of Submission	
Name of the Experiment	**Configuration of inter VLAN network using Router on Stick method**
Google Drive link of the packet tracer file(give view permission):	https://drive.google.com/drive/folders/13fvy66uGb8qc1O8OEyyEwNXlVBcHzIfl?usp=sharing

Objective(s):

To design and implement Inter VLAN using switch configuration

Introduction:

'Router on a Stick' allows routing between VLANs with only one interface. Each VLAN represents a different Subnet. In general, routers can take traffic from only one subnet and transfer it to another subnet. And we can assign only one IP Address to a router interface. 'Router on a stick' allow us to create sub-interfaces, and assign IP Addresses to those sub-interfaces. To make it work, we have to create a truck connection between the switch and a router so that traffic from multiple VLANs can be sent to the router.

If we create a route between VLANs without the 'Router on a Stick' method, then we have to waste interfaces on the switches and routers. And if we enable routing between multiple VLANs then it will become practically inefficient as the switches and the routers will use those multiple interfaces.

The image below is an alternative method for allowing routing between VLANs. As you can see, we are using two interfaces on both the router and a switch to allow routing between VLANs. We have not created sub-interface in the below figure.

You can see that we have to use extra interfaces for each VLAN. So, it becomes practically non-efficient if we have multiple VLANs. Hence, 'Router on a Stick' is a perfect solution for routing between VLANs with just one router interface.

The more simple way to do routing between VLANs is by using a Layer 3 Switch. We just have to create virtual interfaces for each VLAN and assign them IP Addresses from the same network. A Layer 3 Switch will then enable routing between VLANs as it has routing capabilities as well. However, Layer 3 Switch is quite expensive so it might not be an affordable option for small office networks.

In the below lab, we will configure 'Router on a Stick' that would allow routing between the VLANs. Some of the important concepts in this lab are – to create sub-interfaces, use encapsulation dot1Q command to encapsulate the traffic, and mentioning the VLAN number to ascertain that for which VLAN the sub-interface should respond.

1. **Device Requirements:**
   1. PC0
   2. PC1
   3. PC2
   4. PC3
   5. PC4
   6. PC5
   7. PC6
   8. PC7
   9. PC8
   10. PC9
   11. SWITCH-0(2960-24TT)
   12. SWITCH-1(2960-24TT)
   13. ROUTER(2911)
2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/1	192.168.10.1	255.255.255.0
PC1	Fa0/2	192.168.20.1	255.255.255.0
PC2	Fa0/3	192.168.30.1	255.255.255.0
PC3	Fa0/1	192.168.10.2	255.255.255.0
PC4	Fa0/2	192.168.20.2	255.255.255.0
PC5	Fa0/3	192.168.30.2	255.255.255.0
PC6	Fa0/1	192.168.10.3	255.255.255.0
PC7	Fa0/2	192.168.20.3	255.255.255.0
PC8	Fa0/3	192.168.30.3	255.255.255.0

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**
    1. **Create VLANs**
    2. **Configure interfaces**
    3. **Configure trunking**

SWITCH – 1

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#vlan 20
Switch(config-vlan)#vlan 30
Switch(config-vlan)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/4, Fa0/5, Fa0/6, Fa0/7
                                                Fa0/8, Fa0/9, Fa0/10, Fa0/11
                                                Fa0/12, Fa0/13, Fa0/14, Fa0/15
                                                Fa0/16, Fa0/17, Fa0/18, Fa0/19
                                                Fa0/20, Fa0/21, Fa0/22, Fa0/23
                                                Fa0/24, Gig0/1, Gig0/2
10   VLAN0010                         active    Fa0/1
20   VLAN0020                         active    Fa0/2
30   VLAN0030                         active    Fa0/3
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
```

```
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -       -    -       0      0
10   enet  100010     1500  -      -      -       -    -       0      0
20   enet  100020     1500  -      -      -       -    -       0      0
30   enet  100030     1500  -      -      -       -    -       0      0
1002 fddi  101002     1500  -      -      -       -    -       0      0
1003 tr    101003     1500  -      -      -       -    -       0      0
1004 fdnet 101004     1500  -      -      -       ieee -       0      0
1005 trnet 101005     1500  -      -      -       ibm  -       0      0

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------

Remote SPAN VLANs
------------------------------------------------------------------------------

Primary Secondary Type              Ports
------- --------- ----------------- ------------------------------------------
Switch#
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#interface fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#interface fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit
Switch(config)#
Switch>show interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/4       auto         n-802.1q       trunking      1
```

Port Vlans allowed on trunk
Fa0/4 1-1005

Port Vlans allowed and active in management domain
Fa0/4 1,10,20,30

Port Vlans in spanning tree forwarding state and not pruned
Fa0/4 1,10,20,30

Switch>%SPANTREE-2-RECV_PVID_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/4 VLAN1.

%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking FastEthernet0/4 on VLAN0001. Inconsistent port type.

CENTER SWITCH-0
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#vlan 20
Switch(config-vlan)#vlan 30
Switch(config-vlan)#exit
Switch(config)#interface range fa0/1-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport mode trunk
Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

```
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking    1
Fa0/2     on        802.1q         trunking    1
Fa0/3     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/2     1-1005
Fa0/3     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,10,20,30
Fa0/2     1,10,20,30
Fa0/3     1,10,20,30

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,10,20,30
Fa0/2     1,10,20,30
Fa0/3     1,10,20,30

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface fa0/4
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
```

```
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking    1
Fa0/2     on        802.1q         trunking    1
Fa0/3     on        802.1q         trunking    1
Fa0/4     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005
Fa0/2     1-1005
Fa0/3     1-1005
Fa0/4     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1,10,20,30
Fa0/2     1,10,20,30
Fa0/3     1,10,20,30
Fa0/4     1,10,20,30

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1,10,20,30
Fa0/2     1,10,20,30
Fa0/3     1,10,20,30
Fa0/4     1,10,20,30

ROUTER-0
Router>enable
Router#show ip route
Codes: L - local, C - connected, S - static, 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
Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  administratively down down
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0.10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.10.100 255.255.255.0
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.20
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.20.100 255.255.255.0
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.30
Router(config-subif)#encapsulation dot1Q 30
Router(config-subif)#ip address 192.168.30.100 255.255.255.0
Router(config-subif)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  administratively down down
GigabitEthernet0/0.10  192.168.10.100  YES manual administratively down down
GigabitEthernet0/0.20  192.168.20.100  YES manual administratively down down
GigabitEthernet0/0.30  192.168.30.100  YES manual administratively down down
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
Router#
Router#configure terminal
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#no  shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up

Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
GigabitEthernet0/0.10  192.168.10.100  YES manual up                    up
GigabitEthernet0/0.20  192.168.20.100  YES manual up                    up
GigabitEthernet0/0.30  192.168.30.100  YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
Router#
```

6. Output Diagram (Minimum 3 screenshot):

Cisco Packet Tracer
Logical
Physical
VLAN 10
192.168.10.1
VLAN 20
192.168.20.1
VLAN 30
192.168.30.1
VLAN 30
192.168.30.3
VLAN 20
Switch1
Switch2
PC8
PC7
PC6
IP Configuration
Interface FastEthernet0
DHCP
Static
IPv4 Address 192.168.30.3
Subnet Mask 255.255.255.0
Default Gateway 192.168.30.100
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::260:70FF:FEAD:BB52
IPv4 Address 192.168.20.3
Default Gateway 192.168.20.100
Link Local Address FE80::201:63FF:FEA3:E6D7
IPv4 Address 192.168.10.3
Default Gateway 192.168.10.100
Link Local Address FE80::2D0:BAFF:FEB5:7591
Realtime
Simulation
Search
ENG
IN
10:57 AM
28-01-2025

Cisco Packet Tracer
Logical
Physical
VLAN 10
192.168.10.1
VLAN 20
192.168.20.1
VLAN 30
192.168.30.1
VLAN 30
192.168.30.3
VLAN 10
192.168.10.2
Switch1
Switch2
PC0
PC1
PC2
IP Configuration
Interface FastEthernet0
DHCP
Static
IPv4 Address 192.168.10.1
Subnet Mask 255.255.255.0
Default Gateway 192.168.10.100
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::20C:CFFF:FE94:E1D9
IPv4 Address 192.168.20.1
Default Gateway 192.168.20.100
Link Local Address FE80::205:5EFF:FE25:826C
IPv4 Address 192.168.30.1
Default Gateway 192.168.30.100
Link Local Address FE80::202:4AFF:FED5:825D
Search
ENG
IN
10:53 AM
28-01-2025

Cisco Packet Tracer - C:\Users\DELL\Cisco Packet Tracer 8.2.2\saves\inter vlan exp-5b.pkt
Switch1
Physical Config CLI Attributes
IOS Command Line Interface
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#vlan 20
Switch(config-vlan)#vlan 30
Switch(config-vlan)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#show vlan
VLAN Name Status Ports
1 default active Fa0/4, Fa0/5, Fa0/6, Fa0/7
Fa0/8, Fa0/9, Fa0/10, Fa0/11
Fa0/12, Fa0/13, Fa0/14, Fa0/15
Fa0/16, Fa0/17, Fa0/18, Fa0/19
Fa0/20, Fa0/21, Fa0/22, Fa0/23
Fa0/24, Gig0/1, Gig0/2
10 VLAN0010 active Fa0/1
20 VLAN0020 active Fa0/2
30 VLAN0030 active Fa0/3
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
1 enet 100001 1500 - - - - - 0 0
10 enet 100010 1500 - - - - - 0 0
20 enet 100020 1500 - - - - - 0 0
30 enet 100030 1500 - - - - - 0 0
1002 fddi 101002 1500 - - - - - 0 0
1003 tr 101003 1500 - - - - - 0 0
1004 fdnet 101004 1500 - - - ieee - 0 0
1005 trnet 101005 1500 - - - ibm - 0 0
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
Copy
Paste
Top
PC-PT PC1
VLAN 20
192.168.20.1
PC-PT PC2
VLAN 30
192.168.30.1
PC-PT PC3
VLAN 10
192.168.10.2
Fa0/1
Fa0/3 a0/2 0-24TT
Switch1
Fa0/4
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)

Cisco Packet Tracer - C:\Users\DELL\Cisco Packet Tracer 8.2.2\saves\inter vlan exp-5b.pkt
Switch3
Physical Config CLI Attributes
IOS Command Line Interface
Model number : WS-C2960-24TT-L
System serial number : FOC1010X104
Top Assembly Part Number : 800-27221-02
Top Assembly Revision Number : A0
Version ID : V02
CLEI Code Number : COM3L00BRA
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
* 1 26 WS-C2960-24TT-L 15.0(2)SE4 C2960-LANBASEK9-M
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
Copy
Paste
Top
PC-PT PC1
VLAN 20
192.168.20.1
PC-PT PC2
VLAN 30
192.168.30.1
PC-PT PC3
VLAN 10
192.168.10.2
Fa0/1
Fa0/3 a0/2 0-24TT
Switch1
Fa0/4
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/13fvy66uGb8qc1O8OEyyEwNXlVBcHz Ifl?usp=sharing

CONCLUSION (provide conclusion about this experiment):

a router is used in inter-VLAN routing to enable communication between different VLANs by acting as a Layer 3 device that directs traffic based on IP addresses, allowing devices in separate broadcast domains to exchange data while maintaining network segmentation and security benefits provided by VLANs

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

RESULT:

Thus, the implementation of configuration of inter VLAN using Router on stick method has been successfully implemented by using the cisco packet.

Register No:	**99220040570**
Name	**KAPILAVAI HANUMAAN**
Class/Section	**8501A/S06**
Ex.No:	**6a**
Date of Submission	**06.02.2025**
Name of the Experiment	**Spanning Tree Protocol Configuration**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1xeF6Ry-JXDk6vymw93v_nc14-oGuO2qA?usp=sharing

1. **Device Requirements:**
   1. Server 0
   2. PC0
   3. PC1
   4. Switch 0
   5. Switch 1
   6. Switch 2

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet Tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/1	192.168.10.1	255.255.255.0
PC1	Fa0/2	192.168.10.2	255.255.255.0
Switch 0	Fa0/3		
Switch 1	Fa0/3		
Switch 2	Fa0/3		
Server 0	Fa0	192.168.10.3	255.255.255.0

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)

Switch0:

Switch>en

Switch#show spanning-tree

VLAN0001

```
Spanning tree enabled protocol ieee
Root ID    Priority      32769
           Address       000B.BECE.B890
           Cost          19
           Port          3(FastEthernet0/3)
           Hello Time    2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority       32769   (priority 32768 sys-id-ext 1)
          Address        00E0.8FB4.95A5
          Hello Time     2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time     20
Interface      Role   Sts    Cost       Prio.Nbr    Type
---------------- ------   ------  ---------   ------------- --------------------
Fa0/1          Desg   FWD  19         128.1       P2p
Fa0/2          Altn   BLK  19         128.2       P2p
Fa0/3          Root   FWD  19         128.3       P2p
Switch#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fa0/2
Switch(config-if)#shut
Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
Switch(config-if)#exit
Switch(config)#exit
```

Switch 1:

```
Switch>en
Switch#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee Root
ID   Priority       32769
```

```
        Address        000B.BECE.B890
        This bridge is the root
        Hello Time      2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority      32769 (priority 32768 sys-id-ext 1)
          Address       000B.BECE.B890
          Hello Time    2 sec Max Age 20 sec Forward Delay 15 sec
          Aging Time    20
Interface       Role    Sts     Cost       Prio.Nbr    Type
---------------- ------   ------  ---------   ------------- --------------------
Fa0/1           Desg   FWD    19        128.1        P2p
Fa0/2           Desg    FWD   19        128.2        P2p Fa0/3
Desg   FWD    19        128.3        P2p
```

Switch 2:

```
Switch>en
Switch#show spanning-tree VLAN0001
Spanning tree enabled protocol ieee
Root ID         Priority      32769
                Address       000B.BECE.B890
                Cost          19
                Port          2(FastEthernet0/2)
                Hello Time    2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID       Priority      32769 (priority 32768 sys-id-ext 1)
                Address       0030.A3A4.A059
                Hello Time    2 sec Max Age 20 sec Forward Delay 15 sec
                Aging Time    20
Interface       Role    Sts     Cost       Prio.Nbr    Type
---------------- ------   ------  ---------   ------------- --------------------
Fa0/1           Desg   FWD    19        128.1        P2p
Fa0/2           Desg    FWD   19        128.3        P2p
```

Fa0/3 Root FWD 19 128.2 P2p

Switch#config ter

Switch(config)#spanning-tree vlan 1 ?

priority Set the bridge priority for the spanning tree root

Configure switch as root

<cr>

Switch(config)#spanning-tree vlan 1?

WORD

Switch(config)#spanning-tree vlan 1 ?

priority Set the bridge priority for the spanning tree root

Configure switch as root

<cr>

Switch(config)#spanning-tree vlan 1 root ? primary Configure this

switch as primary root for this spanning tree secondary Configure

switch as secondary root

Switch(config)#spanning-tree vlan 1 root primary

Switch(config)#

%LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

Switch(config)#exit

Switch#

%SYS-5-CONFIG_I: Configured from console by console

exit

6.Output Diagram (Minimum 3 screenshot):

99220040570

Google Drive link of the packet tracer file (give view permission): Link:

https://drive.google.com/drive/folders/1xeF6Ry-JXDk6vymw93v_nc14-oGuO2qA?usp=sharing

CONCLUSION (provide conclusion about this experiment):

Configuring the Spanning Tree Protocol (STP) is essential to prevent network loops while maintaining redundancy. By selecting an optimal Root Bridge, network efficiency and stability are ensured. Proper STP configuration enhances network performance, minimizes downtime, and supports seamless data transmission.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus, the Design a Configuration of Spanning Tree Protocol has been done successfully

Register No:	**99220040581**
Name	**KOPPOLU VENKATA KALYAN RAM**
Class/Section	**8501A/S06**
Ex.No:	**6a**
Date of Submission	**30.1.2025**
Name of the Experiment	**Configuration of Inter VLAN network using L3 switch**
Google Drive link of the packet tracer file (give view permission):	**https://drive.google.com/drive/folders/1lCejKm7aX5Dw5bNkLt7KwHkljdOOS0Z6?usp=sharing**

Objective(s):

To design and implement Inter VLAN using switch configuration

Introduction:

Normally, Routers are used to divide the broadcast domain and switches (at layer 2) Operate in a single broadcast domain but Switches can also divide the broadcast domain by using the concept of **VLAN (Virtual LAN)**.

VLAN is the logical grouping of devices in the same or different broadcast domains. By default, all the switch ports are in VLAN 1. As the single broadcast domain is divided into multiple broadcast domains, Routers or layer 3 switches are used for intercommunication between the different VLANs.The process of intercommunication of the different Vlans is known as Inter Vlan Routing (IVR).
Suppose we have made 2 logical groups of devices (VLAN) named sales and finance. If a device in the sales department wants to communicate with a device in the finance department, inter-VLAN routing has to be performed. These can be performed by either router or layer 3 switches.

Switch Virtual Interface (SVI): SVI is a logical interface on a multilayer switch that provides layer 3 processing for packets to all switch ports associated with that VLAN. A single SVI can be created for a VLAN. SVI on the layer 3 switch provides both management and routing services while SVI on layer 2 switch provides only management services like creating VLANs or telnet/SSH services.

Process of Inter Vlan Routing by Layer 3 Switch: The SVI created for the respective VLAN acts as a default gateway for that VLAN just like the sub-interface of the router (in the process of Router On a stick). If the packet is to be delivered to different VLANs i.e inter VLAN Routing is to be performed on the layer 3 switch then first the packet is delivered to the layer 3 switch and then to the destination just like in the process of the router on a stick.

1. **Device Requirements:**
   1.L3 Switch
   2. PC0
   3.PC1
   4.PC2
   5.PC3
   6.Cable

7. Switch 0

8.Switch 1

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. **Network Diagram (Packet Tracer diagram before configuration):**

4. **Configuration details:**

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/2	192.168.10.1	255.255.255.0
PC1	Fa0/1	192.168.20.2	255.255.255.0
PC2	Fa0/1	192.168.10.2	255.255.255.0
PC3	Fa0/2	192.168.20.2	255.255.255.0
Switch 0	Fa0/1		
Switch 1	Fa0/2		
L3 switch			

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

   1.Create VLANs

   2.Configure interfaces

   3.Configure trunking

99220040581

6. Output Diagram (Minimum 3 screenshot):

99220040581

CONCLUSION (provide conclusion about this experiment):

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Register No:	**99220040570**
Name	**KAPILAVAI HANUMAAN**
Class/Section	**8501A/S06**
Ex.No:	**6b**
Date of Submission	**30.1.2025**
Name of the Experiment	**Configuration of Address Resolution protocol**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1xeF6Ry-JXDk6vymw93v_nc14-oGuO2qA?usp=sharing

1. **Device Requirements:**
   1. Switch 0
   2. PC0
   3. PC1
   4. PC2
   5. PC3
   6. Pc4
   7. Wires

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet Tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask
PC0	Fa0/1	192.168.10.1	255.255.255.0
PC1	Fa0/2	192.168.10.2	255.255.255.0
PC2	Fa0/3	192.168.10.3	255.255.255.0
PC3	Fa0/4	192.168.10.4	255.255.255.0
Pc4	Fa0/5	192.168.10.4	255.255.255.0
Switch 0	Fa0/1		

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)

Switch 0:

```
Switch>en

Switch#show mac-address-table

          Mac Address Table

-------------------------------------------
```

Vlan	Mac Address	Type	Ports
1	0000.0c37.0a29	DYNAMIC	Fa0/2
1	0001.63d1.6cc7	DYNAMIC	Fa0/5
1	0001.c701.c761	DYNAMIC	Fa0/1
1	0090.21b7.19ca	DYNAMIC	Fa0/4
1	00e0.a3e8.0a59	DYNAMIC	Fa0/3

Switch#show mac-address-table

Mac Address Table

Vlan	Mac Address	Type	Ports
1	0000.0c37.0a29	DYNAMIC	Fa0/2 1
1	0001.63d1.6cc7	DYNAMIC	Fa0/5
1	0001.c701.c761	DYNAMIC	Fa0/1
1	0090.21b7.19ca	DYNAMIC	Fa0/4

6. Output Diagram (Minimum 3 screenshot):

99220040570

Google Drive link of the packet tracer file (give view permission): Link:

https://drive.google.com/drive/folders/1xeF6Ry-JXDk6vymw93v_nc14-oGuO2qA?usp=sharing

CONCLUSION (provide conclusion about this experiment):

Configuring the Address Resolution Protocol (ARP) is crucial for efficient network communication by mapping IP addresses to MAC addresses. This ensures seamless packet delivery within a local network. Proper ARP configuration enhances network performance, reduces latency, and prevents connectivity issues.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus, the Design a Configuration of Adress Resolution Protocol has been done successfully

Register No:	**99220040570**
Name	**KAPILAVAI HANUMAAN**
Class/Section	**8501A/S06**
Ex.No:	**7a**
Date of Submission	**20.02.2025**
Name of the Experiment	**Link State Routing**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

1. **Device Requirements:**

1. Router 0
2. Router 1
3. Router 2
4. Switch 0
5. Switch 1
6. Pc 0
7. Pc 1
8. Wires

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. **Network Diagram (Packet Tracer diagram before configuration):**

4. **Configuration details:**

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
PC0	Fa0	10.10.10.2	255.0.0.0	10.10.10.1
PC1	Fa0	20.20.20.2	255.0.0.0	20.20.20.1
Switch 0	Fa0/2			
Switch 1	Fa0/1			
Router 0	Fa0/0, Se2/0, Se3/0	10.10.10.1 30.30.30.1 40.40.40.1	255.0.0.0 255.0.0.0 255.0.0.0	
Router 1	Fa0/0, Se2/0, Se3/0	20.20.20.1 30.30.30.3 50.50.50.2	255.0.0.0 255.0.0.0 255.0.0.0	
Router 2	Se2/0, Se3/0	40.40.40.2 50.50.50.1	255.0.0.0 255.0.0.0	

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

<u>Router 0:</u>

Router>enable

Router#

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up ip
address 10.10.10.1 255.0.0.0
Router(config-if)#ip address 10.10.10.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#ip address 30.30.30.1 255.0.0.0
Router(config-if)#ip address 30.30.30.1 255.0.0.0
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to u
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#clock rate 64000
Router(config-if)#ip address 40.40.40.1 255.0.0.0
Router(config-if)#ip address 40.40.40.1 255.0.0.0
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up Router(config-if)#exit
Router(config)#router ospf 1
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
```

```
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0

Router(config-router)#exit

Router(config)#exit

Router#

%SYS-5-CONFIG_I: Configured from console by console

00:11:50: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.1 on Serial3/0 from LOADING to FULL, Loading Done
```

Router 1:

```
Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up


%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up ip

address 20.20.20.1 255.0.0.0

Router(config-if)#ip address 20.20.20.1 255.0.0.0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up no

clock rate

Router(config-if)#ip address 30.30.30.3 255.0.0.0

Router(config-if)#ip address 30.30.30.3 255.0.0.0

Router(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down

Router(config-if)#exit

Router(config)#interface Serial3/0
```

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

Router(config-if)#

%LINK-5-CHANGED: Interface Serial3/0, changed state to up clock

rate 64000

Router(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up ip

address 50.50.50.2 255.0.0.0

Router(config-if)#ip address 50.50.50.2 255.0.0.0

Router(config-if)#exit

Router(config)#router ospf 1

Router(config-router)#network 30.0.0.0 0.255.255.255 area 0

Router(config-router)#

Router(config-router)#network 20.0.0.0 0.255.255.255 area 0

Router(config-router)#network 50.0.0.0 0.255.255.255 area 0

Router(config-router)#ex

00:14:44: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.1 on Serial3/0 from LOADING to FULL, Loading Done

Router(config)#exit

Router#

%SYS-5-CONFIG_I: Configured from console by console
```

Router

2:

```
Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Serial3/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up ip

address 40.40.40.2 255.0.0.0

Router(config-if)#ip address 40.40.40.2 255.0.0.0

Router(config-if)#

Router(config-if)#exit
```

```
Router(config)#interface Serial2/0

Router(config-if)#no shutdown

Router(config-if)#ip address 50.50.50.1 255.0.0.0

Router(config-if)#ip address 50.50.50.1 255.0.0.0

Router(config-if)#

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit

Router(config)#router ospf 1

Router(config-router)#network 40.0.0.0 0.255.255.255 area 0

Router(config-router)#network 40.0.0.0 0.255.255.255 area 0

Router(config-router)#

00:11:43: %OSPF-5-ADJCHG: Process 1, Nbr 40.40.40.1 on Serial3/0 from LOADING to FULL, Loading Done

Router(config-router)#network 50.0.0.0 0.255.255.255 area 0

Router(config-router)#exit

Router(config)#exit

Router#

%SYS-5-CONFIG_I: Configured from console by console

00:14:39: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.2 on Serial2/0 from LOADING to FULL, Loading Done
```

6. Output Diagram (Minimum 3 screenshot):

99220040570

99220040570

99220040570

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

CONCLUSION (provide conclusion about this experiment):

Configuring Link State Routing Protocol is essential for efficient and accurate path selection in an internetwork. By maintaining updated routing tables, network stability and performance are ensured. Proper implementation minimizes bandwidth usage, reduces convergence time, and enhances routing efficiency. Link State Advertisements (LSAs) ensure timely updates, improving overall network reliability.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuration of Link State Routing Protocol has been done successfully

Register No:	**99220040570**
Name	**KAPILAVAI HANUMAAN**
Class/Section	**8501A/S06**
Ex.No:	**7b**
Date of Submission	**20.02.2025**
Name of the Experiment	**Distance Vector Routing**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

1. **Device Requirements:**
   1. Router 0
   2. Router 1
   3. Router 2
   4. Switch 0 5. Switch 1
   6. Switch 2
   7. Pc 0 8. Pc 1
   9. Pc 2
   10. Wires

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet Tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
PC0	Fa0	192.168.10.2	255.255.255.0	
PC1	Fa0	192.168.20.2	255.255.255.0	
PC2	Fa0	192.168.30.2	255.255.255.0	
Switch 0	Fa0/1			
Switch 1	Fa0/1			
Switch 2	Fa0/1			
Router 0	Fa0/0, Se2/0,	192.168.10.1 10.0.0.2	255.255.255.0 255.0.0.0	
Router 1	Fa0/0, Se2/0, Se3/0	192.168.20.1 10.0.0.3 20.0.0.2	255.255.255.0 255.0.0.0 255.0.0.0	
Router 2	Fa0/0, Se2/0	192.168.30.1 20.0.0.3	255.255.255.0 255.0.0.0	

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

Router 0:

```
Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up ip

address 192.168.10.1 255.255.255.0

Router(config-if)#ip address 192.168.10.1 255.255.255.0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#no shutdown

Router(config-if)#clock rate 64000

Router(config-if)#ip address 10.0.0.2 255.0.0.0

Router(config-if)#clock rate 64000

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#ip address 10.0.0.2 255.0.0.0 Router(config-if)#ip

address 10.0.0.2 255.0.0.0
```

Router(config-if)#

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#router rip

Router(config-router)#network 192.168.10.0

Router(config-router)#network 10.0.0.0

Router(config-router)#end

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Serial2/0

Router(config-if)#

%SYS-5-CONFIG_I: Configured from console by console **Router**

1:

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up ip

address 192.168.10.1 255.255.255.0

Router(config-if)#ip address 192.168.10.1 255.255.255.0

Router(config-if)#exit

Router(config)#interface Serial2/0 Router(config-if)#no

shutdown

Router(config-if)#clock rate 64000

Router(config-if)#ip address 10.0.0.2 255.0.0.0

Router(config-if)#clock rate 64000

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#ip address 10.0.0.3 255.0.0.0

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#ip address 10.0.0.2 255.0.0.0

Router(config-if)#

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#router rip

Router(config-router)#network 192.168.10.0

Router(config-router)#network 10.0.0.0

Router(config-router)#end

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Serial2/0

Router(config-if)#

%SYS-5-CONFIG_I: Configured from console by console **Router**

2:

Router>enable

```
Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up ip
address 192.168.10.1 255.255.255.0

Router(config-if)#ip address 192.168.10.1 255.255.255.0

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#no shutdown

Router(config-if)#clock rate 64000

Router(config-if)#ip address 10.0.0.2 255.0.0.0

Router(config-if)#clock rate 64000

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#ip address 10.0.0.3 255.0.0.0

Router(config-if)#no shutdown

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#ip address 10.0.0.2 255.0.0.0

Router(config-if)#

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit

Router(config)#interface Serial2/0
```

Router(config-if)#exit

Router(config)#router rip

Router(config-router)#network 192.168.10.0

Router(config-router)#network 10.0.0.0

Router(config-router)#end

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Serial2/0

Router(config-if)#

%SYS-5-CONFIG_I: Configured from console by console

6.Output Diagram (Minimum 3 screenshot):

Cisco Packet Tracer
Router0
Router1
Router2
FastEthernet0/0
192.168.10.1
192.168.20.2
192.168.30.2
255.255.255.0
Equivalent IOS Commands
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#ip address 192.168.20.2 255.255.255.0
Router(config-if)#ip address 192.168.30.2 255.255.255.0

Cisco Packet Tracer
Router0
Router1
Router2
Serial2/0
64000
1200
10.0.0.2
10.0.0.3
20.0.0.3
255.0.0.0
Equivalent IOS Commands
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial2/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
Router(config-if)#exit

99220040570

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

CONCLUSION (provide conclusion about this experiment):

Configuring Distance Vector Routing Protocol is essential for efficient data packet transmission in an internetwork. By maintaining updated routing tables, network stability and performance are ensured. Proper implementation minimizes manual updates, supports automatic convergence, and enhances routing efficiency. The periodic exchange of routing tables ensures accurate path selection, improving overall network reliability

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuration of Distance Vector Routing Protocol has been done successfully.

Register No:	**99220040570**
Name	**K.HANUMAN**
Class/Section	**8501A/S06**
Ex.No:	**8**
Date of Submission	**27.02.2025**
Name of the Experiment	**Subnetting**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1FoHZ0xcfb4sr_soLnAXpWWRnYTUccObR

1. **Device Requirements:**
   1. Router 0
   2. Switch 0
   3. Switch 1
   4. Pc 0 5. Pc 1 6. Pc 2
   7. Pc 3
   8. Pc 4
   9. Pc 5
   10. Wires

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (Packet Tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
PC0	Fa0	192.168.10.1	255.255.255.128	192.168.10.4
PC1	Fa0	192.168.10.2	255.255.255.128	192.168.10.4
PC2	Fa0	192.168.10.3	255.255.255.128	192.168.10.4
PC3	Fa0	192.168.10.129	255.255.255.128	192.168.10.132
PC4	Fa0	192.168.10.130	255.255.255.128	192.168.10.132
PC5	Fa0	192.168.10.131	255.255.255.128	192.168.10.132
Router 0	Gig0/0, Gig0/1	192.168.10.4, 192.168.10.132	255.255.255.128, 255.255.255.128	
Switch 1	Fa0/4			
Switch 2	Fa0/4			

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

Router 0:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up ip
address 192.168.10.4 255.255.255.0
Router(config-if)#ip address 192.168.10.4 255.255.255.0
Router(config-if)#ip address 192.168.10.4 255.255.255.128
Router(config-if)#ip address 192.168.10.4 255.255.255.128
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up ip
address 192.168.10.132 255.255.255.128
Router(config-if)#ip address 192.168.10.132 255.255.255.128
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#exit
```

6.Output Diagram (Minimum 3 screenshot):

Cisco Packet Tracer
Logical
Physical
PC3
PC4
PC5
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
DHCP
Static
IPv4 Address 192.168.10.129
Subnet Mask 255.255.255.128
Default Gateway 192.168.10.132
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::20D:BDFF:FE9C:
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
IP Configuration
Interface FastEthernet0
DHCP
Static
IPv4 Address 192.168.10.130
Subnet Mask 255.255.255.128
Default Gateway 192.168.10.132
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::20D:BDFF:FE4
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
IP Configuration
Interface FastEthernet0
DHCP
Static
IPv4 Address 192.168.10.131
Subnet Mask 255.255.255.128
Default Gateway 192.168.10.132
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::230:A3FF:FE71:90A7
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
Top
Gig0/0
2911 Router0
192.168.10.0
/25 (X.X.X.10000000)
Subnet #1
Fa0/4
Fa0/1
Fa0/2
Fa0/3
Fa0
PC-PT PC0
PC-PT PC1
PC-PT PC2
Time: 00:23:47
Simulation

Cisco Packet Tracer
Logical
Physical
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.131
Pinging 192.168.10.131 with 32 bytes of data:
Request timed out.
Reply from 192.168.10.131: bytes=32 time<1ms TTL=127
Reply from 192.168.10.131: bytes=32 time<1ms TTL=127
Reply from 192.168.10.131: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.10.131:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.10.130
Pinging 192.168.10.130 with 32 bytes of data:
Request timed out.
Reply from 192.168.10.130: bytes=32 time<1ms TTL=127
Reply from 192.168.10.130: bytes=32 time<1ms TTL=127
Reply from 192.168.10.130: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.10.130:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.10.129
Pinging 192.168.10.129 with 32 bytes of data:
Request timed out.
Reply from 192.168.10.129: bytes=32 time<1ms TTL=127
Reply from 192.168.10.129: bytes=32 time<1ms TTL=127
Reply from 192.168.10.129: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.10.129:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
Top
Gig0/0
2911 Router0
Gig0/1
192.168.10.0
/25 (X.X.X.10000000)
Subnet #1
Fa0/4
Fa0/1
Fa0/2
Fa0/3
Fa0
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
PC-PT PC4
Time: 00:28:44
Realtime
Simulation
Copper Straight-Through

Google Drive link of the packet tracer file (give view permission):

Link:https://drive.google.com/drive/folders/1FoHZ0xcfb4sr_soLnAXpWWRnYTUccObR

CONCLUSION (provide conclusion about this experiment):

Configuring subnetting is essential for efficient IP address management and network segmentation. By dividing a network into smaller subnets, subnetting improves performance, enhances security, and optimizes resource utilization. Proper implementation reduces network congestion, minimizes broadcast traffic, and ensures better network organization. Subnetting also simplifies troubleshooting and enhances overall network efficiency.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuring subnetting Protocol has been done successfully.

Register No:	**99220040570**
Name	**K HANUMAN**
Class/Section	**8501A/S06**
Ex.No:	**9**
Date of Submission	**27.02.2025**
Name of the Experiment	**DHCP Configuration**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1QFZMTfqK2SrborDk6Jk0xn36xwRhArK?usp=sharing

1. **Device Requirements:**
   1. Router 0
   2. Switch 0
   3. Switch 1
   4. PC0,PC1,PC2,PC,PC4,PC5,PC6,PC7
   5. Wires

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3.Network Diagram (Packet Tracer diagram before configuration):

3. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
PC0	Fa0	192.168.10.2	255.255.255.0	192.168.10.1
PC1	Fa0	192.168.10.7	255.255.255.0	192.168.10.1
PC2	Fa0	192.168.10.8	255.255.255.0	192.168.10.1
PC3	Fa0	192.168.10.9	255.255.255.0	192.168.10.1
PC4	Fa0	192.168.20.2	255.255.255.0	192.168.20.1
PC5	Fa0	192.168.20.3	255.255.255.0	192.168.20.1
PC6	Fa0	192.168.20.4	255.255.255.0	192.168.20.1
PC7	Fa0	192.168.20.5	255.255.255.0	192.168.20.1
Router 0	Gig0/0, Gig0/1			
Switch 1	Fa0/5			
Switch 2	Fa0/5			

4. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

Router 0:

```
Router>en
Router#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface gigabitEthernet 0/1
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#ip dhcp pool 10
Router(dhcp-config)#network 192.168.10.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.10.3 192.168.10.6
Router(config)#dhcp p
^
% Invalid input detected at '^' marker.
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip dhcp pool 20
Router(dhcp-config)#network 192.168.20.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.20.1
Router(dhcp-config)#exit
```

6.Output Diagram (Minimum 3 screenshot):

99220040570

Google Drive link of the packet tracer file (give view permission):

Link:
https://drive.google.com/drive/folders/1QFZMTfqK2SrborDk6Jk0xn36xwRhArK?usp=sharing

CONCLUSION (provide conclusion about this experiment):

Configuring DHCP is essential for automating IP address allocation and simplifying network management. By setting up a DHCP server, devices receive IP addresses dynamically, reducing manual configuration and minimizing errors. Proper implementation enhances network efficiency, ensures seamless connectivity, and optimizes resource utilization. DHCP configuration also improves scalability and simplifies administration in large networks.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuring DHCP Protocol has been done successfully.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**10**
Name of the Experiment	**Capture and Analyse TCP and IP packets**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1qvnsMZNaThgj8Ps7meXTnRsGRaXqe0hl?usp=drive_link

1. Visit any one website by opening a browser and fill your machine details.

Parameter	**Value**
Your Machine IP Address.	172.16.103.254
Your Machine MAC Address	14-D4-24-17-5E-9B
Default Gateway address	10.2.0.1
Website URL	https://www.slideshare.net/
Website IP Address	20.72.205.209

2. Fill the following IP packet details:

Field Name	**Field Length (no of bits)**	**Field value**
Destination MAC address	48 bits	14:d4:24:17:5e:9b
Source MAC address	48 bits	c8:4f:86:fc:00:10
Destination IP address	32 bits	10.2.16.28
Source IP Address	32 bits	20.72.205.209
Destination TCP port	16 bits	60619
Source TCP port	16 bits	443

3. Fill the details as per the IP frame format .(highlight the details for each of the output and paste screenshot)

Field Name	Field Value (# of bits)	Field Value (Either Binary or Hex Value)
Version	4 bits	4 (IPv4)
Header Length	4 bits	20 bytes (5 in 32 – bit words)
Type of service	8 bits	0x00
Datagram Length	16 bits	40 (0x0028 in hex)
16 bit Identifier	16 bits	0x604F (24655 in decimal)
Flags	3 bits	0x2 (Don't Fragment Set)
13-bit Fragment offset	13 bits	0 (No fragmentation)
Time-to-live	8 bits	112
Upper layer protocol	8 bits	TCP (6)
Header Checksum	16 bits	0xAE48
32 bit Source Address	32 bits	20.72.205.209
32 bit destination address	32 bits	10.2.16.28
Options (if any)	Variable	None
Date	Variable	None

Paste the screenshot and highlight the above details:

TCP Header Format:

TCP Header.

Field Name	Field Value (# of bits)	Field Value (Either Binary or Hex Value)
Source Port	16 bits	443 (0x01BB in hex)
Destination Port	16 bits	60619 (0xECDB in hex)
Sequence No.	32 bits	1 (0x00000001 in hex)
Acknowledgement No	32 bits	1 (0x00000001 in hex)
Header Length	4 bits	20 bytes (5 in 32-bit words)
FLAGS (URG,PSH,ACK,RST,SYN,FIN)	6 bits	0x011 (FIN, ACK)
Receive Window Size	16 bits	49150 (0xC01E in hex)
Checksum	16 bits	0x5B7B
Urgent Pointer	16 bits	0x0000
Options	Variable	None
Data	Variable	None

Paste the screenshot and highlight the above details:

Rubrics for Wireshark labs:

Rubrics	Excellent	Fair	Poor	Marks
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
			Total	

Result: Thus the Capture and analyse TCP and IP Packets has been implemented and successfully verified.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**11**
Name of the Experiment	**Capture and Analyzing TCP 3 way handshake**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1bPielwY257DVwUtO2qz_DVoPJ4_fK_R_?usp=drive_link

1. Visit any one website by opening a browser fill your machine details.

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14:d4:24:17:5e:9b
Default Gateway address	10.2.0.1
Website URL	www.amazon.in
Website IP Address	23.58.31.18

2. Fill the following details:

Field Name	Field Length (no of bits)	Field value
Destination MAC address	48 bits	c8:4f:86:fc:00:10
Source MAC address	48 bits	14:d4:24:17:5e:9b
Destination IP address	32 bits	23.58.31.18
Source IP Address	32 bits	10.2.16.28
Destination TCP port	16 bits	80
Source TCP port	16 bits	62129

3. Fill the details as per the IP frame format .(highlight the details for each of the output and paste screenshot)

4	20 bytes	DSCP:CS0	52	
0x0381 (897)			0x2	0
128		TCP (6)	0xa6d9	
10.2.16.28				
23.58.31.18				
None				
None				

4. Using the Wireshark capture of the first TCP session startup (SYN bit set to 1), fill in information about the TCP header. (paste screenshot for each of the output). Capture the packet and analyze it.

5. Fill in the following information regarding the SYN message.(highlight the details for each of the output and paste screenshot)

Source IP address	10.2.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	0
Acknowledgement number	0
Flags	0x002 (SYN)
Header length	32 bytes (8)
Window size	65535
Checksum	0xff4b

6. Fill in the following information regarding the SYN-ACK message .(highlight the details for each of the output and paste screenshot)

Source IP address	23.58.31.18
Destination IP address	10.2.16.28
Source port number	80
Destination port number	62129
Sequence number	0
Acknowledgement number	1
Header length	32 bytes (8)
Window size	64240
Flags	0x012 (SYN, ACK)
Checksum	0xe504

7. Fill in the following information regarding the ACK message. .(highlight the details for each of the output and paste screenshot)

Source IP address	10.20.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	1
Acknowledgement number	1
Header length	20 bytes (5)
Window size	255
Flags	0x010 (ACK)
Checksum	0x1fc9

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	Excellent	Fair	Poor	Marks
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
			Total	

Result:Thus the Capture and Analyzing TCP 3 way handshake has been implemented and successfully verified.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**11**
Name of the Experiment	**Capture and Analyzing TCP 3 way handshake**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1bPielwY257DVwUtO2qz_DVoPJ4_fK_R_?usp=drive_link

1. Visit any one website by opening a browser fill your machine details.

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14:d4:24:17:5e:9b
Default Gateway address	10.2.0.1
Website URL	www.amazon.in
Website IP Address	23.58.31.18

2. Fill the following details:

Field Name	Field Length (no of bits)	Field value
Destination MAC address	48 bits	c8:4f:86:fc:00:10
Source MAC address	48 bits	14:d4:24:17:5e:9b
Destination IP address	32 bits	23.58.31.18
Source IP Address	32 bits	10.2.16.28
Destination TCP port	16 bits	80
Source TCP port	16 bits	62129

3. Fill the details as per the IP frame format .(highlight the details for each of the output and paste screenshot)

4	20 bytes	DSCP:CS0	52	
0x0381 (897)			0x2	0
128		TCP (6)	0xa6d9	
10.2.16.28				
23.58.31.18				
None				
None				

4. Using the Wireshark capture of the first TCP session startup (SYN bit set to 1), fill in information about the TCP header. (paste screenshot for each of the output). Capture the packet and analyze it.

5. Fill in the following information regarding the SYN message.(highlight the details for each of the output and paste screenshot)

Source IP address	10.2.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	0
Acknowledgement number	0
Flags	0x002 (SYN)
Header length	32 bytes (8)
Window size	65535
Checksum	0xff4b

99220040570

6. Fill in the following information regarding the SYN-ACK message .(highlight the details for each of the output and paste screenshot)

Source IP address	23.58.31.18
Destination IP address	10.2.16.28
Source port number	80
Destination port number	62129
Sequence number	0
Acknowledgement number	1
Header length	32 bytes (8)
Window size	64240
Flags	0x012 (SYN, ACK)
Checksum	0xe504

7. Fill in the following information regarding the ACK message. .(highlight the details for each of the output and paste screenshot)

Source IP address	10.20.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	1
Acknowledgement number	1
Header length	20 bytes (5)
Window size	255
Flags	0x010 (ACK)
Checksum	0x1fc9

99220040570

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	Excellent	Fair	Poor	Marks
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
			Total	

Result:Thus the Capture and Analyzing TCP 3 way handshake has been implemented and successfully verified.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**12**
Name of the Experiment	**Capture and Analyse HTTP packets**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1g0GjX7uZsXGddsaleVBZKMTCB5IX-W4z?usp=drive_link

1. Visit any one website by opening a browser fill your machine details (attach relevant screenshots).

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14:d4:24:17:5e:9b
Default Gateway address	10.2.0.1
Website URL	http://testphp.vulnweb.com/login.php
Website IP Address	44.228.249.3

2. Fill the TCP connection segment details:

Field Name	Field Length (no of bits)	Field value
Destination MAC address	48 bits	c8:4f:86:fc:00:10
Source MAC address	48 bits	14:d4:24:17:5e:9b
Destination IP address	32 bits	44.228.249.3
Source IP Address	32 bits	10.2.16.28
Destination TCP port	16 bits	80
Source TCP port	16 bits	64084

3. HTTP Request Message Details.

Field Name	Field Length (# of Bits)	Field Value (Binary or Hexa value)
Method	Variable (Usually 3 Bytes)	GET (0x474554 in Hex)
Host	Variable	Testphp.vulnweb.com\r\n (Hex: 546573747068702E76756C6E7765622E636F6D0D0A)
Accept	Variable	text/html, application/xhtml+xml
User-Agent	Variable	Mozilla/5.0 (Windows NT 10.0; Win64; x64)
Accept-Language	Variable	en-US, en; q=0.9\r\n
Accept-Encoding	Variable	gzip, deflate\r\n
Connection	Variable	Keep-alive\r\n

Paste the HTTP Response Screenshot:

Paste the Wireshark File with view permission:

Google Drive Link:https://drive.google.com/drive/folders/1g0GjX7uZsXGddsaleVBZKMTCB5IXW4z?usp=drive_link

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	**Excellent**	**Fair**	**Poor**	**Marks**
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
Total				

Result: Thus the Capture and analyse HTTP packets has been implemented and it was successfully verified.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**13**
Name of the Experiment	**Capture and Analyse ICMP packet**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/file/d/1uWQcuBJXNYw2RQI4yHc0uvAcJpKBHDeq/view?usp=drive_link

1. Use command prompt and fill the following details using ipconfig /all command. (highlight and paste screenshot for each of the output).

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14-D4-24-17-5E-9B
Default Gateway address	10.2.0.1
DNS Server IP Address	172.16.103.254

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
   Physical Address. . . . . . . . . : 14-D4-24-17-5E-9B
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::81c6:cfc8:e5c5:292e%5(Preferred)
   IPv4 Address. . . . . . . . . . . : 10.2.16.28(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.224.0
   Lease Obtained. . . . . . . . . . : 14 March 2025 13:40:12
   Lease Expires . . . . . . . . . . : 15 March 2025 01:40:12
   Default Gateway . . . . . . . . . : 10.2.0.1
   DHCP Server . . . . . . . . . . . : 10.2.0.2
   DHCPv6 IAID . . . . . . . . . . . : 68473892
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2B-F6-99-AF-E0-73-E7-CE-7D-F6
   DNS Servers . . . . . . . . . . . : 172.16.103.254
                                       4.2.2.2
                                       8.8.8.8
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

2. Ping any website through command prompt and Fill the following details by applying the filter as **ICMP**: (highlight and paste screenshot for each of the output).

ICMP Request message:

Field Name	**Field Length (no of bits)**	**Field value**
Type	8 bits	0 (Echo Request)
Code	8 bits	0 (No further details needed for Echo Reply)
Checksum	16 bits	0x4d56
Identifier	16 bits	1 (0x0001)
Sequence Number	16 bits	5 (0x0005)

ICMP Reply message: (highlight and paste screenshot for each of the output).

Field Name	Field Length (no of bits)	Field value
Type	8 bits	0 (Echo Reply)
Code	8 bits	0 (No further details needed for Echo Reply)
Checksum	16 bits	0x5556
Identifier	16 bits	1 (0x0001)
Sequence Number	16 bits	5 (0x0005)

Paste the Wireshark File with view permission:

Google Drive Link:
https://drive.google.com/file/d/1uWQcuBJXNYw2RQI4yHc0uvAcJpKBHDeq/view?usp=drive_link

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	**Excellent**	**Fair**	**Poor**	**Marks**
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
Total				

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**14**
Name of the Experiment	**Capture and Analyse DNS packet**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1GFJ2cdfYx5oDNC8sKrTu826JfcdrL5Kl?usp=drive_link

1. Use command prompt and fill the following details using ipconfig /all command. (highlight and paste screenshot for each of the output).

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14-D4-24-17-5E-9B
Default Gateway address	10.2.0.1
DNS Server IP Address	172.16.103.254

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
   Physical Address. . . . . . . . . : 14-D4-24-17-5E-9B
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::81c6:cfc8:e5c5:292e%5(Preferred)
   IPv4 Address. . . . . . . . . . . : 10.2.16.28(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.224.0
   Lease Obtained. . . . . . . . . . : 14 March 2025 13:40:12
   Lease Expires . . . . . . . . . . : 15 March 2025 01:40:12
   Default Gateway . . . . . . . . . : 10.2.0.1
   DHCP Server . . . . . . . . . . . : 10.2.0.2
   DHCPv6 IAID . . . . . . . . . . . : 68473892
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2B-F6-99-AF-E0-73-E7-CE-7D-F6
   DNS Servers . . . . . . . . . . . : 172.16.103.254
                                       4.2.2.2
                                       8.8.8.8
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

2. Ping any website through command prompt and Fill the following details by applying the filter as **DNS**: (highlight and paste screenshot for each of the output).

DNS Query message:

Field Name	**Field Length (no of bits)**	**Field value**
Destination MAC Address	48 bits	c8:4f:86:fc:00:10
Source MAC Address	48 bits	14:d4:24:17:5e:9b
Destination IP Address	32 bits	172.16.103.254
Source IP Address	32 bits	10.2.16.28
Destination UDP port	16 bits	53 (DNS Server)
Source UDP port	16 bits	56539 (Ephemeral Port)
DNS Tx id	16 bits	0x20f8 (Randomly generated for matching request – response)
DNS Flags	16 bits	0x0100 (Standard query)
DNS Questions	16 bits	1 (Single Query)
DNS Queries	Variable	www.flipkart.com: type A, class IN

3. DNS Response message: (highlight and paste screenshot for each of the output).

DNS Response message:

Field Name	Field Length (no of bits)	Field value
Destination MAC Address	48 bits	14:d4:24:17:5e:9b
Source MAC Address	48 bits	c8:4f:86:fc:00:10
Destination IP Address	32 bits	10.2.16.28
Source IP Address	32 bits	172.16.103.254
Destination UDP port	16 bits	56539
Source UDP port	16 bits	53
DNS Tx id	16 bits	0x20f8
DNS Flags	16 bits	0x8180 (Standard query response, No error)
DNS Questions	16 bits	1
DNS Queries	Variable	www.flipkart.com: type A, class IN

Paste the Wireshark File with view permission:

Google Drive Link:https://drive.google.com/drive/folders/1GFJ2cdfYx5oDNC8sKrTu826JfcdrL5Kl?usp=drive_link

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	**Excellent**	**Fair**	**Poor**	**Marks**
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
Total				

Result:Thus the Capture and Analysis of DNS packet has been implemented and successfully verified.

Register No:	**99220040570**
Name	**K. Hanumaan**
Class/Section	**8501 A/S06**
Ex. No:	**15**
Name of the Experiment	**FTP Server Configuration**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1efze7AfaTD90i4Rbu_DHTDwrEhyBx-qK?usp=drive_link

1. **Device Requirements:**

   1. Router1
   2. Switch0
   3. Server0
   4. PC0
   5. PC1

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (packet tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)

1. Ping
2. Configure Terminal
3. ftp 10.0.0.2

Router1:

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface GigabitEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

ip address 192.168.10.1 255.255.255.0

Router(config-if)#ip address 192.168.10.1 255.255.255.0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface GigabitEthernet0/1

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

ip address 10.0.0.1 255.0.0.0

Router(config-if)#ip address 10.0.0.1 255.0.0.0

Router(config-if)#

6. Output Diagram (Minimum 3 screenshot):

Network Diagram

Assigning IP Address

99220040570

Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1efze7AfaTD90i4Rbu_DHTDwrEhyBx-qK?usp=drive_link

CONCLUSION:

In this experiment, we configured an **FTP (File Transfer Protocol) server** to enable secure file sharing and transfer between devices over a network. By setting up user authentication and defining access permissions, we ensured controlled access to shared files.

Rubrics for Experiment Assessment:

Rubrics	**Good**	**Normal**	**Poor**	**Marks**
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
Total				

Result:Thus the FTP server configuration has been implemented and verified successfully.

Register No:	**99220040570**
Name	**K. Hanumaan**
Class/Section	**8501 A/S06**
Ex. No:	**16**
Name of the Experiment	**E-mail Server Configuration**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1i8SAe2LyrhDB1oG4d1VPeTAXFDE34Hcz?usp=drive_link

1. **Device Requirements:**

   1. Router0
   2. Switch0
   3. Server0
   4. PC0
   5. Laptop0

2. **Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)**

3. Network Diagram (packet tracer diagram before configuration):

4. Configuration details:

Device Name	Interface Name	IP Address	Subnet mask

5. Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)

1. Ping
2. Configure Terminal
3. SMTP for Outing Mail
4. POP3 for Incoming Mail

Router0:

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface GigabitEthernet0/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

ip address 192.168.1.1 255.255.255.0

Router(config-if)#ip address 192.168.1.1 255.255.255.0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface GigabitEthernet0/1

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

ip address 192.168.2.1 255.255.255.0

Router(config-if)#ip address 192.168.2.1 255.255.255.0

Router(config-if)#

6. Output Diagram (Minimum 3 screenshot):

Network Diagram

Assigning IP Address

99220040570

Google Drive link of the packet tracer file (give view permission):

Link:https://drive.google.com/drive/folders/1i8SAe2LyrhDB1oG4d1VPeTAXFDE34Hcz?usp=drive_link

CONCLUSION:

n this experiment, we configured an **Email Server** to enable the sending and receiving of emails within a network. By setting up protocols like **SMTP (Simple Mail Transfer Protocol) for outgoing mail** and **IMAP/POP3 for incoming mail**, we ensured smooth email communication.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
Total				

Result: Thus the E-mail server conguration has been implemented and verified successfully.

Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**17**
Name of the Experiment	**Block the Website by configuring the Firewall**
Google Drive link of the packet tracer file **(give view permission):**	https://drive.google.com/drive/folders/12uMOeOyWp4vZv9NEQcALvUjCWRIwAD8C?usp=drive_link

1. Select the Control Panel

2. Click Systems and Security
3. Click Windows defender Firewall
4. Click Advanced setting
5. Enter the Administrator Password
6. Click the outbound rule

7. Right Click Outbound Rule
8. Click New Rule

9. Click custom
10. Click Next
11. Click Next

12. Click These IP Address option

13. To know the target website of the IP address using command prompt

Before block the website

14.

15. Add the above addresses in the address list

16.

17. Add the IPv6 & IPv4 addresses one by one

18. After adding all the IP address, click Next

19. Select the option “Block the Connection” and click Next

20.

21. Verify all the options are clicked (Public, Private, Domain)

22.

23. Type the Name and description

24.

25. Click Finish
26. Check the same website

After block the website

Google Drive link of the packet tracer file (give view permission):

Link:
https://drive.google.com/drive/folders/12uMOeOyWp4vZv9NEQcALvUjCWRIwAD8C?usp=drive_link

CONCLUSION:

In this experiment, we configured a **firewall** to block access to specific websites, enhancing network security and access control. By defining firewall rules and using methods such as **URL filtering, domain blocking, or IP-based restrictions**, we successfully restricted unauthorized web access.