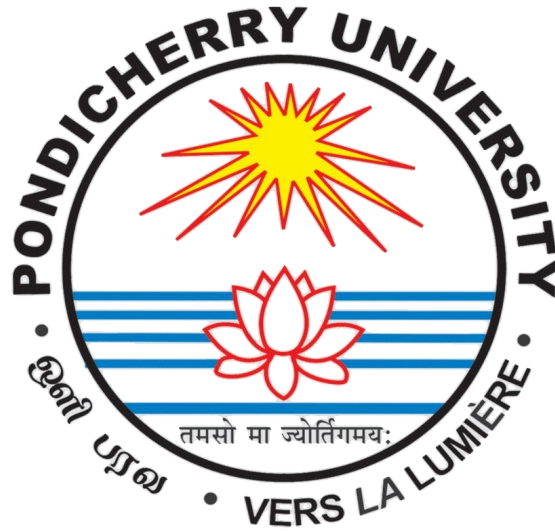


PONDICHERRY UNIVERSITY
(A Central university)



SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
M.Sc. Integrated Computer Science

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SUBJECT	:	CSSC 513 - WEB TECHNOLOGY AND COMPUTER NETWORKS LAB

PONDICHERRY UNIVERSITY

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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

M.Sc. Integrated Computer Science

PRACTICAL LAB RECORD

BONAFIDE CERTIFICATE

This is to certify that this is a Bonafide record of practical work done by **Aanisha Almaaz S**, having Reg. No. **20384101** semester IX - from the month July 2024 to December 2024.

FACULTY IN-CHARGE

SUBMITTED FOR THE PRACTICAL EXAM HELD ON: 22 – 11 - 2024

INTERNAL EXAMINER

EXTERNAL EXAMINER

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3	BASIC ROUTER CONFIGURATION	27-09-2024	
4	BASIC FIREWALL CONFIHURATION	25-10-2024	

IMPLEMENTATION OF STAR TOPOLOGY

AIM:

To implement star topology using Cisco Packet Tracer

PROCEDURE:

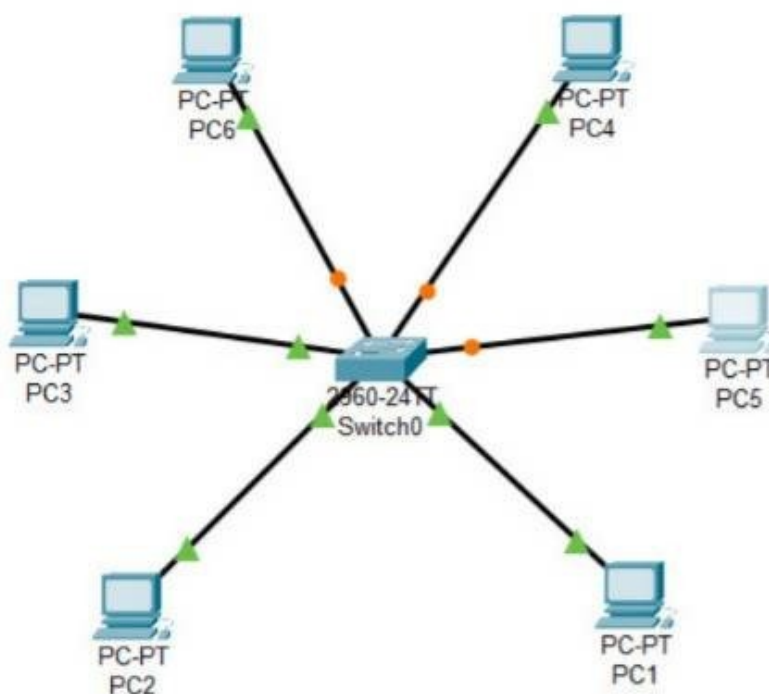
Step 1: Take a switch and link it to six end devices.

Step 2: Link every device with the switch.

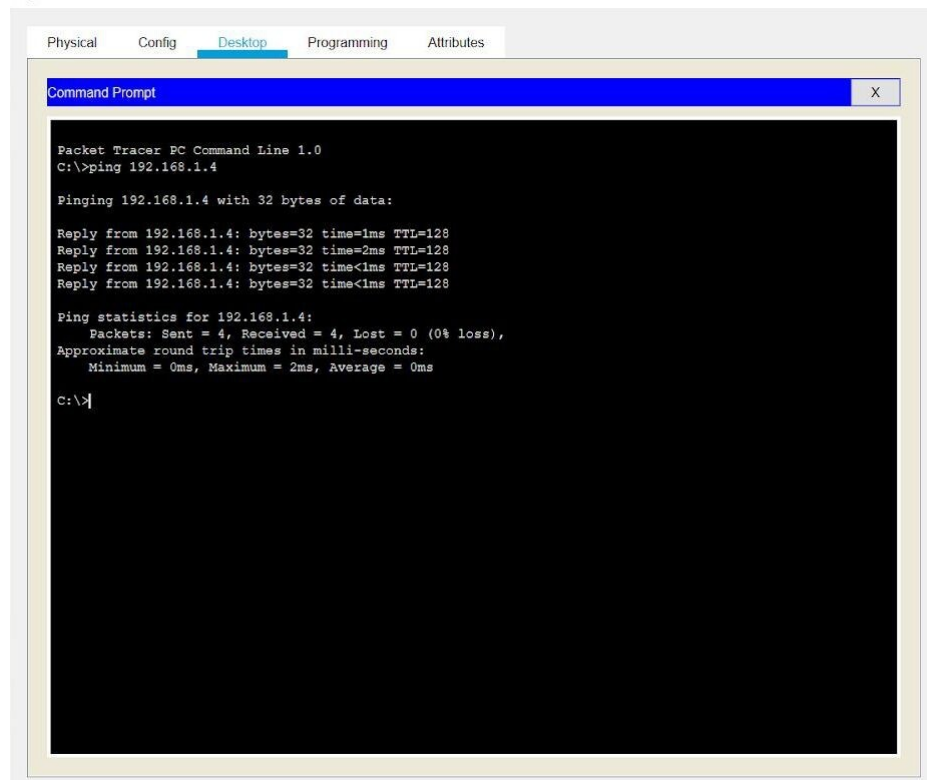
Step 3: Provide the IP address to each device.

Step 4: Transfer message from one device to another and check the Table for Validation.

Now to check whether the connections are correct or not try to ping any device.



OUTPUT:



The screenshot shows a Packet Tracer PC Command Line window with the 'Desktop' tab selected. The window title is 'Command Prompt'. The text inside the window shows the execution of a ping command to 192.168.1.4. The output indicates that four packets were sent and received successfully with 0% loss. The round trip times are very low, with a maximum of 2ms and an average of 0ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time=1ms TTL=128
Reply from 192.168.1.4: bytes=32 time=2ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

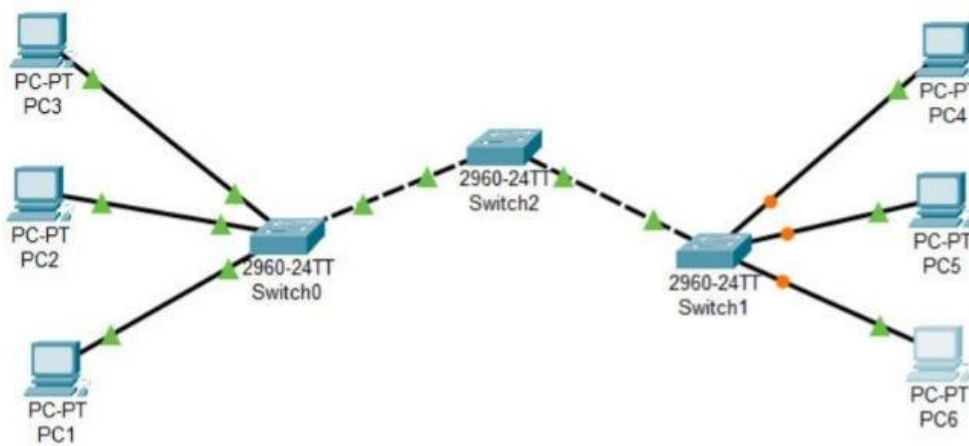
c:\>
```

BASIC VALN CONFIGURATION

AIM:

To implement basuc VLAN configuration using Cisco Packet Tracer

TOPOLOGY DIAGRAM:



ADDRESSING TABLE:

Device (Hostname)	Interface	IP Address	Subnet Mask	Default Gateway
S1	VLAN 99	172.17.99.11	255.255.255.0	N/A
S2	VLAN 99	172.17.99.12	255.255.255.0	N/A
S3	VLAN 99	172.17.99.13	255.255.255.0	N/A
PC1	NIC	172.17.10.21	255.255.255.0	172.17.10.1
PC2	NIC	172.17.20.22	255.255.255.0	172.17.20.1
PC3	NIC	172.17.30.23	255.255.255.0	172.17.30.1
PC4	NIC	172.17.10.24	255.255.255.0	172.17.10.1
PC5	NIC	172.17.20.25	255.255.255.0	172.17.20.1
PC6	NIC	172.17.30.26	255.255.255.0	172.17.30.1

Ports	Assignment	Network
Fa0/1 – 0/5	802.1q Trunks (Native VLAN 99)	172.17.99.0 /24
Fa0/6 – 0/10	VLAN 30 – Guest (Default)	172.17.30.0 /24
Fa0/11 – 0/17	VLAN 10 – Faculty/Staff	172.17.10.0 /24

Task 1: Prepare the Network

Step 1: To Cable a network that is similar to the one in the topology diagram.

Step 2: Clear any existing configurations on the switches, and initialize all ports in the shutdown state.

```
Switch#config term
```

```
Switch(config)#interface range fa0/1-24
```

```
Switch(config-if-range)#shutdown
```

```
Switch(config-if-range)#interface range gi0/1-2
```

```
Switch(config-if-range)#shutdown
```

Task 2: Perform Basic Switch Configurations

Step 1: Configure the switches .

Step 2: Re-enable the user ports on S2 and S3.

```
S2(config)#interface range fa0/6, fa0/11, fa0/18
```

```
S2(config-if-range)#switchport mode access
```

```
S2(config-if-range)#no shutdown
```

```
S3(config)#interface range fa0/6, fa0/11, fa0/18
```

```
S3(config-if-range)#switchport mode access
```

```
S3(config-if-range)#no shutdown
```

Task 3: Configure and Activate Ethernet Interfaces

Step 1: Configure the PCs.

Task 4: Configure VLANs on the Switch

Step 1: Create VLANs on switch S1.

```
S1(config)#vlan 10
```

```
S1(config-vlan)#name staff
```

```
S1(config-vlan)#vlan 20
```

```
S1(config-vlan)#name students
```

```
S1(config-vlan)#vlan 30
```

```
S1(config-vlan)#name guest
```

```
S1(config-vlan)#vlan 99
```

```
S1(config-vlan)#name managment
```

Step 2: Verify that the VLANs have been created on S1.

```
S1#show vlan brief
```

Step 3: Configure and name VLANs on switches S2 and S3.

Step 4: Assign switch ports to VLANs on S2 and S3.

```
S3(config)#interface range fa0/6-10
```

```
S3(config-if-range)#switchport access vlan 30
```

```
S3(config-if-range)#interface range fa0/11-17
```

```
S3(config-if-range)#switchport access vlan 10
```

```
S3(config-if-range)#interface range fa0/18-24
```

```
S3(config-if-range)#switchport access vlan 20
```

```
S3(config-if-range)#end
```

Step 5: Determine which ports have been added.

Step 6: Assign the management VLAN.

```
S1(config)#interface vlan 99
```

```
S1(config-if)#ip address 172.17.99.11 255.255.255.0
```


S1(config-if)#no shutdown

S2(config)#interface vlan 99

S2(config-if)#ip address 172.17.99.12 255.255.255.0

S2(config-if)#no shutdown

S3(config)#interface vlan 99

S3(config-if)#ip address 172.17.99.13 255.255.255.0

S3(config-if)#no shutdown

Step 7: Configure trunking and the native VLAN for the trunking ports on all switches.S1(config)#interface range fa0/1-5

S1(config-if-range)#switchport mode trunk

S1(config-if-range)#switchport trunk native vlan 99

S1(config-if-range)#no shutdown

S1(config-if-range)#end

S2(config)# interface range fa0/1-5

S2(config-if-range)#switchport mode trunk

S2(config-if-range)#switchport trunk native vlan 99

S2(config-if-range)#no shutdown

S2(config-if-range)#end

Verify that the trunks have been configured with the show interface trunk command.

S1#show interface trunk

Step 8: Verify that the switches can communicate.

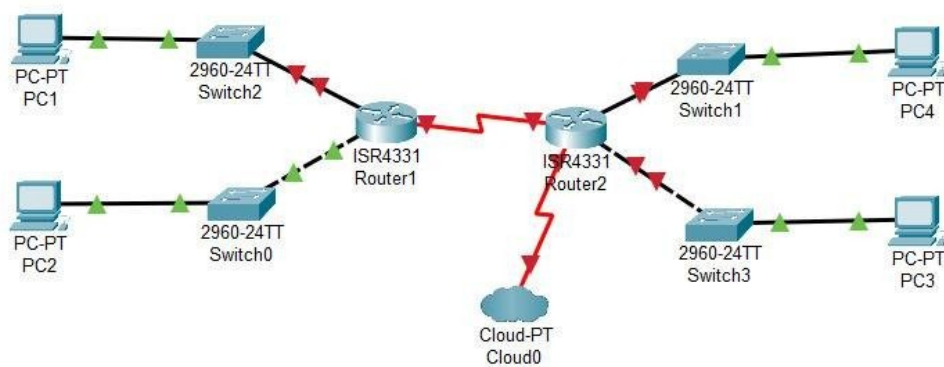
Step 9: Ping several hosts from PC2.

BASIC ROUTER CONFIGURATION

AIM:

To implement basic router configuration using Cisco Packet Tracer

TOPOLOGY DIAGRAM:



ADDRESSING TABLE:

Device	Interface	IP Address / Prefix	Default Gateway
R2	G0/0/0	10.0.4.1 /24	N/A
		2001:db8:acad:4::1 /64	
		fe80::2:a	
	G0/0/1	10.0.5.1 /24	
		2001:db8:acad:5::1 /64	
		fe80::2:b	
	S0/1/0	10.0.3.2 /24	
		2001:db8:acad:3::2 /64	
PC1	NIC	fe80::1:c	10.0.1.1
		209.165.200.225 /30	
		2001:db8:feed:224::1/64	
		fe80::1:d	
PC2	NIC	10.0.1.10 /24	10.0.1.1
		2001:db8:acad:1::10 /64	
PC3	NIC	10.0.2.10 /24	10.0.2.1
		2001:db8:acad:2::10 /64	
PC4	NIC	10.0.4.10 /24	10.0.4.1
		2001:db8:acad:4::10 /64	
PC5	NIC	10.0.5.10 /24	10.0.5.1
		2001:db8:acad:5::10 /64	

Part 1: Configure Devices and Verify Connectivity

Step 1: Configure the PC interfaces.

Configure the IPv4 and IPv6 addresses on PC3 and PC4 as listed in the Addressing Table.

Step 2: Configure the router.

```
R1(config)# username SSHadmin secret 55Hadm!n2020
```

```
R1(config)# interface g0/0/0
```

```
R1(config-if)# ip address 192.168.0.1 255.255.255.0
```

```
R1(config-if)# ipv6 address fe80::1 link-local
```

```
R1(config-if)# ipv6 address 2001:db8:acad::1/64
```

```
R1(config-if)# description Connection to PC-B
```

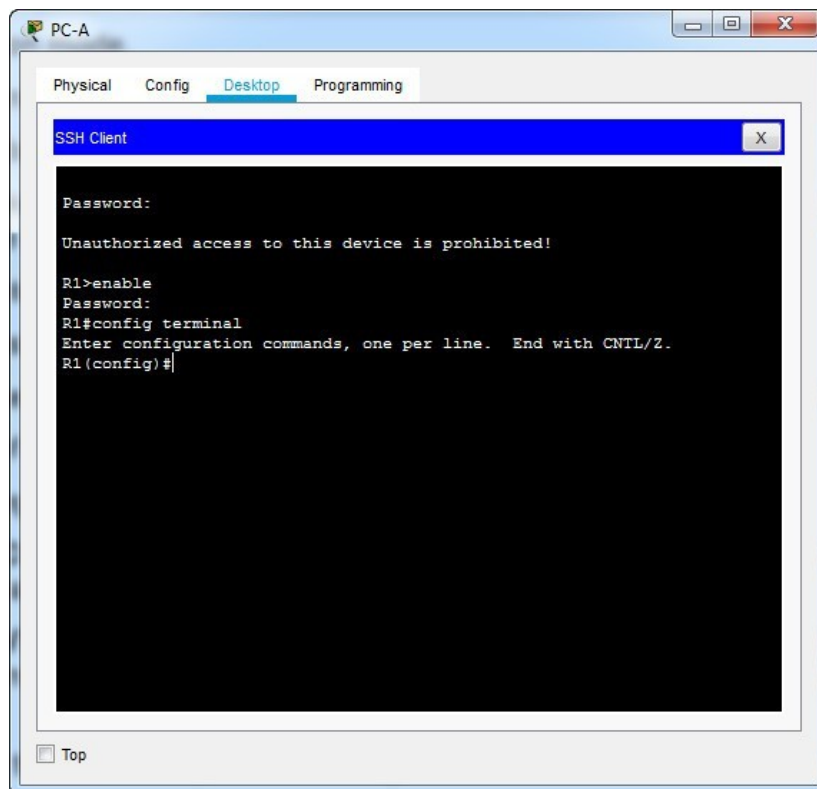
```
R1(config-if)# no shutdown
```

```
R1(config-if)# exit
```

Step 3: Verify network connectivity.

Using Tera Term on PC-A, open an SSH session to the R1 Loopback interface IPv4 address. Ensure that the SSH radio button is selected and then click OK to connect to the router. Log in as SSHadmin with the password 55Hadm!n2020.

OUTPUT:



The screenshot shows a window titled "PC-A" with four tabs: "Physical", "Config", "Desktop" (selected), and "Programming". Inside the "Desktop" tab is an "SSH Client" window. The terminal output is as follows:

```
SSH Client
Password:
Unauthorized access to this device is prohibited!
R1>enable
Password:
R1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#
```

At the bottom left of the "SSH Client" window is a "Top" button.

BASIC FIREWALL CONFIGURATION

AIM:

To implement basic firewall configuration using Cisco Packet Tracer

PROCEDURE:

Step 1: Create a network topology as shown below the image.

Step 2: Configure the PCs (hosts) and server with IPv4 address and Subnet Mask

Step 3: Configuring the firewall in a server and blocking packets and allowing web browser.

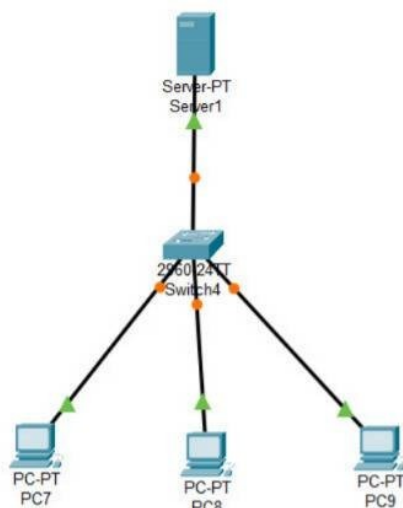
Click on server0 then go to the desktop.

- Then click on firewall IPv4.
- Turn on the services.
- First, Deny the ICMP protocol and set remote IP to 0.0.0.0 and Remote wildcard mask to 255.255.255.255.
- Then, allow the IP protocol and set remote IP to 0.0.0.0 and Remote wildcard mask to 255.255.255.255.
- And add them.

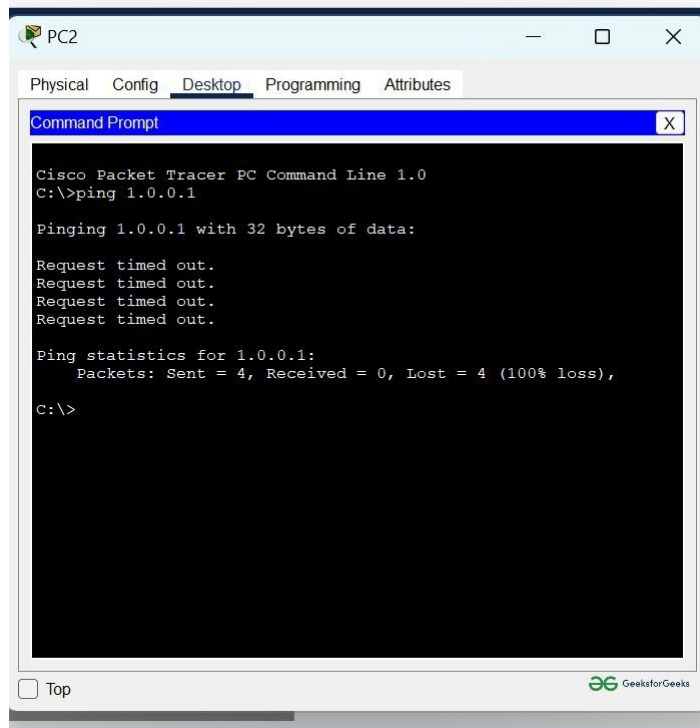
Step 4: Verifying the network by pinging the IP address of any PC.

We will use the ping command to do so.

- First, click on PC2 then Go to the command prompt.
- Then type ping <IP address of targeted node>.
- We will ping the IP address of the server0.



OUTPUT:



Check the web browser by entering the IP address in the URL.

