Institute of Computer Technology

B. Tech Computer Science and Engineering

Sub: CN

NAME: SUJAL SUTHAR

SEM: CSE 5-B (BATCH53)

ER NO. : 23162581026

Practical - 4

Aim: To implement access control list (ACL) in network of an organization containing different departments.

Scenario:

There is an organization of the University having 3 different departments University, ICT and DCS. IPv4 addressing scheme is used for assigning the IP address to the device as shown in Table1. Each department has multiple employees, which have specific rights to communicate within the network. The details of the rights are as mentioned below:

Access Rights:

- University can contact all employees.
- Only Principal can contact University office.
- All Principals should contact each other
- All head of departments can contact each other

Configure Access Control List (ACL) at each router according to the specified access rights.

Procedure:

1) Create network as given below

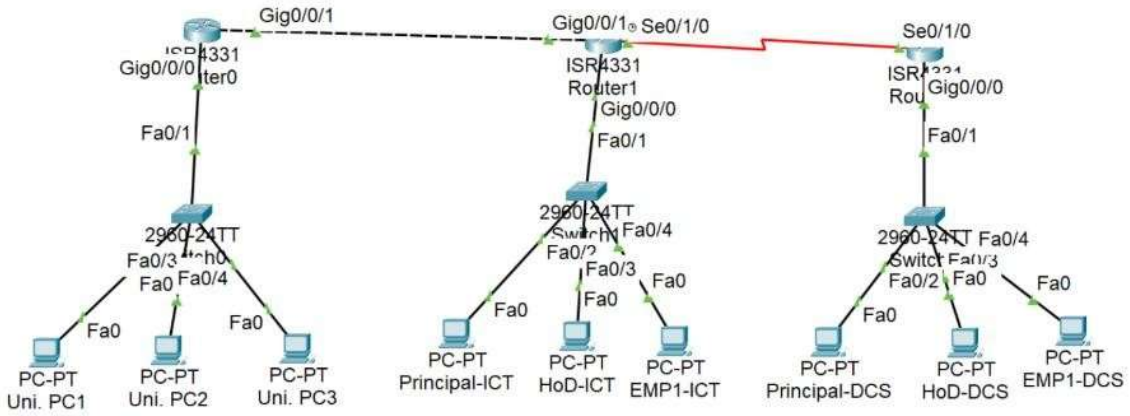


Table 1: IP Address of devices

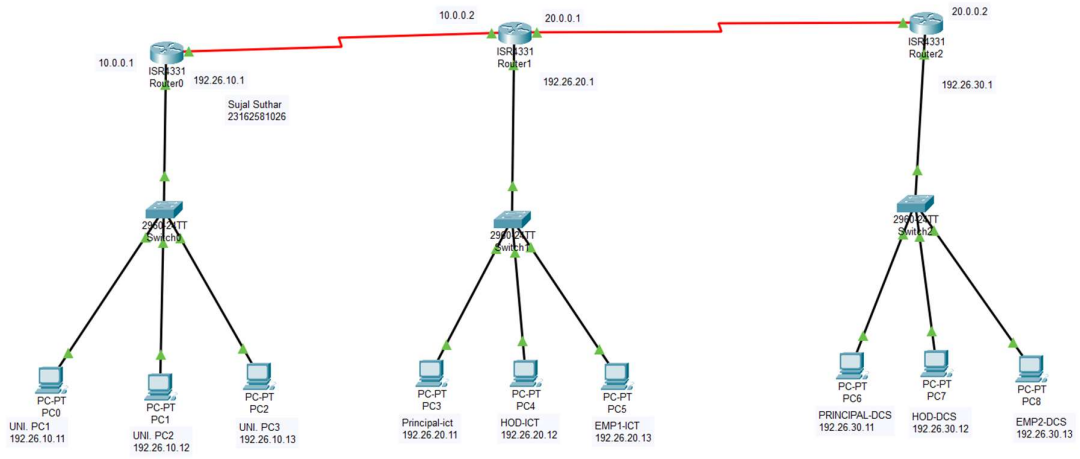
Department	Device	IP Address	Subnet Mask	Default Gateway
University	UNIV_PC0	192.26.10.11	255.255.255.0	192.26.10.1
	UNIV_PC1	192.26.10.12	255.255.255.0	192.26.10.1
	UNIV_PC2	192.26.10.13	255.255.255.0	192.26.10.1
ICT	PRINCIPAL-ICT	192.26.20.11	255.255.255.0	192.26.20.1
	HOD-ICT	192.26.20.12	255.255.255.0	192.26.20.1
	EMPLOYEE-ICT	192.26.20.13	255.255.255.0	192.26.20.1

DCS	PRINCIPAL-DCS	192.26.30.11	255.255.255.0	192.26.30.1
	HOD-DCS	192.26.30.12	255.255.255.0	192.26.30.1
	EMPLOYEE-DCS	192.26.30.13	255.255.255.0	192.26.30.1

2) Configure IP address (All Devices, Routers)
3) Configure dynamic routing table (RIP in routers)
4) Configure ACL on Router0
5) Configure ACL on Router1
6) Configure ACL on Router2

Configuration:

1) Network configuration

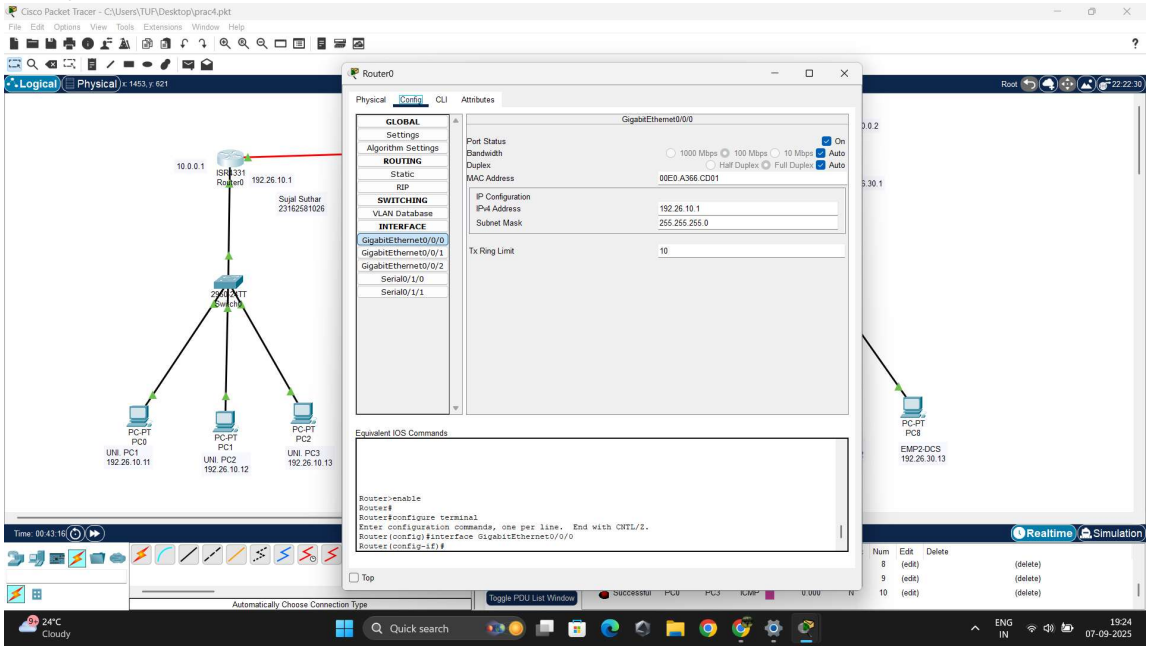


2) Configure IP address (All Devices, Routers):

Department	Device	IP Address	Subnet Mask	Default Gateway
University	UNIV_PC0	192.26.10.11	255.255.255.0	192.26.10.1
	UNIV_PC1	192.26.10.12	255.255.255.0	192.26.10.1
	UNIV_PC2	192.26.10.13	255.255.255.0	192.26.10.1
ICT	PRINCIPAL-ICT	192.26.20.11	255.255.255.0	192.26.20.1
	HOD-ICT	192.26.20.12	255.255.255.0	192.26.20.1
	EMPLOYEE-ICT	192.26.20.13	255.255.255.0	192.26.20.1
DCS	PRINCIPAL-DCS	192.26.30.11	255.255.255.0	192.26.30.1
	HOD-DCS	192.26.30.12	255.255.255.0	192.26.30.1

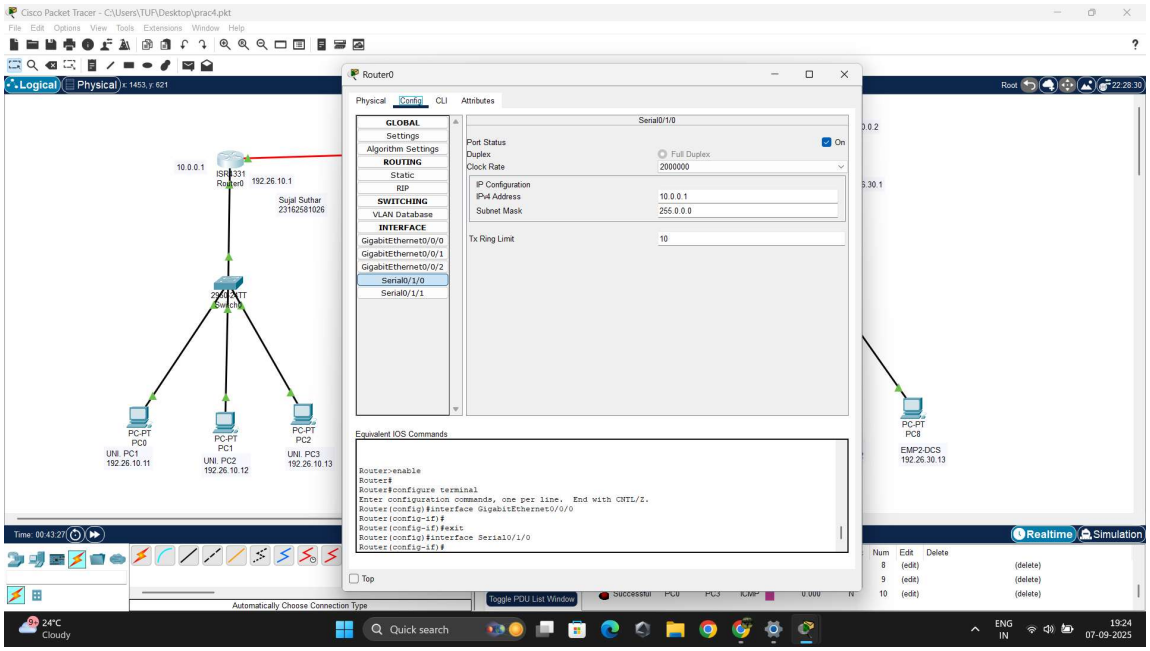
	EMPLOYEE-DCS	192.26.30.13	255.255.255.0	192.26.30.1

3) Configure dynamic routing table (RIP in routers) :

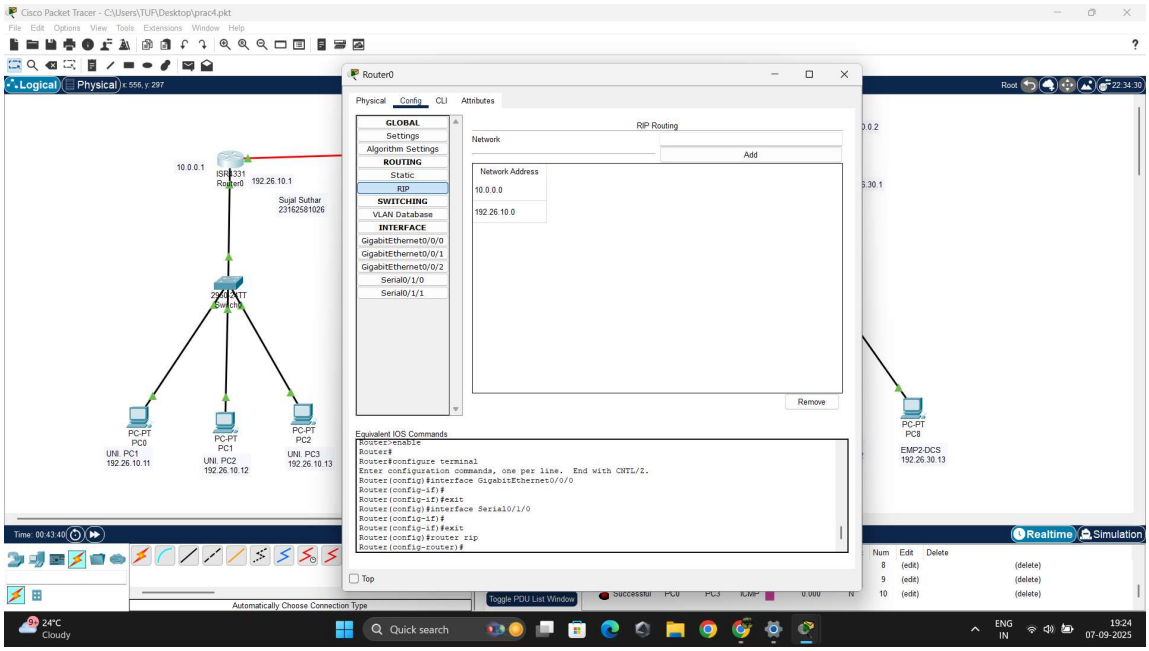


Router:-

- **Router R0 Static 0/1/0**

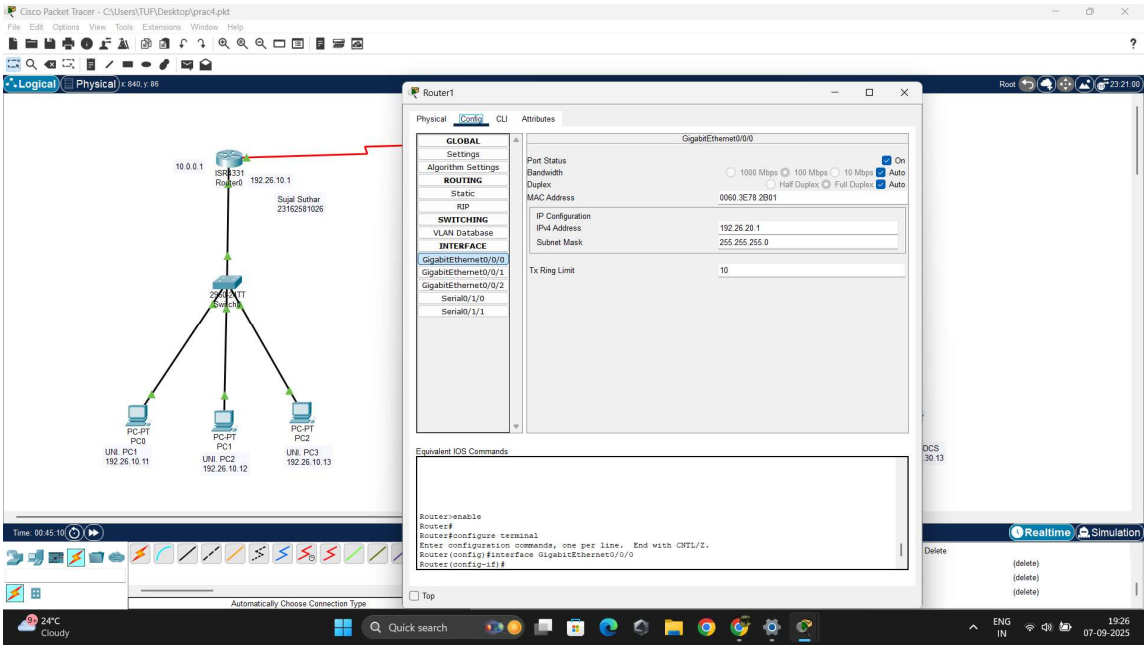


Rip:

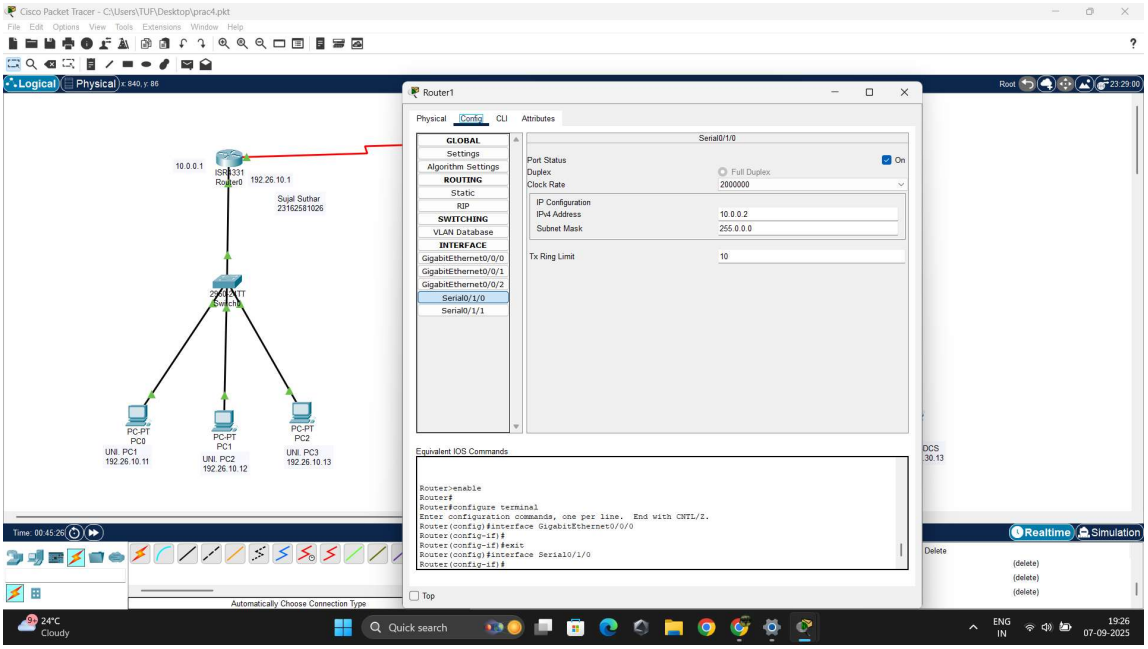

Cisco Packet Tracer - C:\Users\TUF\Desktop\prac4.pkt
Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0/0
GigabitEthernet0/0/1
GigabitEthernet0/0/2
Serial0/1/0
Serial0/1/1
RIP Routing
Network
Add
Network Address
10.0.0.0
192.26.10.0
Remove
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
Top
10.0.0.1
192.26.10.1
Sujal Suthar
23162581026
PC-PT PC0
UNI. PC1
192.26.10.11
PC-PT PC1
UNI. PC2
192.26.10.12
PC-PT PC2
UNI. PC3
192.26.10.13
PC-PT PC8
EMP2-DCS
192.26.30.13
Realtime
Simulation
Automatically Choose Connection Type
Toggle PDU List Window
24°C
Cloudy
Quick search
ENG
IN
19:24
07-09-2025

-

Router R1

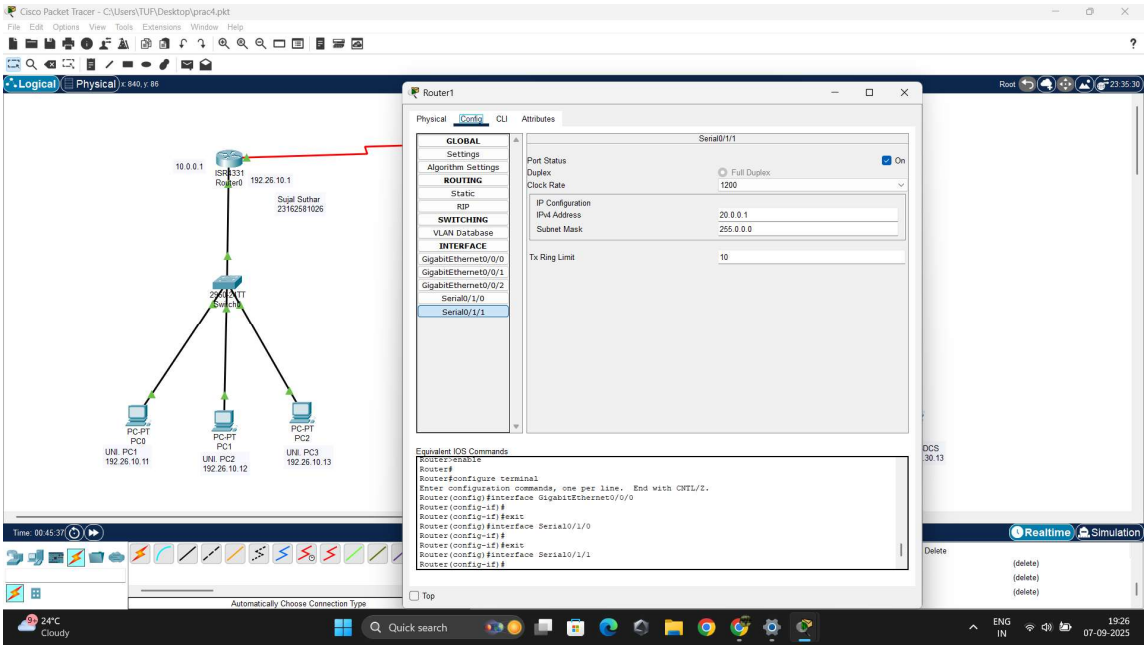


- **Static 0/1/0**

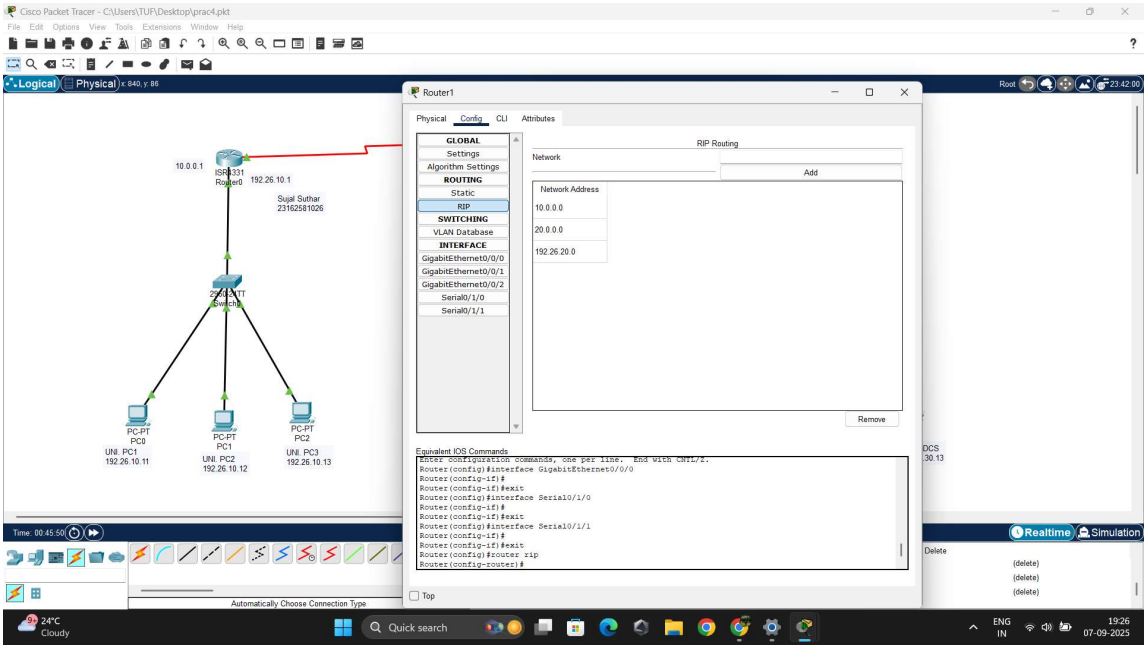


-

Static 0/1/1



RIP:



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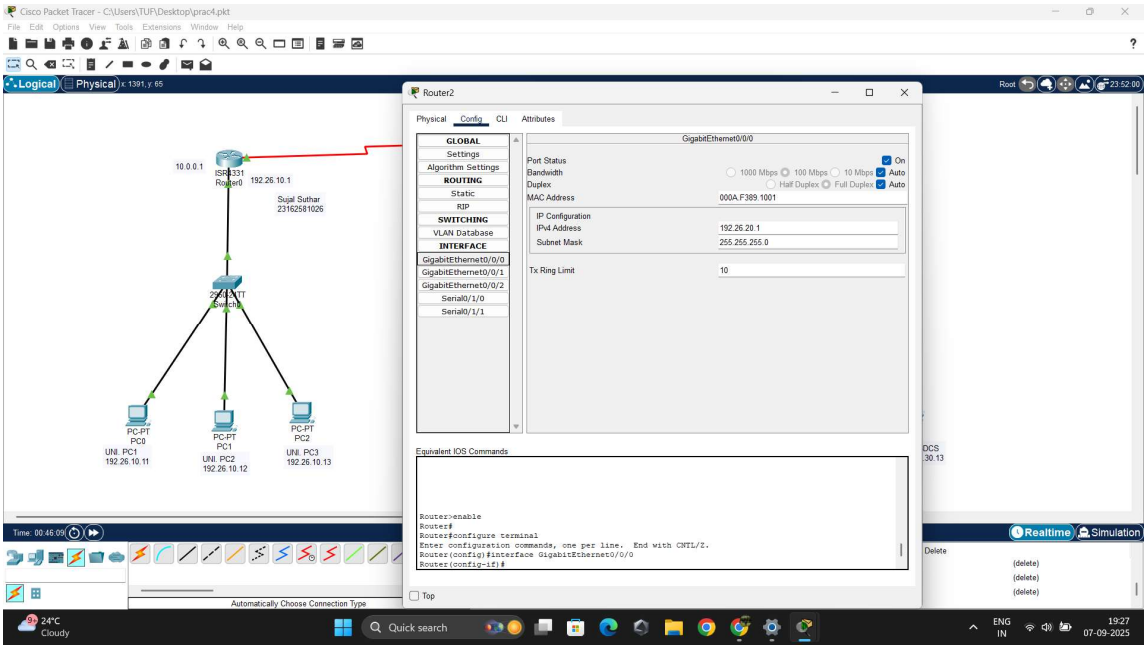
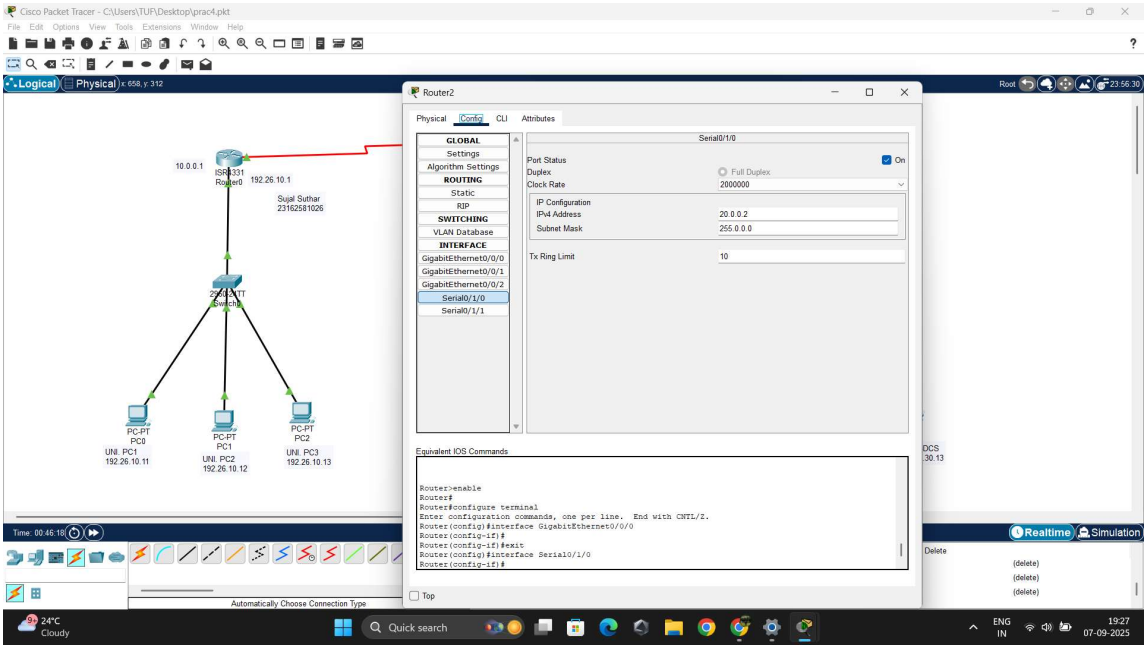
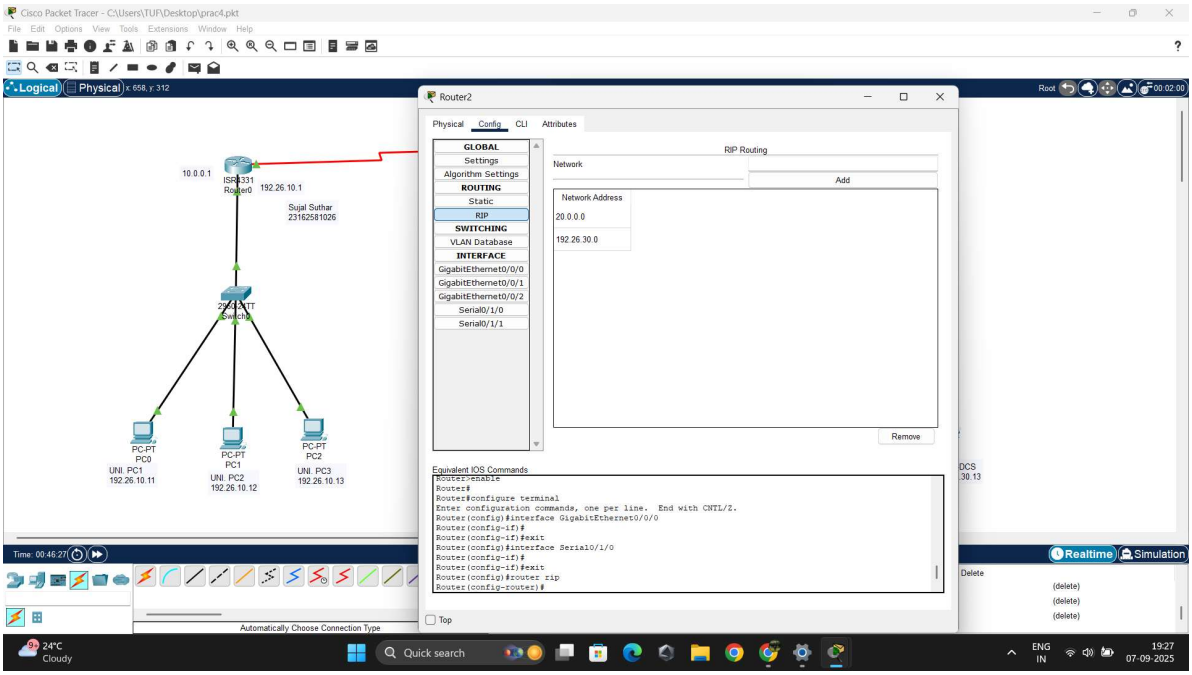
Router R2



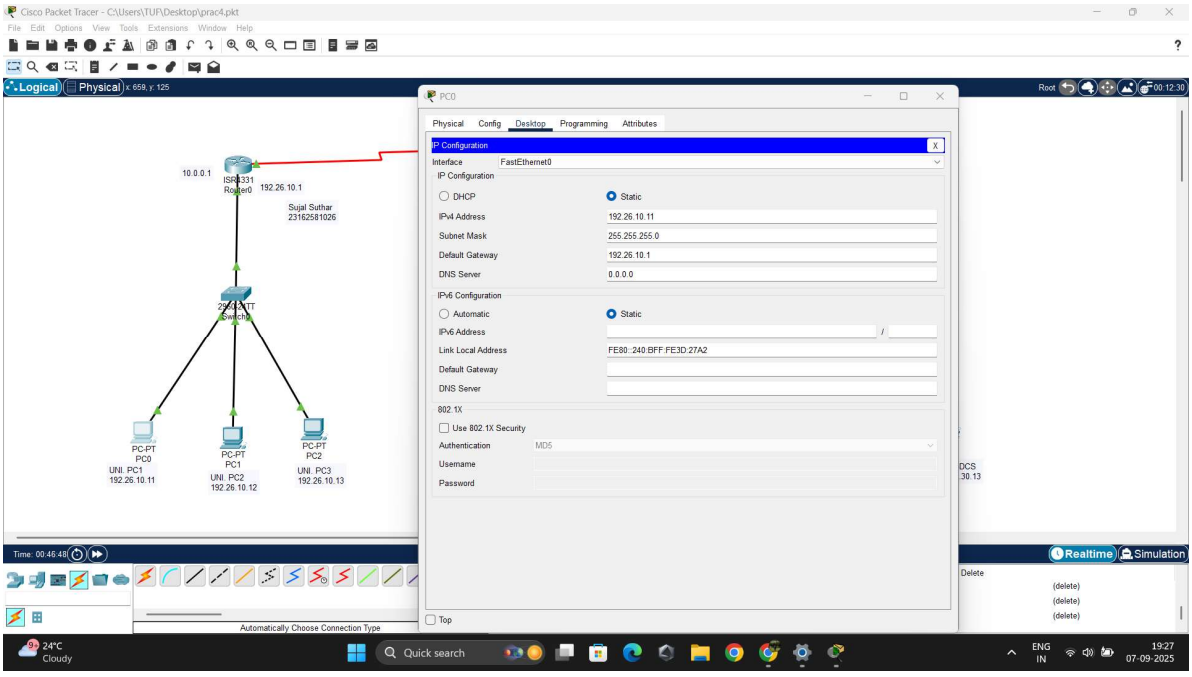
Static 0/1/0



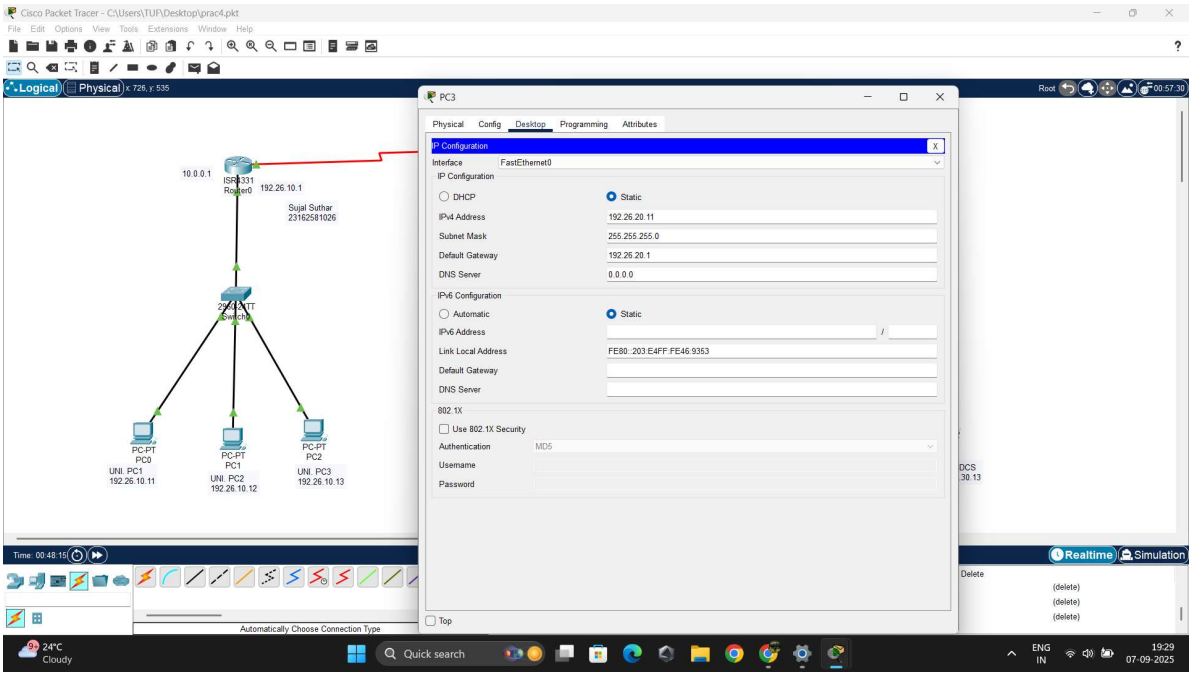
RIP:



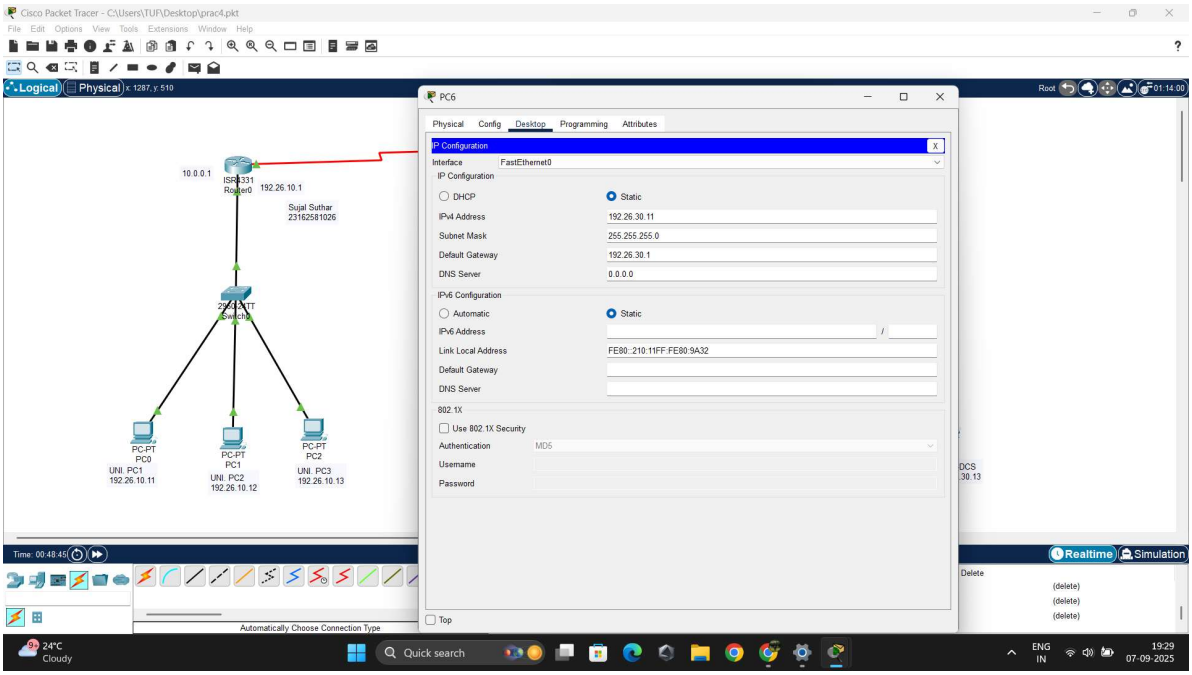
PC0 Network 1:



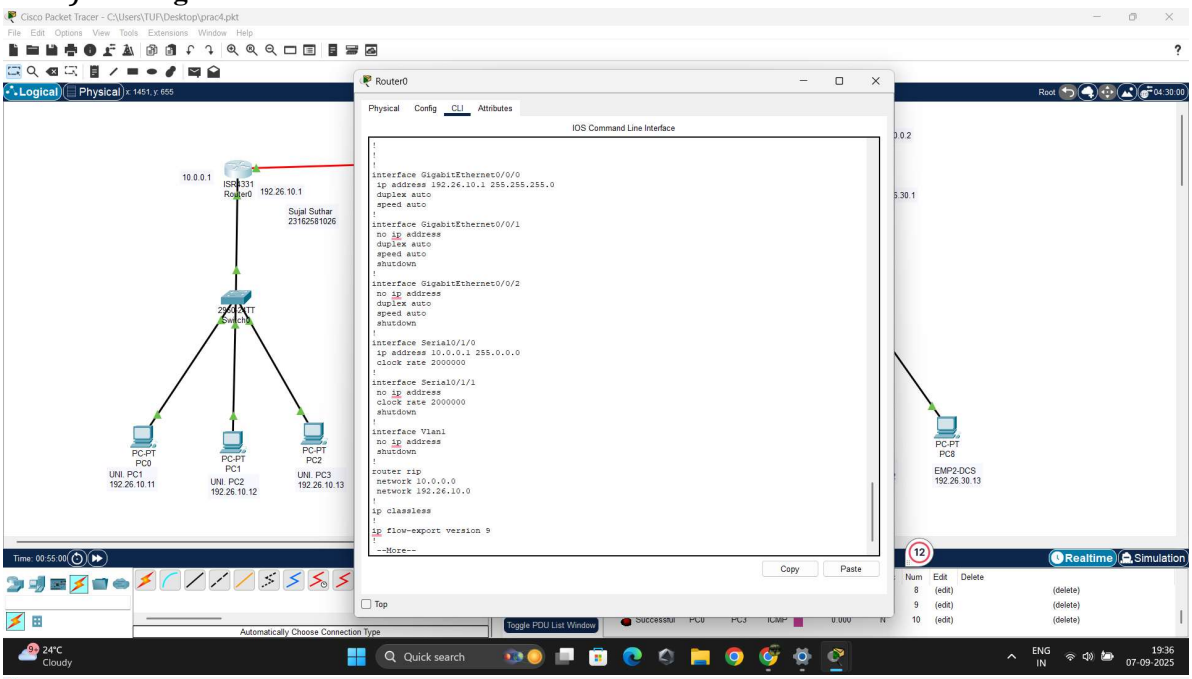
PC3 Network 2:

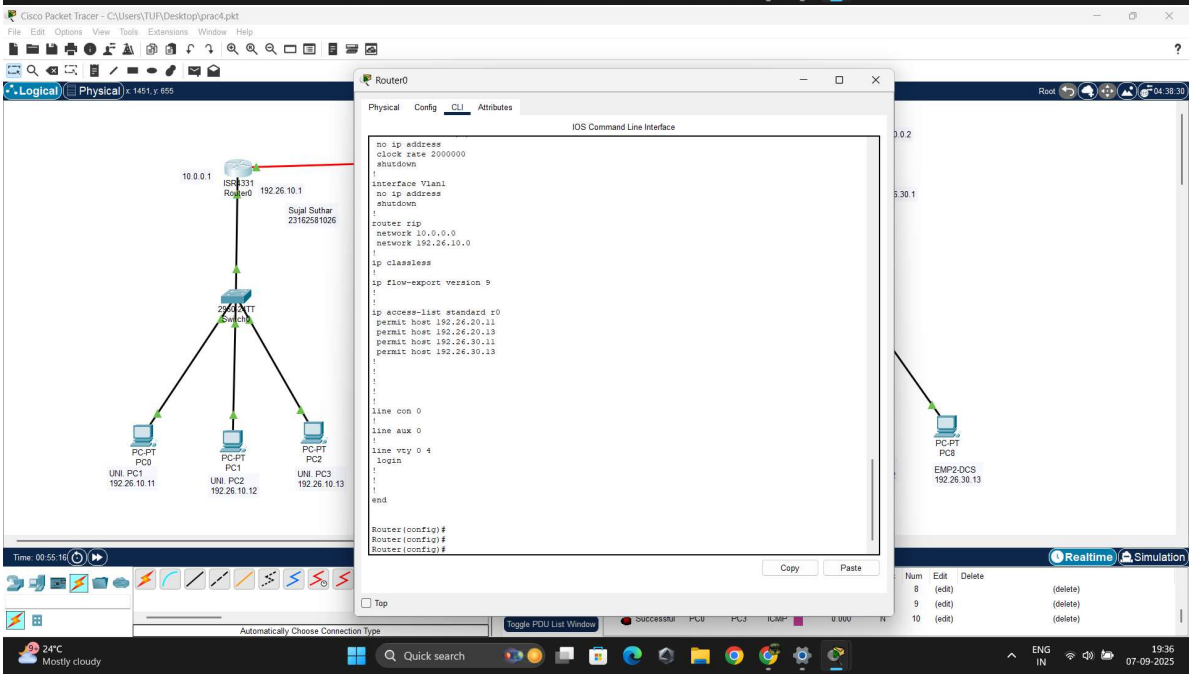


PC6 Network 3:

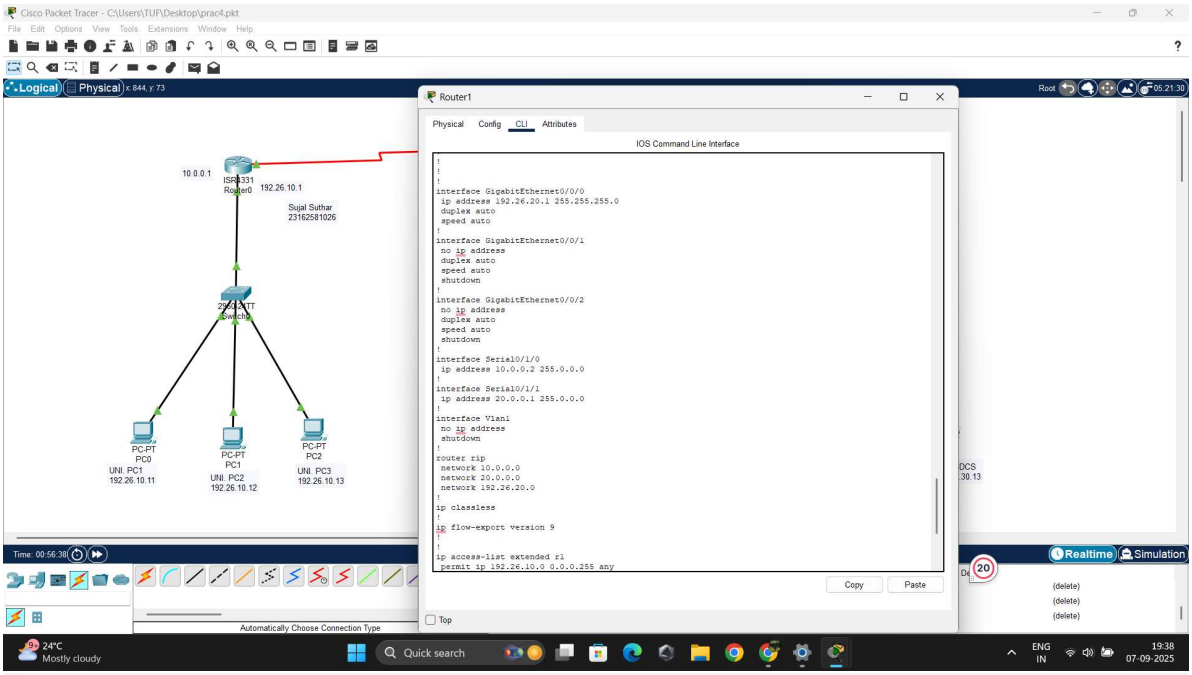


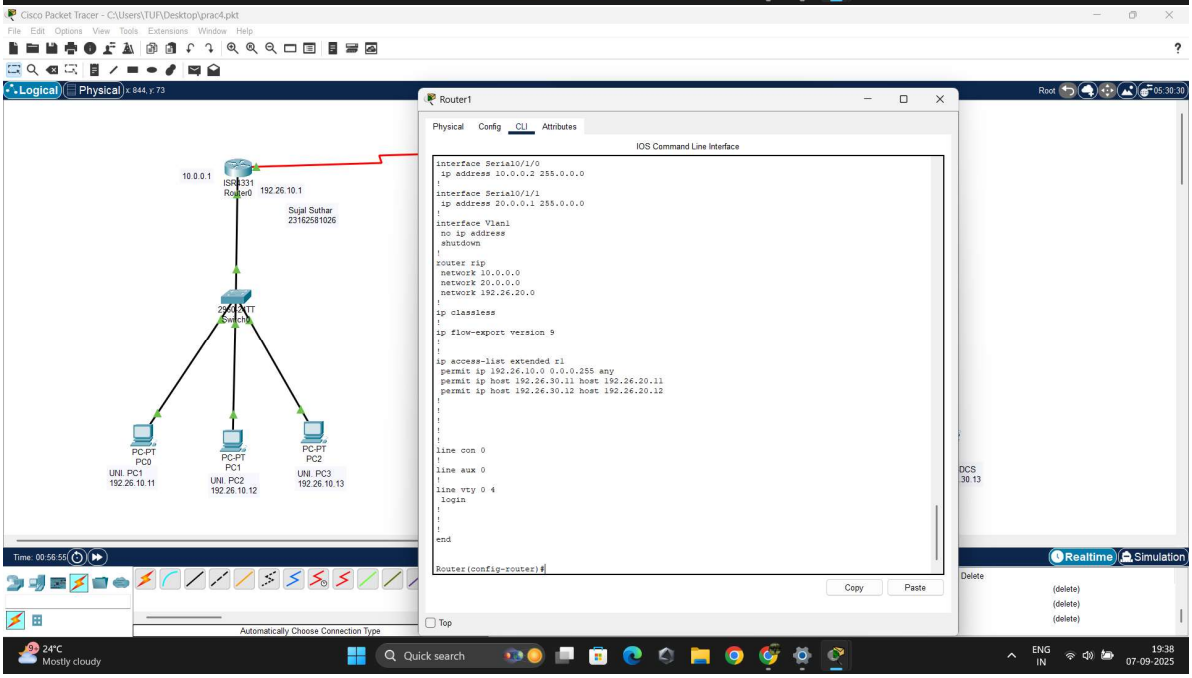
4) Config ACL on Router0:



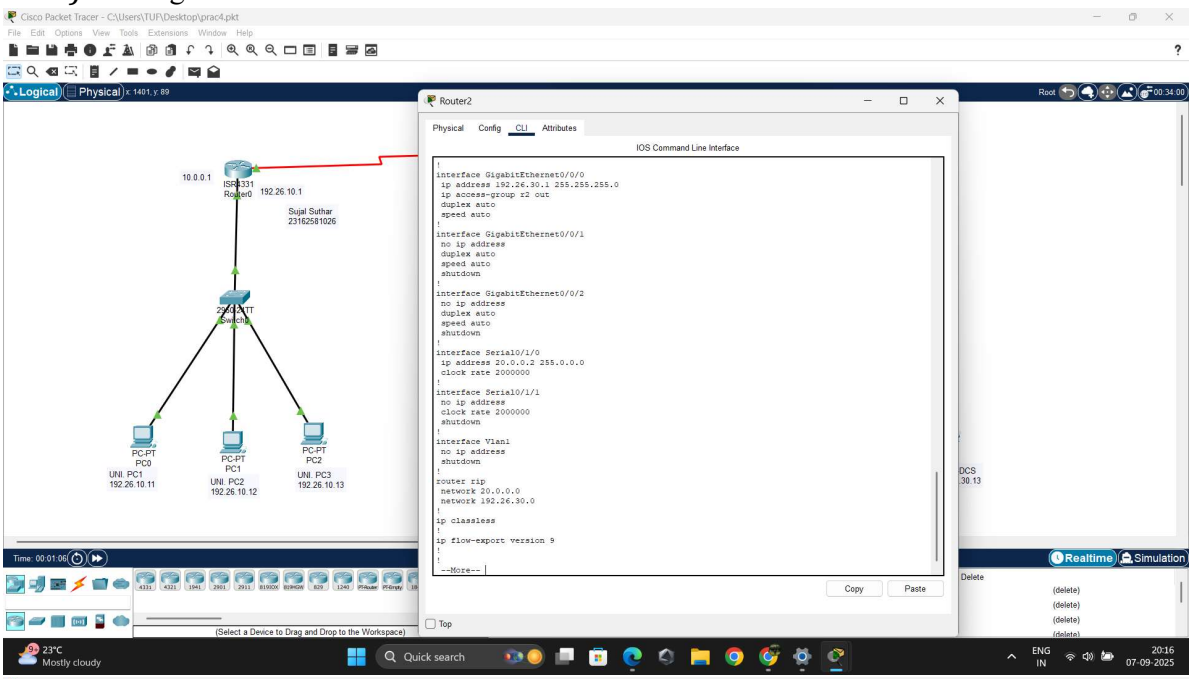


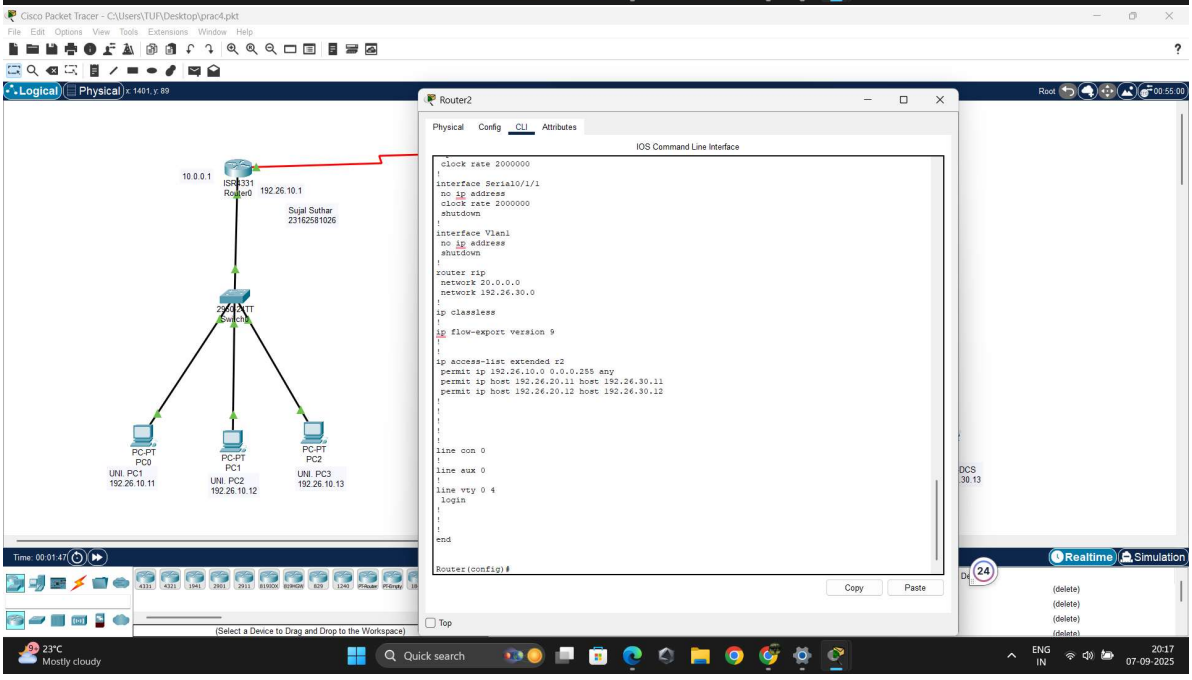
5) Configure ACL on Router1:





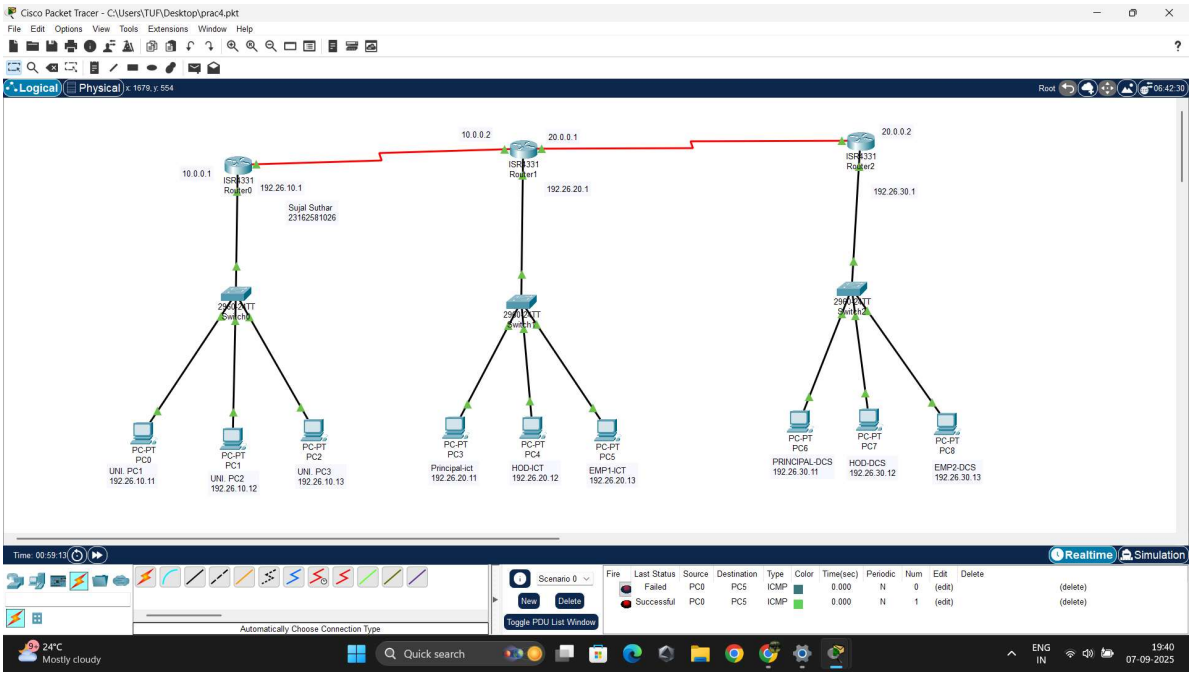
6) Configure ACL on Router2:



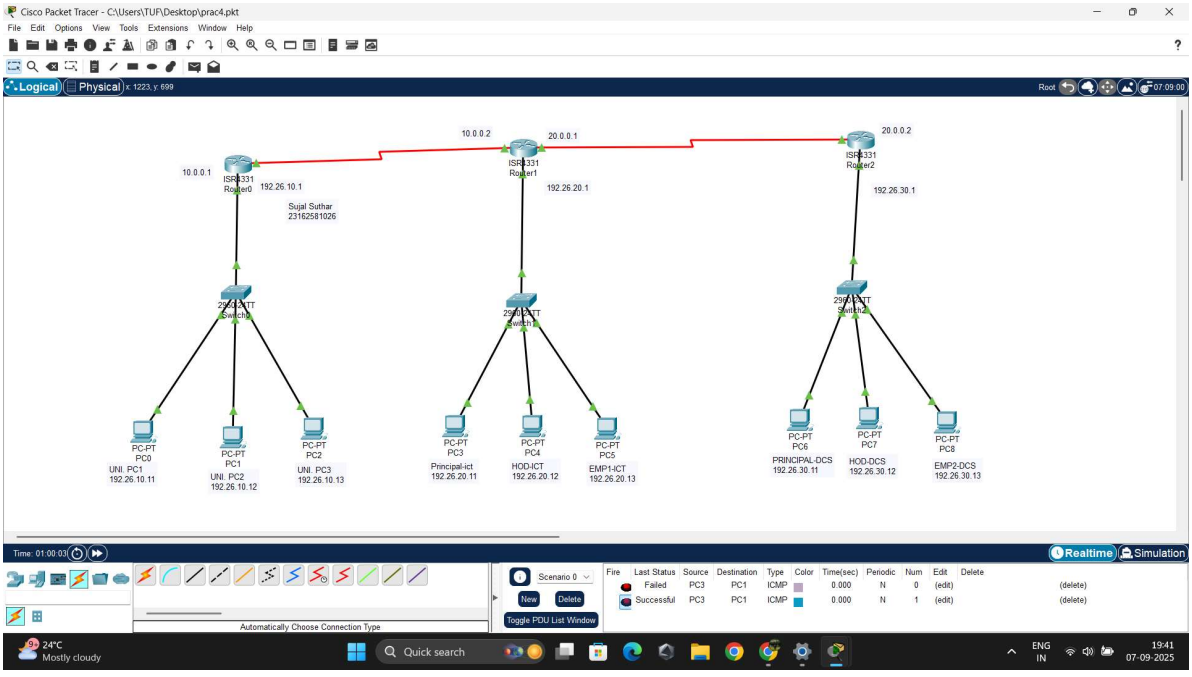


Output:

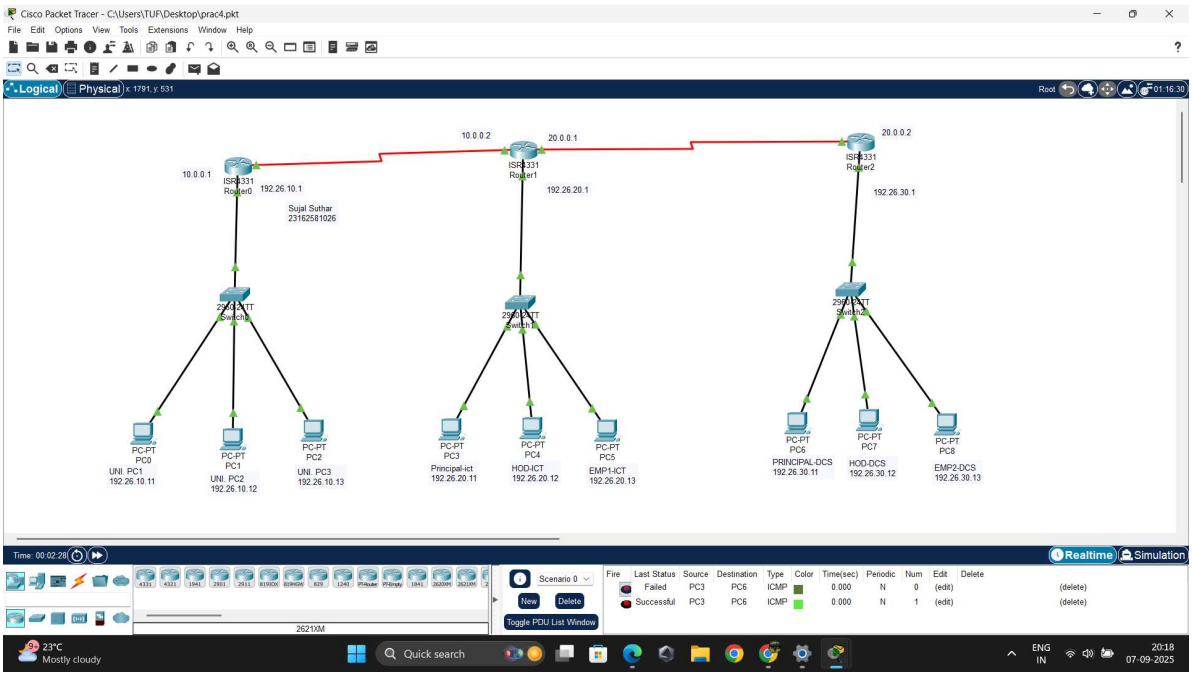
1) University to Employee



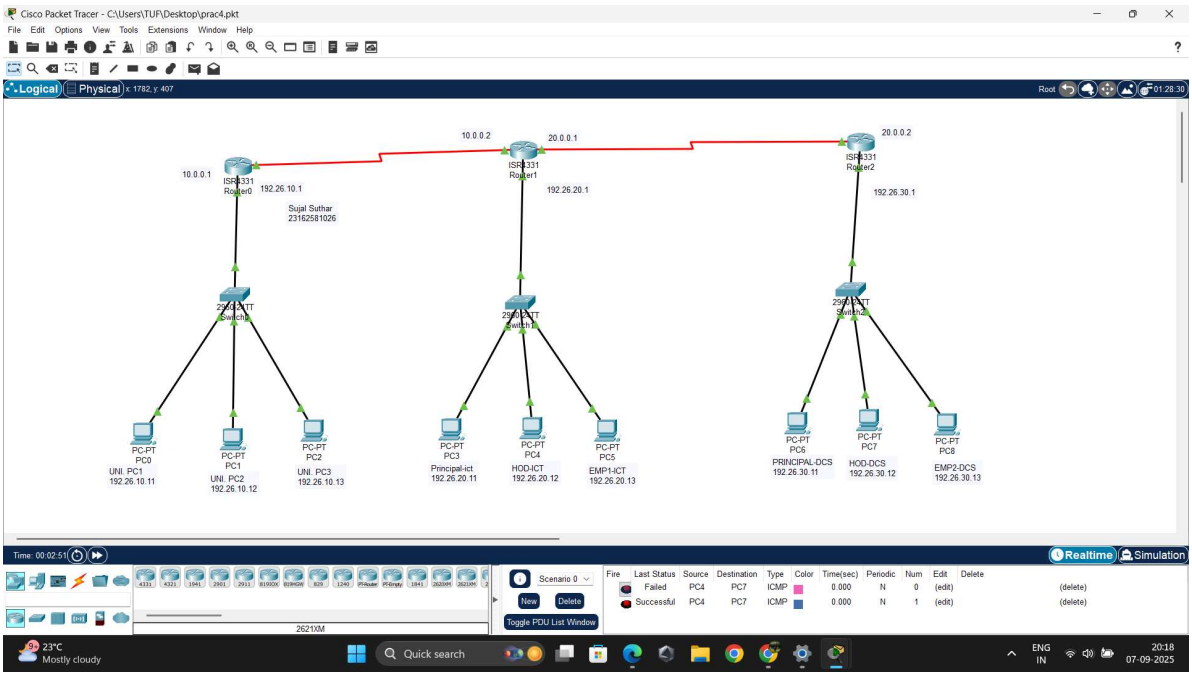
2) Principal to University



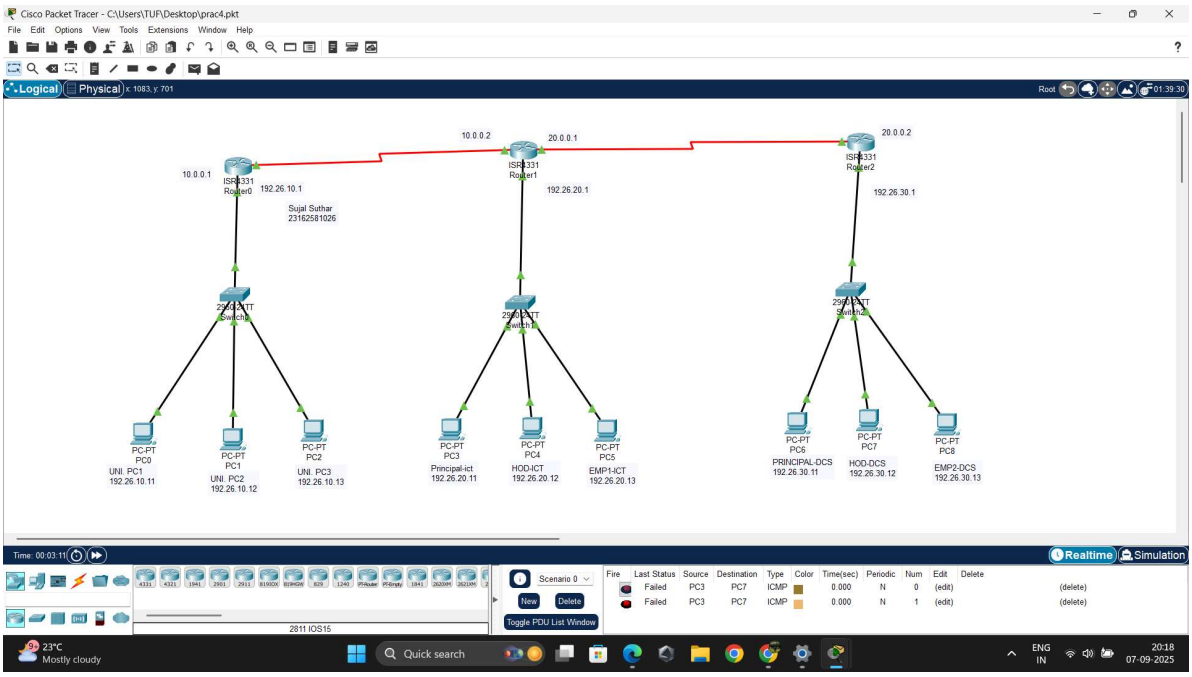
3) Principal to Principal



4) HOD to HOD



- **Principal to HOD: It will be failed!!**



Conclusion:

In this practical, we understood the process of configuring a router through the CLI to apply Access Control Lists (ACLs), which help in securing network devices, controlling access, and managing communication flow. We also practiced setting up RIP routing on routers to ensure smooth and efficient data transfer across different networks.

Note:

Make sure last two digits of your enrollment numbers appears in network IP address that must be visible in snapshot of the cisco packet tracer.i.e. 192.XX.10.1
(XX indicates last two digits of your enrollment no.)