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SUBJECT: DCN SEMESTER PROJECT

SUBMISSION DEADLINE: JULY19, 2021

SUBMITTED TO SIR SANJAY KUMAR

UNIVERSITY NETWORK SYSTEM (UNS)

INTRODUCTION:

This is a University Network System (UNS) in which we have 4 departments. Each department have PCs (Labs & Rooms, etc.) and a DHCP server. This DHCP server is allocating dynamic IPs to all the devices of same network. We have designed and worked on General Lab and other things. It has a President room too. We have implemented Routing Information Protocol (RIP) on complete network which finds the best short route to reach the destination whenever packet (Data & IP information) is passed or sent. Network consist of a web servers of each department which can be accessed by any PC. In Domain Name Server (DNS) we assigned domain names to IP addresses to each web server. We have used File Transfer Protocol (FTP) in our network too. Which can be accessed by any PC of this network.

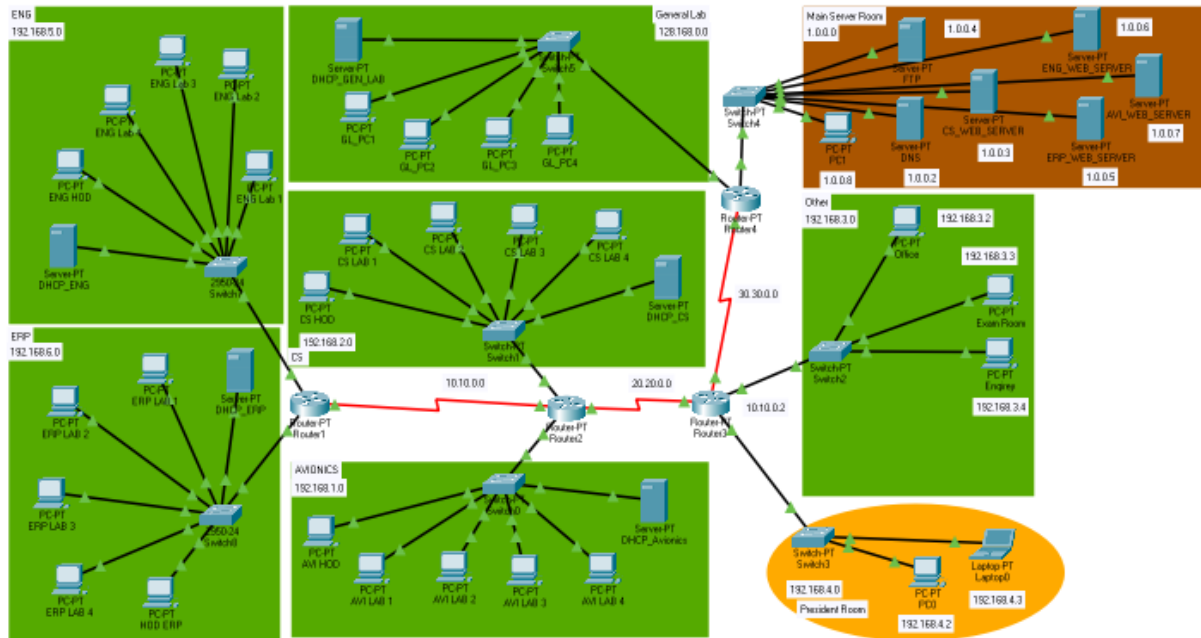
TOPICS COVERED IN THIS NETWORK:

- IP Addressing
- HTTP
- DHCP
- FTP
- DNS
- RIP

OBJECTIVE:

The main objective of this network is to update the existing network and also enhance its capabilities and increase the flexibility of the network which will eventually provide good security.

NETWORK TOPOLOGY:



IP ADDRESSING:

AVIONICS DEPARTMENT(192.168.1.0/24)	
Getting dynamic IPs of this network through DHCP server.	

COMPUTER SCIENCE DEPARTMENT(192.168.2.0/24)	
Getting dynamic IPs of this network through DHCP server.	

ENGINEERING DEPARTMENT(192.168.5.0/24)	
Getting dynamic IPs of this network through DHCP server.	

ERP DEPARTMENT(192.168.6.0/24)	
Getting dynamic IPs of this network through DHCP server.	

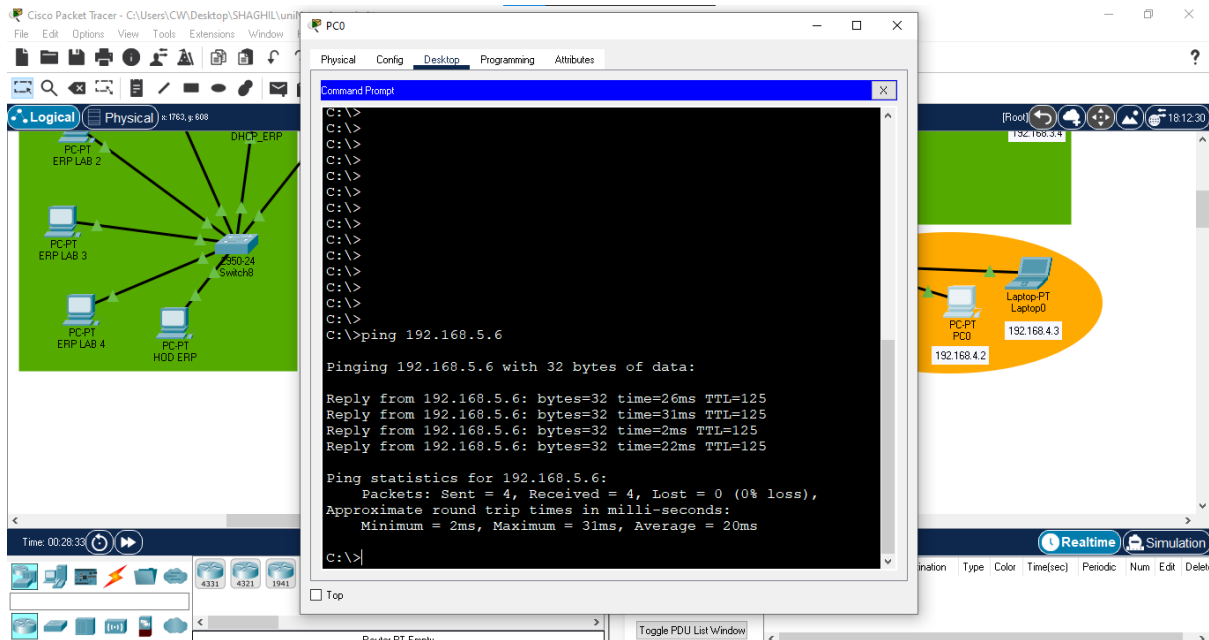
GENERAL LAB(128.168.0.0/16)	
Getting dynamic IPs of this network through DHCP server.	

OTHERS (192.168.3.0/24)	
OFFICE	192.168.3.2
EXAM ROOM	192.168.3.3
ENQUIRY	192.168.3.4

PRESIDENT ROOM (192.168.4.0/24)	
PC 0	192.168.4.2
LAPTOP 0	192.168.4.3

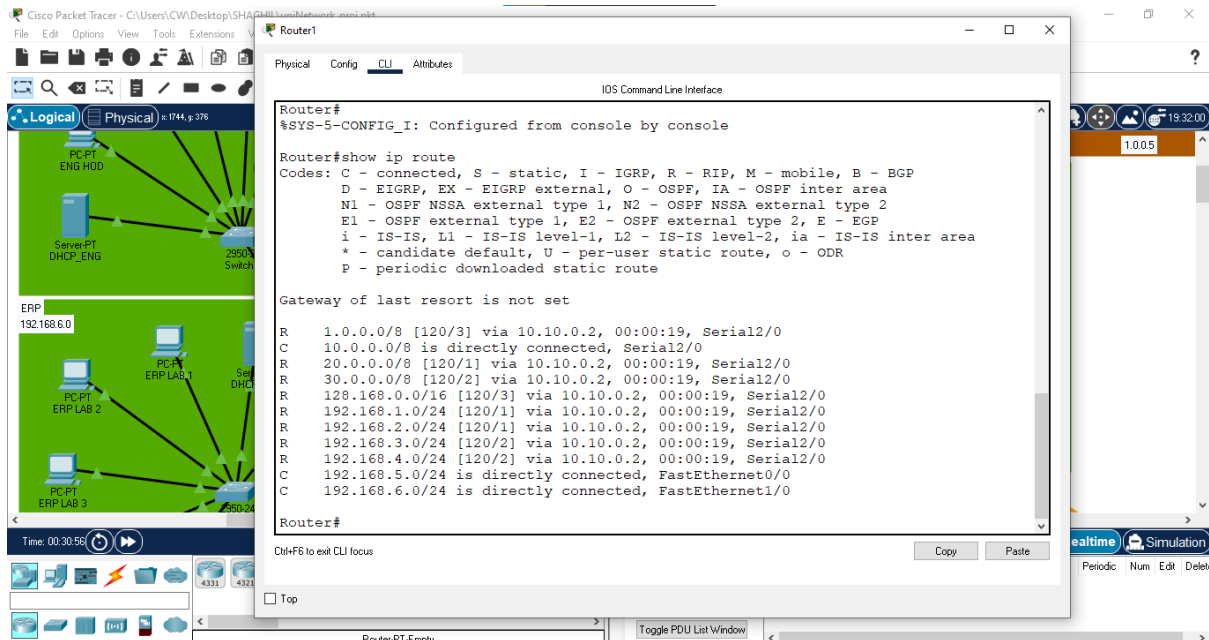
MAIN SERVER ROOM (1.0.0.0/8)	
DNS SERVER	1.0.0.2
CS_WEB_SERVER	1.0.0.3
FTP SERVER	1.0.0.4
ERP_WEB_SERVER	1.0.0.5
ENG_WEB_SERVER	1.0.0.6
AVI_WEB_SERVER	1.0.0.7
PC 1	1.0.0.8

TESTING VLAN FROM PRESIDENT ROOM TO ENGINEERING DEPARTMENT:

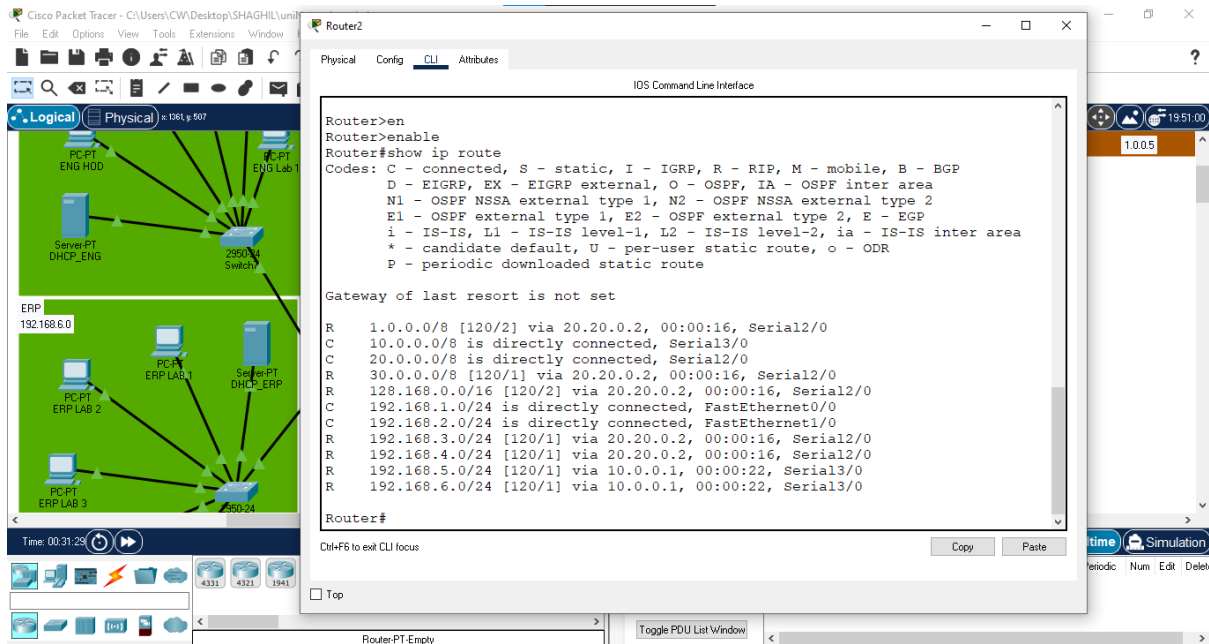


ROUTING INFORMATION PROTOCOLS:

ROUTER 1:



ROUTER 2:



The image shows the Cisco Packet Tracer interface for Router 2. The network diagram on the left displays a topology with a central switch connected to various PCs and servers. The CLI window on the right shows the configuration for Router 2.

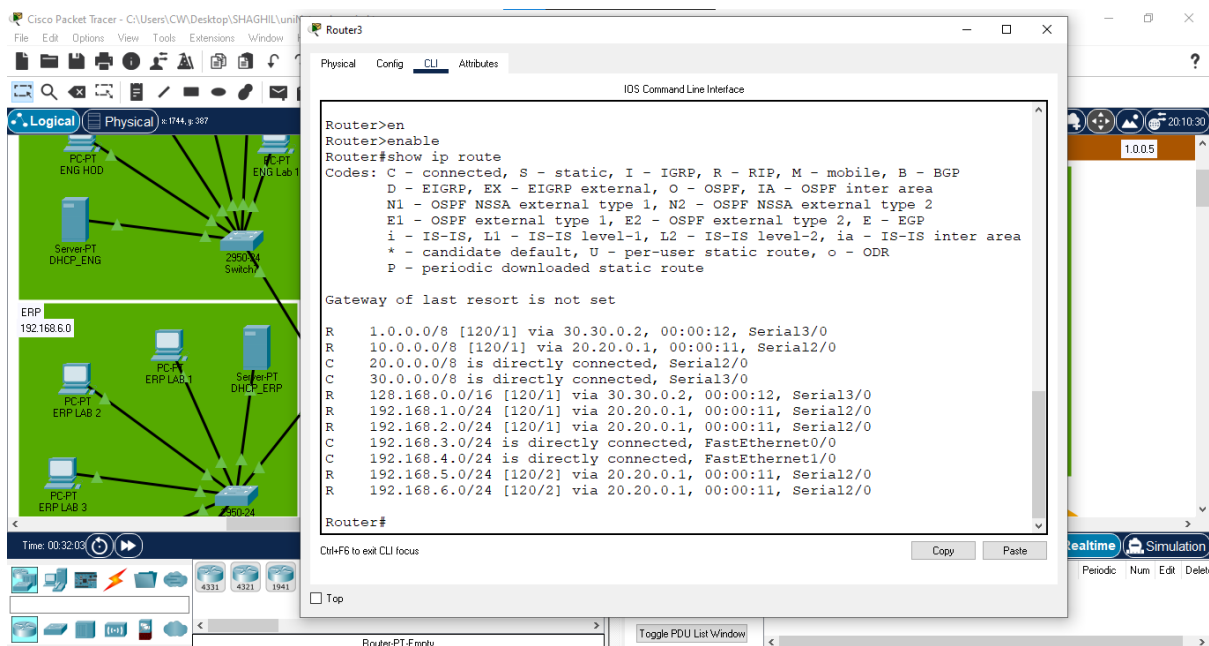
```
Router2
Router>en
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 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

R    1.0.0.0/8 [120/2] via 20.20.0.2, 00:00:16, Serial2/0
C    10.0.0.0/8 is directly connected, Serial3/0
C    20.0.0.0/8 is directly connected, Serial2/0
R    30.0.0.0/8 [120/1] via 20.20.0.2, 00:00:16, Serial2/0
R    128.168.0.0/16 [120/2] via 20.20.0.2, 00:00:16, Serial2/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet1/0
R    192.168.3.0/24 [120/1] via 20.20.0.2, 00:00:16, Serial2/0
R    192.168.4.0/24 [120/1] via 20.20.0.2, 00:00:16, Serial2/0
R    192.168.5.0/24 [120/1] via 10.0.0.1, 00:00:22, Serial3/0
R    192.168.6.0/24 [120/1] via 10.0.0.1, 00:00:22, Serial3/0

Router#
```

ROUTER 3:



The image shows the Cisco Packet Tracer interface for Router 3. The network diagram on the left displays a topology with a central switch connected to various PCs and servers. The CLI window on the right shows the configuration for Router 3.

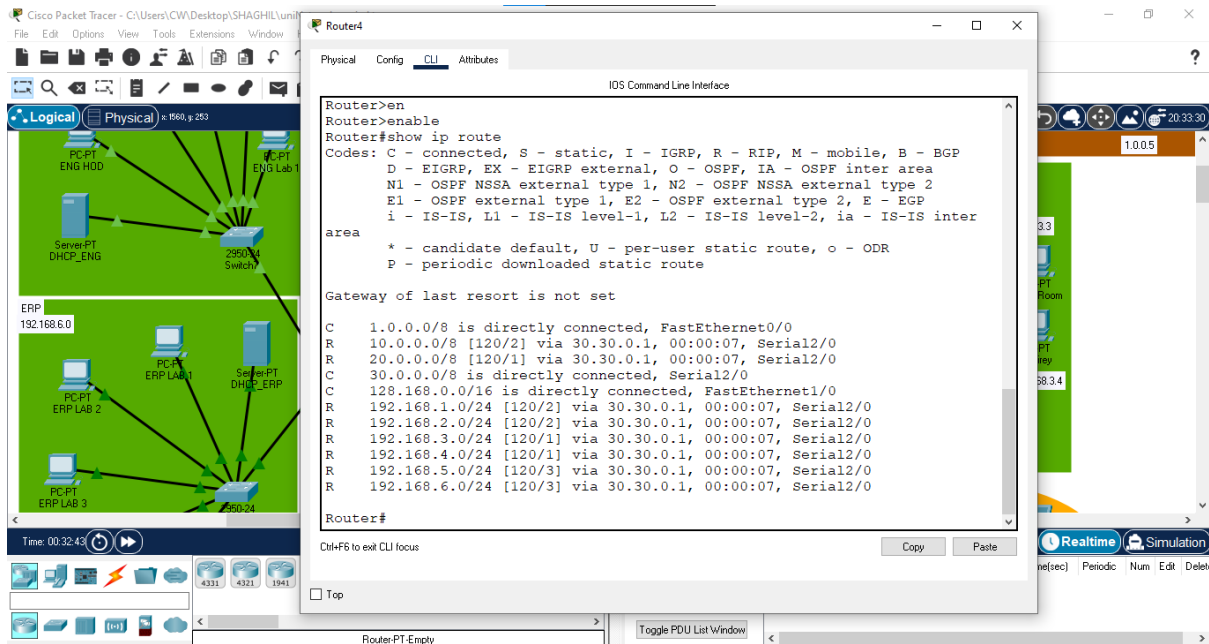
```
Router3
Router>en
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 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

R    1.0.0.0/8 [120/1] via 30.30.0.2, 00:00:12, Serial3/0
R    10.0.0.0/8 [120/1] via 20.20.0.1, 00:00:11, Serial2/0
C    20.0.0.0/8 is directly connected, Serial2/0
C    30.0.0.0/8 is directly connected, Serial3/0
R    128.168.0.0/16 [120/1] via 30.30.0.2, 00:00:12, Serial3/0
R    192.168.1.0/24 [120/1] via 20.20.0.1, 00:00:11, Serial2/0
R    192.168.2.0/24 [120/1] via 20.20.0.1, 00:00:11, Serial2/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
C    192.168.4.0/24 is directly connected, FastEthernet1/0
R    192.168.5.0/24 [120/2] via 20.20.0.1, 00:00:11, Serial2/0
R    192.168.6.0/24 [120/2] via 20.20.0.1, 00:00:11, Serial2/0

Router#
```

ROUTER 4:



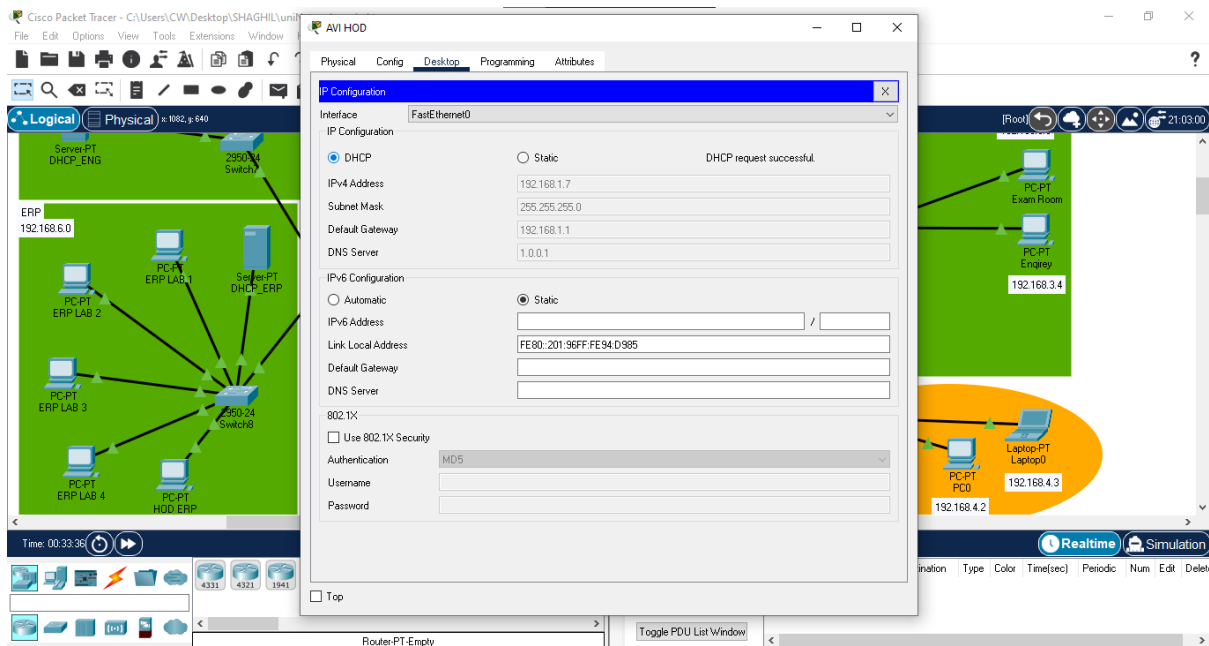
The screenshot shows the Cisco Packet Tracer interface with Router 4 selected. The CLI window displays the following output for the 'show ip route' command:

```
Router>en
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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

C    1.0.0.0/8 is directly connected, FastEthernet0/0
R    10.0.0.0/8 [120/2] via 30.30.0.1, 00:00:07, Serial2/0
R    20.0.0.0/8 [120/1] via 30.30.0.1, 00:00:07, Serial2/0
C    30.0.0.0/8 is directly connected, Serial2/0
C   128.168.0.0/16 is directly connected, FastEthernet1/0
R   192.168.1.0/24 [120/2] via 30.30.0.1, 00:00:07, Serial2/0
R   192.168.2.0/24 [120/2] via 30.30.0.1, 00:00:07, Serial2/0
R   192.168.3.0/24 [120/1] via 30.30.0.1, 00:00:07, Serial2/0
R   192.168.4.0/24 [120/1] via 30.30.0.1, 00:00:07, Serial2/0
R   192.168.5.0/24 [120/3] via 30.30.0.1, 00:00:07, Serial2/0
R   192.168.6.0/24 [120/3] via 30.30.0.1, 00:00:07, Serial2/0
```

ASSIGNING IPs DYNAMICALLY THROUGH DHCP SERVER:



The screenshot shows the Cisco Packet Tracer interface with a PC configuration window open. The 'P Configuration' window is set to the 'FastEthernet0' interface. The 'IP Configuration' section is configured as follows:

- IP Configuration:** DHCP (selected), DHCP request successful.
- IPv4 Address:** 192.168.1.7
- Subnet Mask:** 255.255.0.0
- Default Gateway:** 192.168.1.1
- DNS Server:** 1.0.0.1

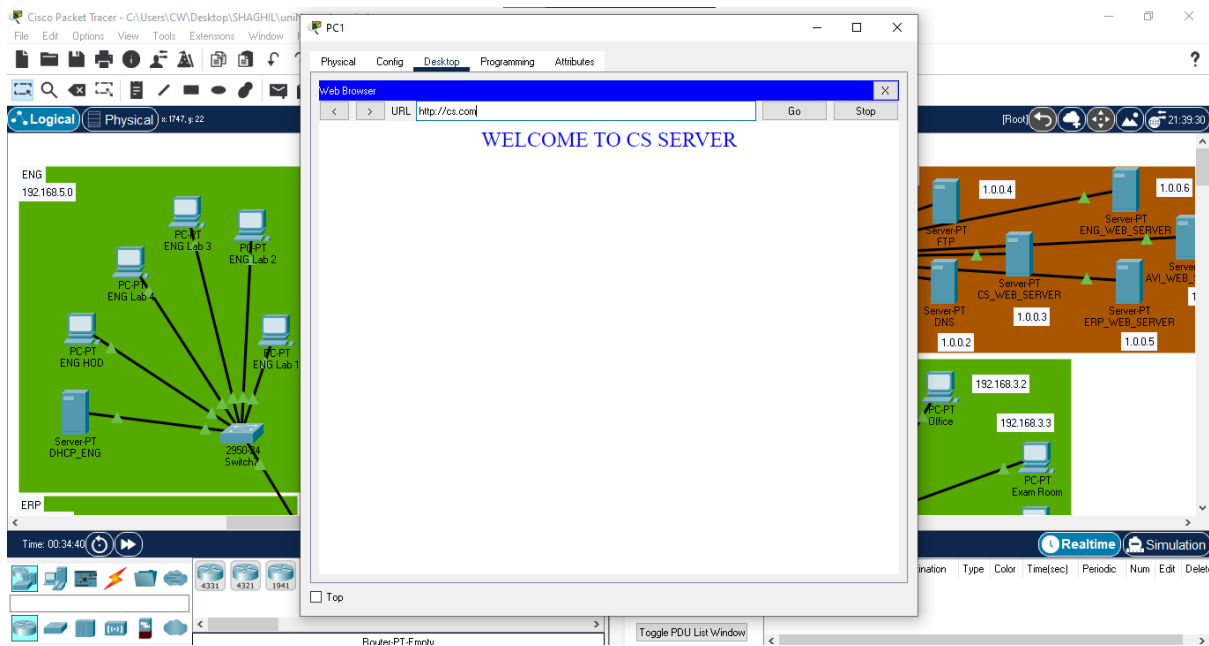
The 'IPv6 Configuration' section is configured as follows:

- IPv6 Configuration:** Static (selected).
- IPv6 Address:** FE80::201:96FF:FE94:D985
- Link Local Address:** FE80::201:96FF:FE94:D985
- Default Gateway:** (empty)
- DNS Server:** (empty)

The '802.1X' section is configured as follows:

- Use 802.1X Security:** (unchecked)
- Authentication:** MD5
- Username:** (empty)
- Password:** (empty)

TESTING WEB HOSTING:



TESTING FTP SERVER:

