Institute of Computer Technology

B. Tech Computer Science and Engineering

Sub: Computer Networks

Course Code:-2CSE502

Sem-V(CS)

Class:-A

Practical:3

Aim: To Design and configure a network using Dynamic Host Configuration Protocol (DHCP).

Scenario:

Mr. Jason has hired a new network admin and asked him to create a network for his company. He has given him the liberty to erase all the previous network setup and create a new one as per his understanding and expertise. Below are the details provided by Mr. Jason to the network admin.

1) The company has 3 departments – Admin, HR, Sales.

2) Each department have 10 users (add at least 3 devices in each network)

3) The networking device available in the organization is 3 DNS servers, 2 DHCP servers, 3 routers and 3 switches.

4) All the users should get the IP address dynamically.

5) The organization has their own inbuilt Domain Name Server (DNS) which will have the details of the website that the user can access.

6) The users of the company are allowed to access only mentioned websites in the office premises. The list of the website is mentioned below:

Admin – google, yahoo, cisco

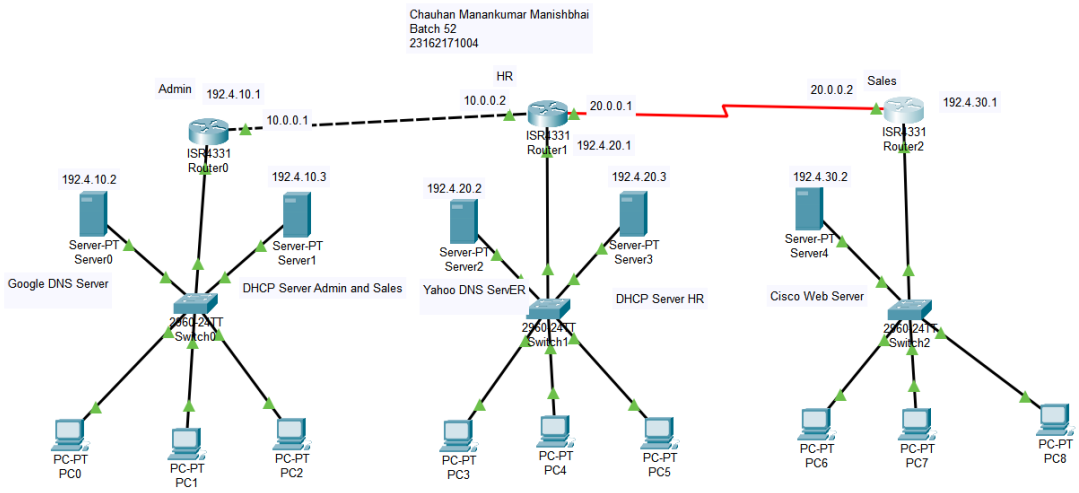
HR – google, cisco

Sales – google

Help the admin to create the network and establish the connection between the devices.

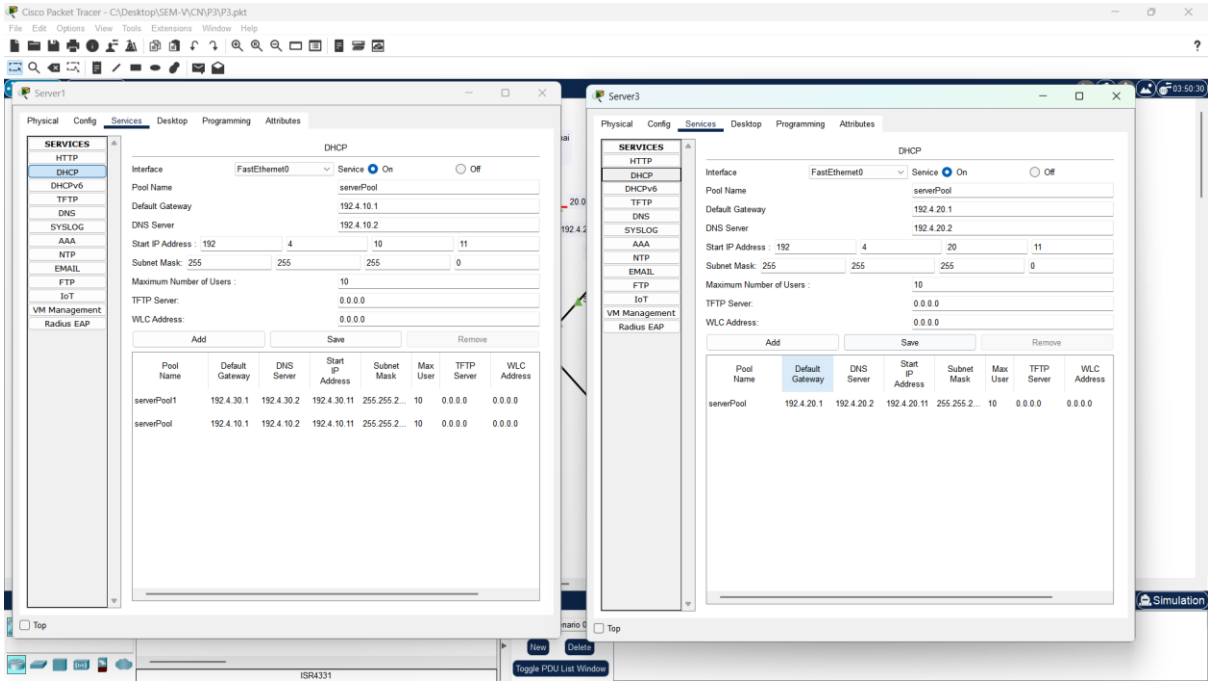
Procedure:

1) Create network

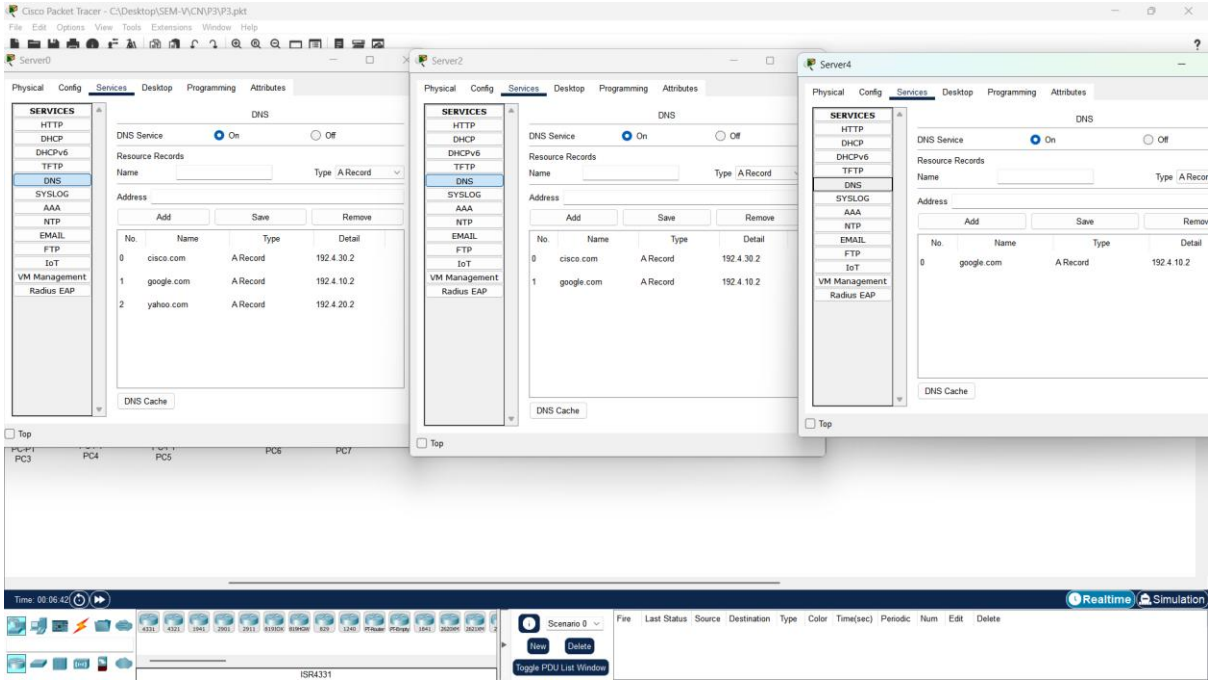


2) Configure IP address (Routers, DNS servers, DHCP servers)

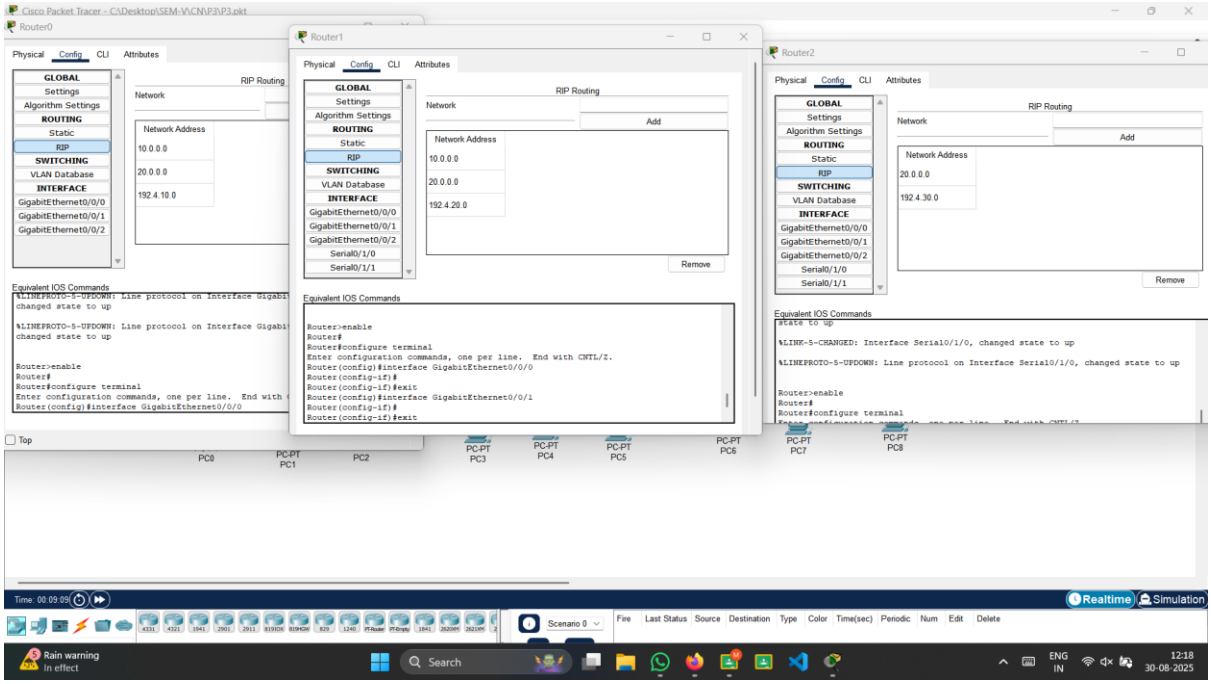
DHCP Servers:-



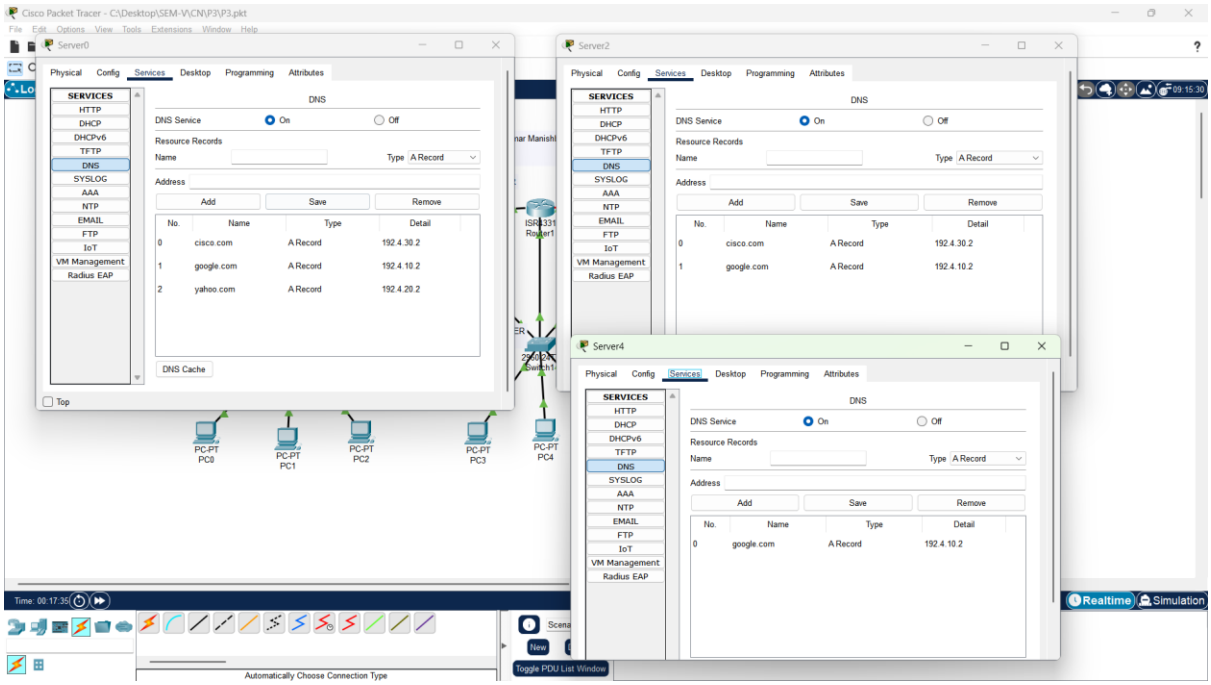
DNS Servres:-



3) Configure dynamic routing table (RIP in routers)

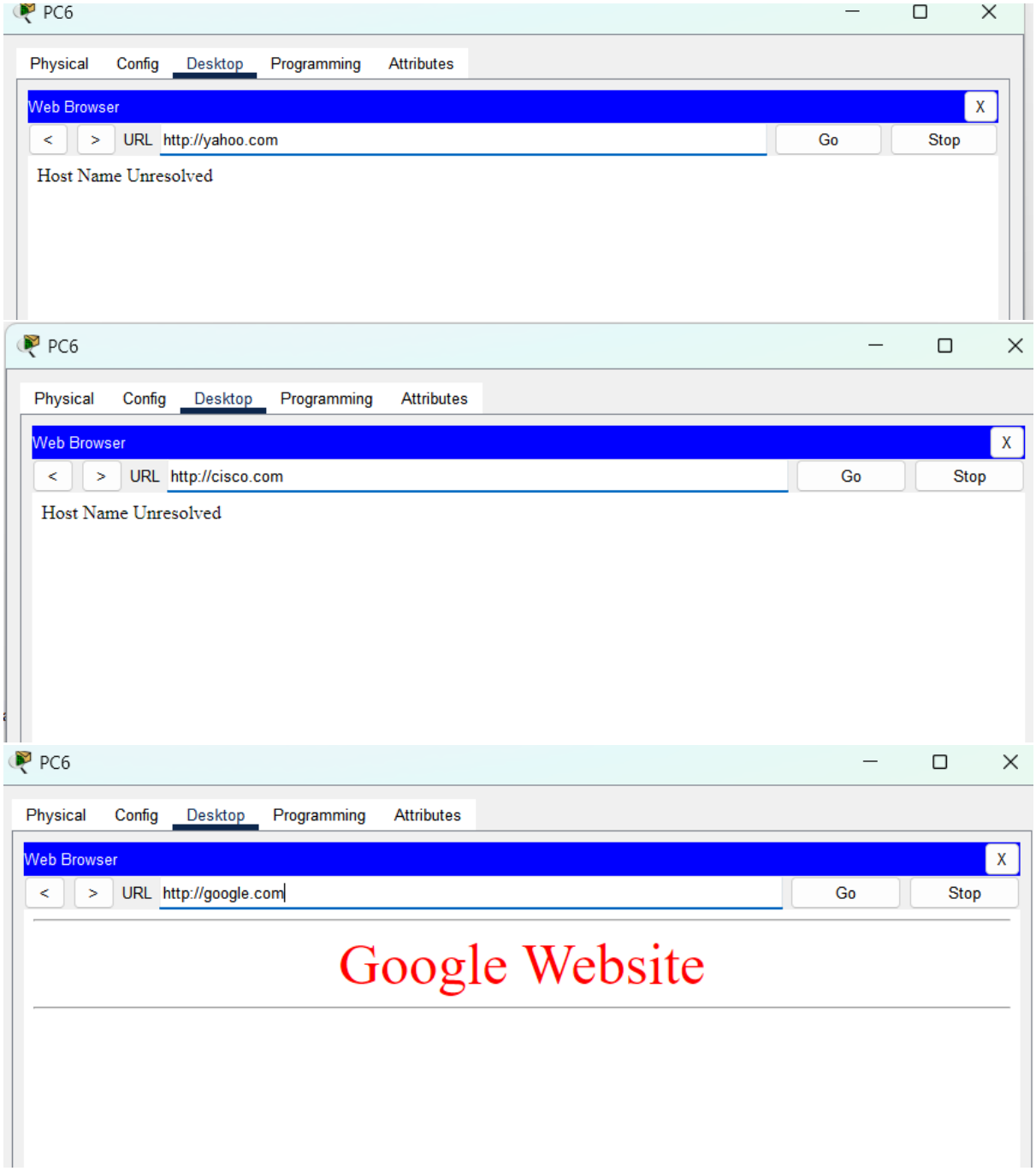


4) Configure DNS service

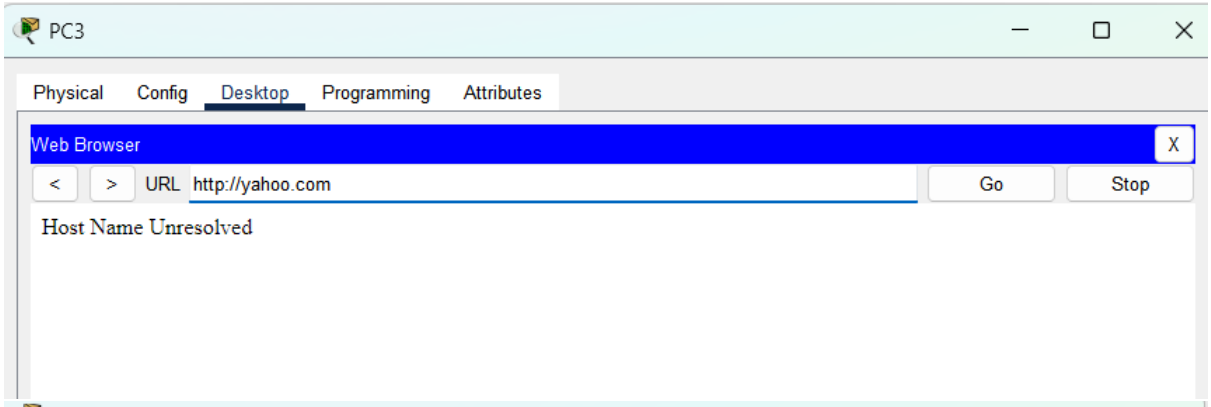


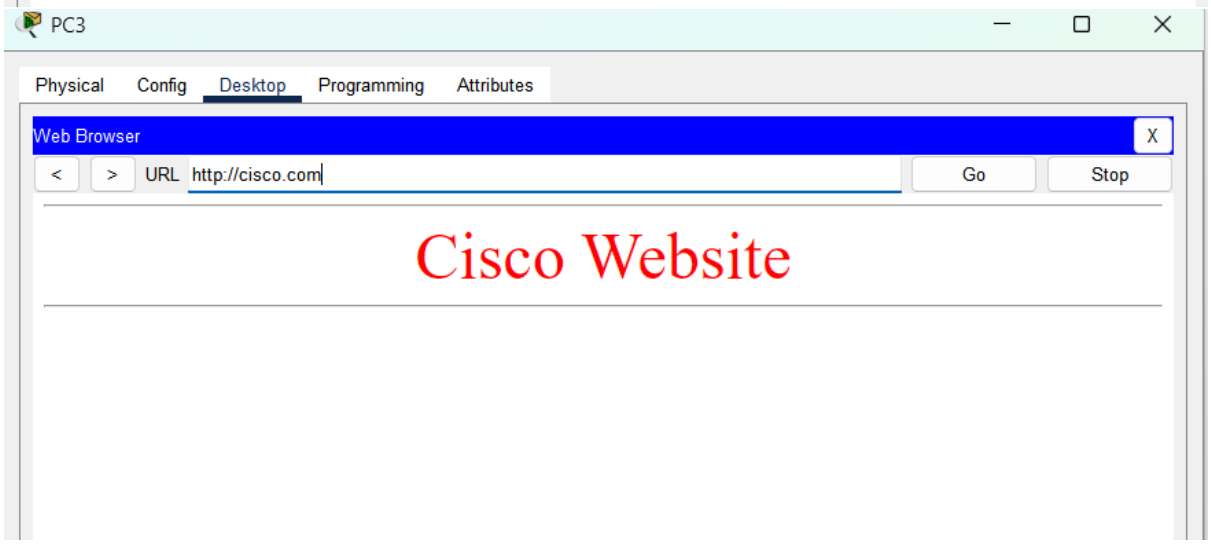
5) Configure WEB service by hosting websites

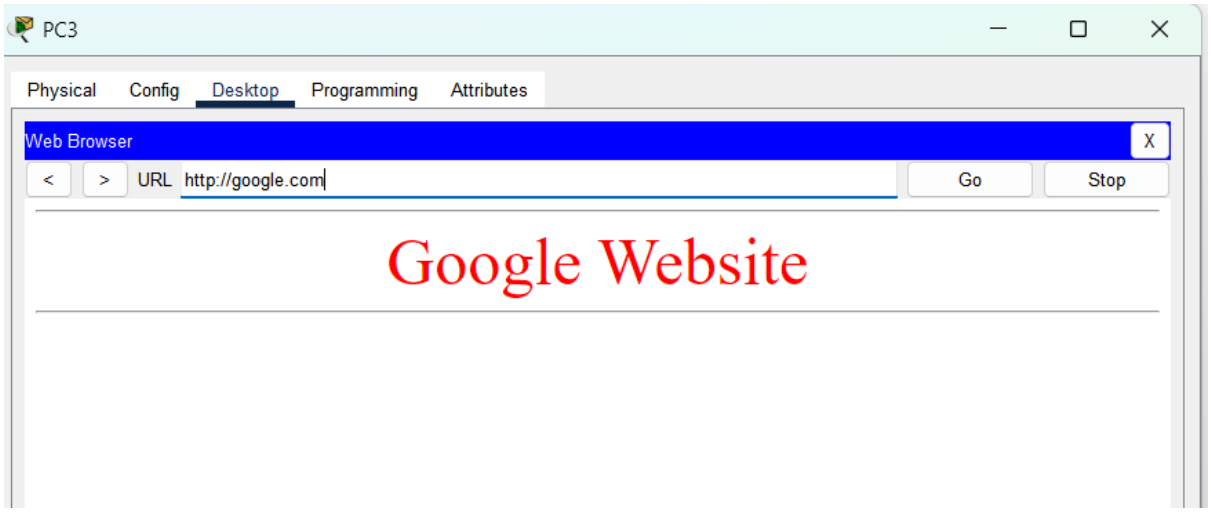
Sales:-



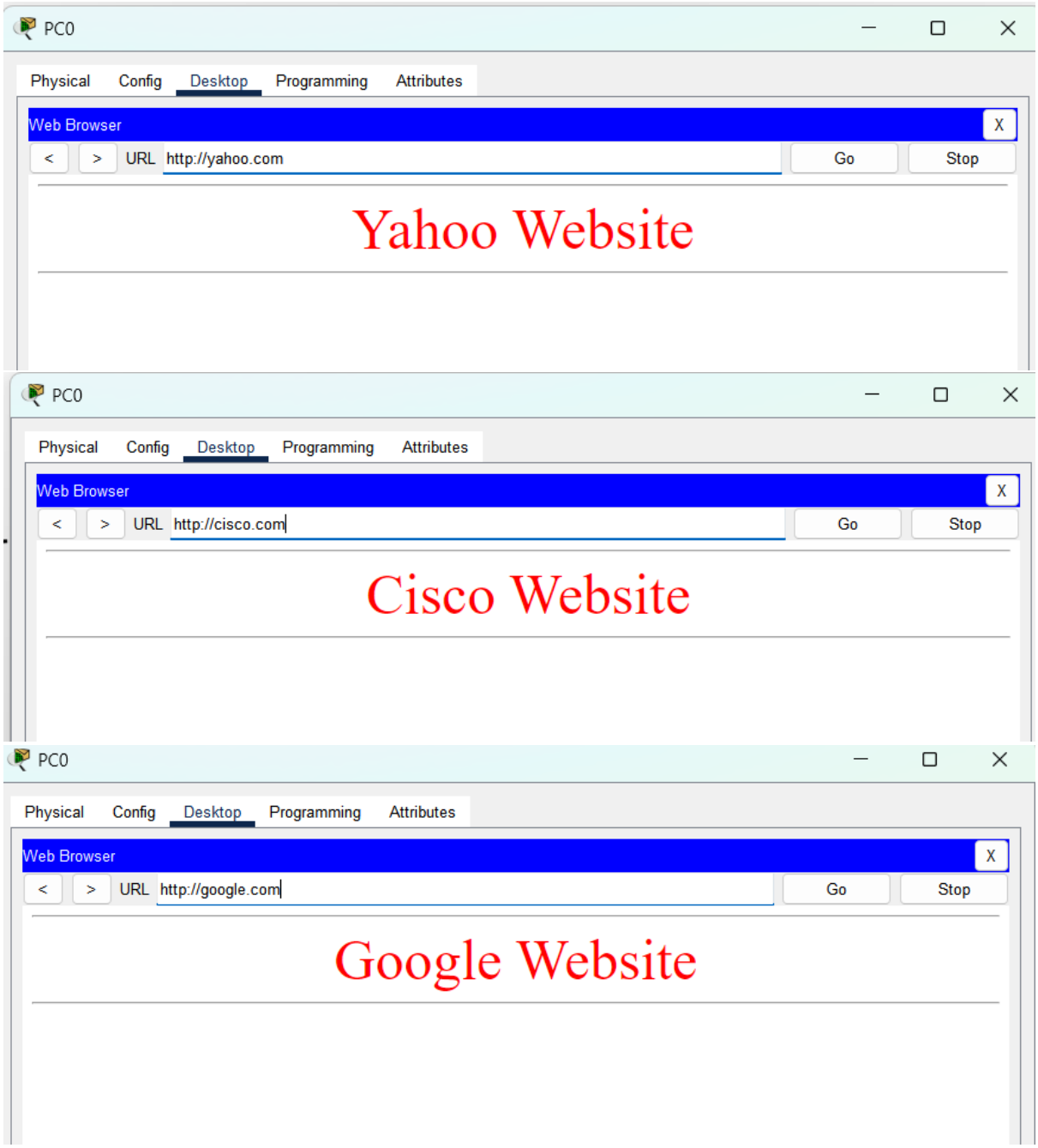
HR:-


PC3
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://yahoo.com
Go
Stop
Host Name Unresolved

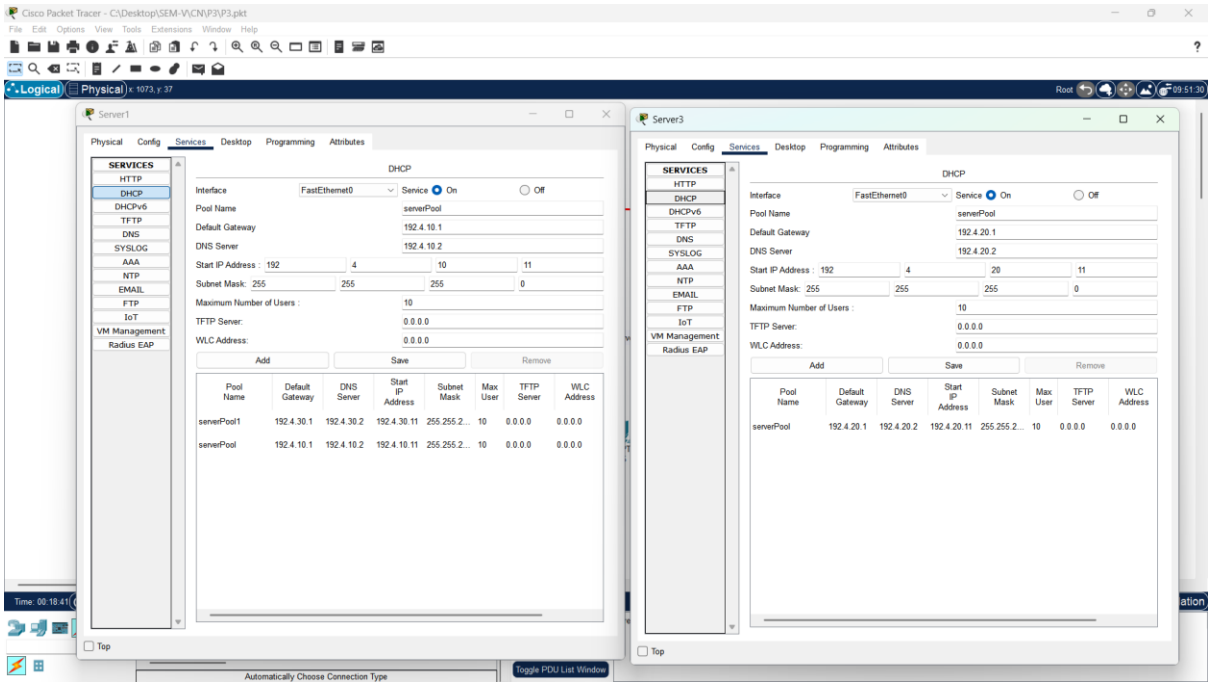

PC3
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://cisco.com
Go
Stop
Cisco Website


PC3
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://google.com
Go
Stop
Google Website

Admin:-


PC0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://yahoo.com
Go
Stop
Yahoo Website
PC0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://cisco.com
Go
Stop
Cisco Website
PC0
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://google.com
Go
Stop
Google Website

6) Configure DHCP server



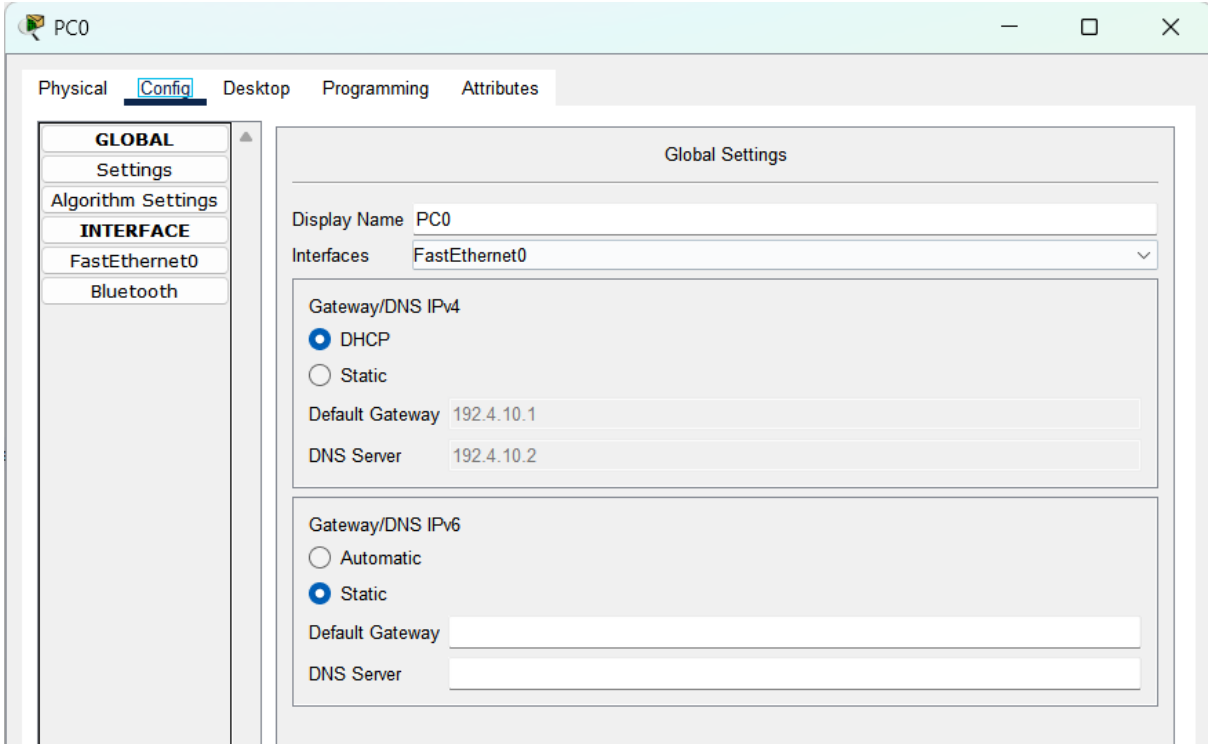
7) Configure IP-Helper command to appropriate interface of a router.

```
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0/0
Router(config-if)#ip address 192.4.30.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#ip helper
Router(config-if)#ip helper-address 192.4.10.3
Router(config-if)#exit
Router(config)#exit\
                ^
% Invalid input detected at '^' marker.

Router(config)#exit\
                ^
% Invalid input detected at '^' marker.

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

8) Set PC to get IP address based on DHCP



Just Like here enable DHCP in all PC to get IP Address.

Conclusion:-

In this practical, a network was successfully created using DHCP to provide automatic IP addresses to all devices. RIP routing was configured for communication between departments, DNS resolved domain names, and web access was restricted as per requirement. The setup worked correctly, showing that DHCP and related services make network management easier and more efficient.