

INSTITUTE OF COMPUTER TECHNOLOGY
B-TECH COMPUTER SCIENCE ENGINEERING 2025-26
SUBJECT: COMPUTER NETWORKS

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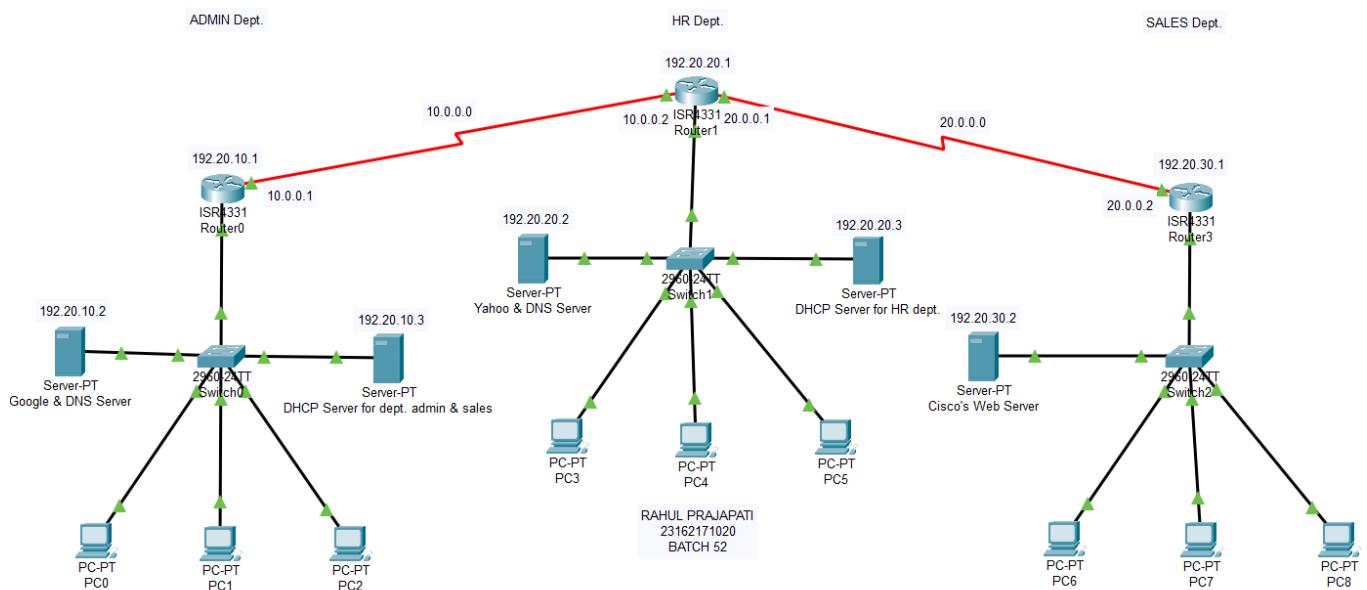
BRANCH: CYBER SECURITY

BATCH: 52

PRACTICAL_03

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

Network Design:



ADMIN DEPARTMENT

Admin and Sales Department DHCP Server Configuration :

DHCP Server for dept. admin & sales

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: On Off

Pool Name: serverPool

Default Gateway: 192.20.10.1

DNS Server: 192.20.10.2

Start IP Address : 192 20 10 11

Subnet Mask: 255 255 255 0

Maximum Number of Users : 20

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool3	192.20.30.1	192.20.30.2	192.20.30.11	255.255.2...	20	0.0.0.0	0.0.0.0
serverPool	192.20.10.1	192.20.10.2	192.20.10.11	255.255.2...	20	0.0.0.0	0.0.0.0

Google Web Server :

Google & DNS Server

IP Configuration

IP Configuration

DHCP Static

IPv4 Address: 192.20.10.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.20.10.1

DNS Server: 192.20.10.2

Google & DNS Server

SERVICES

- HTTP**
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL

Physical Config Services Desktop Programming Attributes

File Name: index.html

```
<html>
<hr>
    <center>
        <font size='+4' color='red'>
            Google Website
        </font>
    </center>
<hr>
</html>
```

Admin Dept. DNS Server :

The screenshot shows the 'Services' tab selected in the top navigation bar. On the left, a sidebar lists various services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The 'DNS' service is currently active, indicated by a blue 'On' button. Below the service status, there is a section for 'Resource Records'. It includes fields for 'Name' (with a dropdown for 'Type' set to 'A Record') and 'Address'. There are three buttons at the bottom of this section: 'Add', 'Save', and 'Remove'. A table below lists three entries: cisco.com (A Record, 192.20.30.2), google.com (A Record, 192.20.10.2), and yahoo.com (A Record, 192.20.20.2).

Router Configuration :

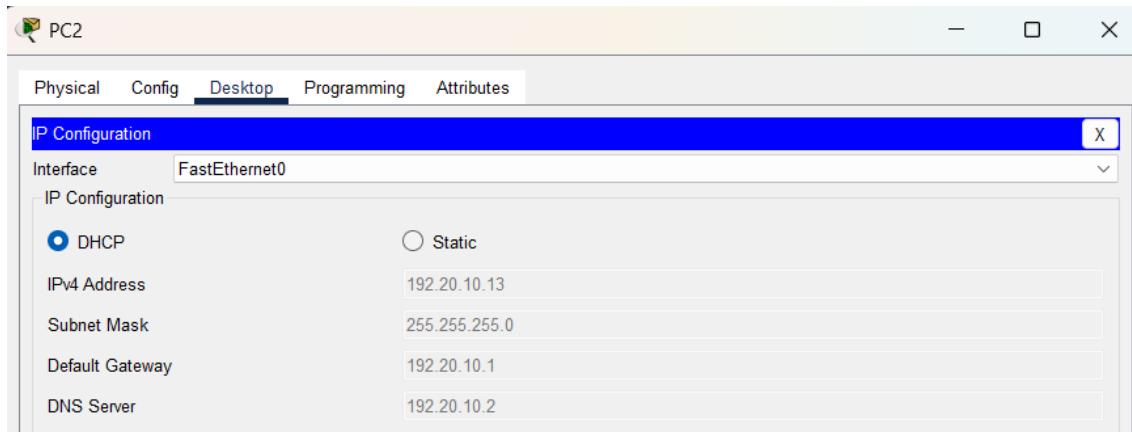
GigabitEthernet 0/0/0 → 192.20.10.1
Serial 0/1/0 → 10.0.0.1

RIP Configuration:

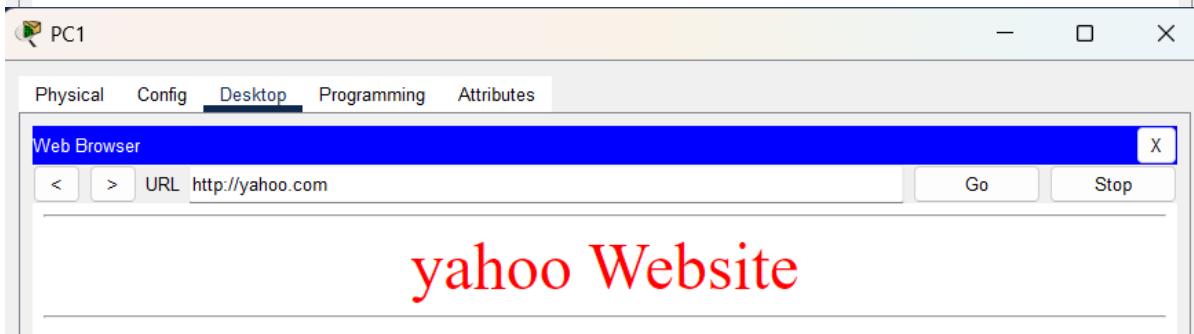
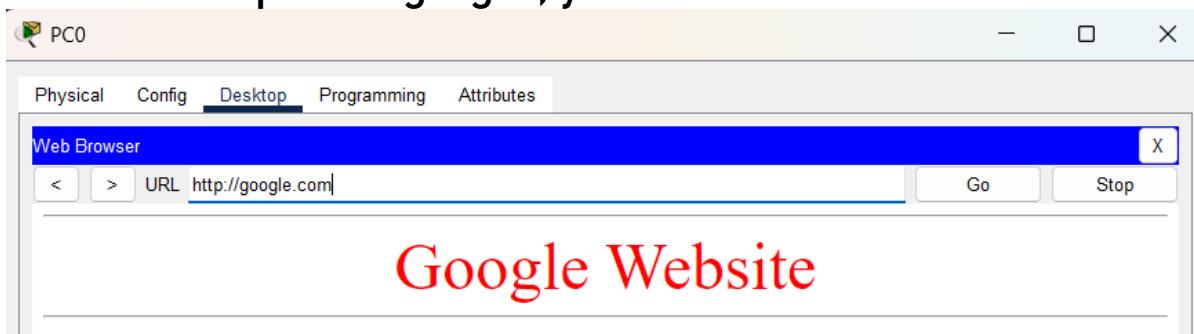
The screenshot shows the 'Config' tab selected in the top navigation bar. On the left, a sidebar lists GLOBAL, ROUTING (with 'RIP' selected), SWITCHING, INTERFACE, and GigabitEthernet0/0/0. In the main area, the 'RIP Routing' section is displayed. It has a 'Network' field and an 'Add' button. Below it is a table titled 'Network Address' containing the entries: 10.0.0.0, 20.0.0.0, and 192.20.10.0.

PC's IP Configuration :

The screenshot shows the 'Desktop' tab selected in the top navigation bar. On the left, a sidebar lists Physical, Config, Desktop (selected), Programming, and Attributes. Under the 'Desktop' tab, the 'IP Configuration' section is active. It shows the interface as 'FastEthernet0'. The configuration type is set to 'DHCP' (radio button selected). Below this, there are fields for 'IPv4 Address' (192.20.10.11), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (192.20.10.1), and 'DNS Server' (192.20.10.2).



Web Service Request to google , yahoo & cisco:



HR DEPARTMENT

HR Department DHCP Server Configuration :

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.20.20.1	192.20.20.2	192.20.20.11	255.255.255.0	20	0.0.0.0	0.0.0.0

Yahoo Web Server :

```
<html>
<hr>
<center>
<font size='4' color='red'>
 yahoo Website
</font>
</center>
<hr>
</html>
```

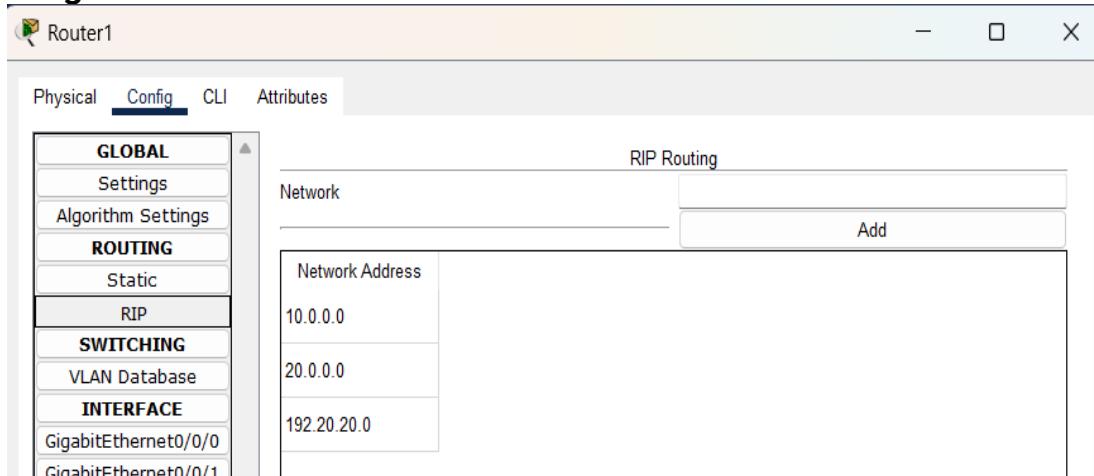
HR Dept. DNS Server :

No.	Name	Type	Detail
0	cisco.com	A Record	192.20.30.2
1	google.com	A Record	192.20.10.2

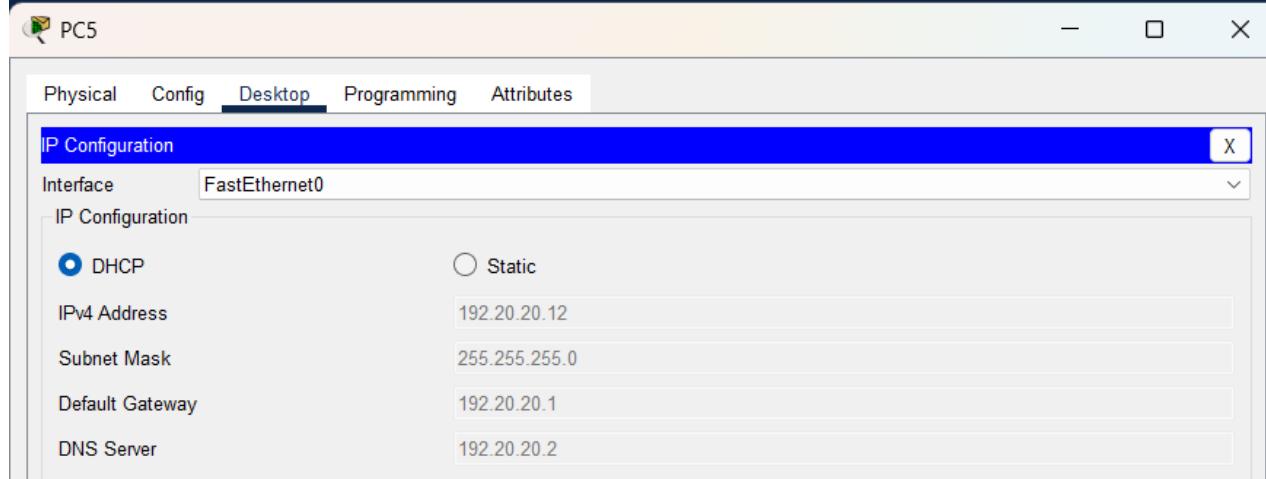
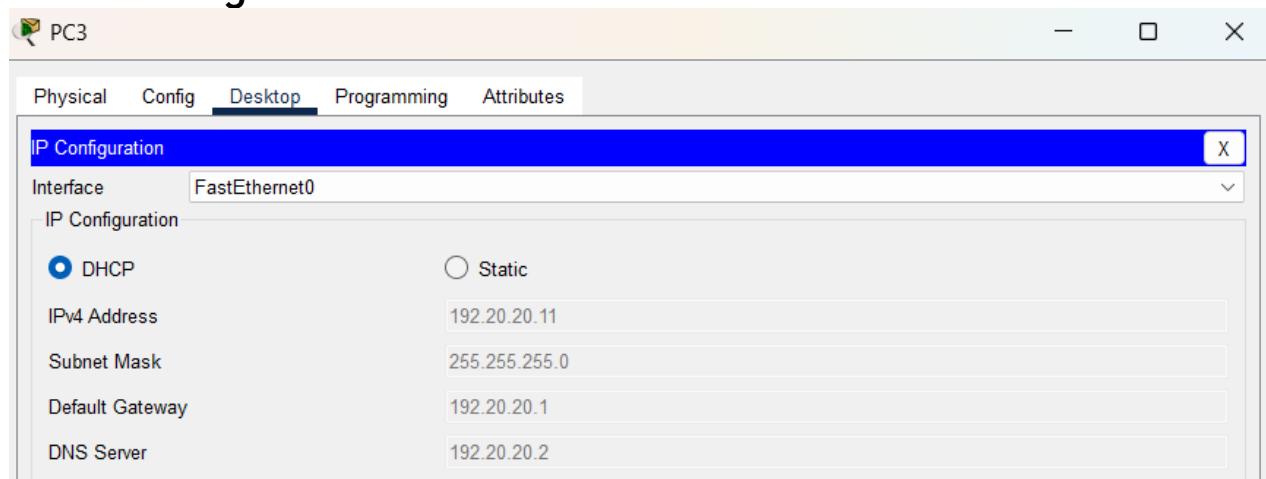
Router Configuration :

GigabitEthernet 0/0/0 → 192.20.20.1
Serial 0/2/1 → 10.0.0.2
Serial 0/2/0 → 20.0.0.1

RIP Configuration:



PC's IP Configuration :



Web Service Request to google & cisco:

The image displays three separate windows, each representing a different computer (PC3, PC4, and PC5) performing a web service request. Each window has a tab bar with 'Physical', 'Config', 'Desktop' (which is selected), 'Programming', and 'Attributes'. A 'Web Browser' tab is open in each window.

- PC3:** URL: <http://GOOGLE.COM>. The page content is "Google Website".
- PC4:** URL: <http://cisco.com>. The page content is "Cisco Website".
- PC5:** URL: <http://yahoo.com>. The status message is "Host Name Unresolved".

SALES DEPARTMENT

Cisco Web Server :

A screenshot of the Cisco's Web Server interface. The 'Services' tab is selected. On the left, a sidebar lists services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, and CMATI. The main panel shows the file 'index.html' with the following content:

```
<html>
    <hr>
    <center>
        <font size='+4' color='red'>
            Cisco Website
        </font>
    </center>
</html>
```

Sales Dept. DNS Server :

A screenshot of the Cisco's Web Server interface. The 'Services' tab is selected. On the left, a sidebar lists services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, and VM Management. The main panel shows the 'DNS' section with the following configuration:

- DNS Service: On Off
- Resource Records:
 - Name:
 - Type:
- Address:
- Action buttons: Add, Save, Remove
- Table of records:

No.	Name	Type	Detail
0	google.com	A Record	192.20.10.2

Router Configuration :

GigabitEthernet 0/0/0 → 192.20.30.1
Serial 0/1/0 → 20.0.0.2

RIP Configuration:



PC's IP Configuration :

The image contains two side-by-side screenshots of network configuration interfaces for PCs.

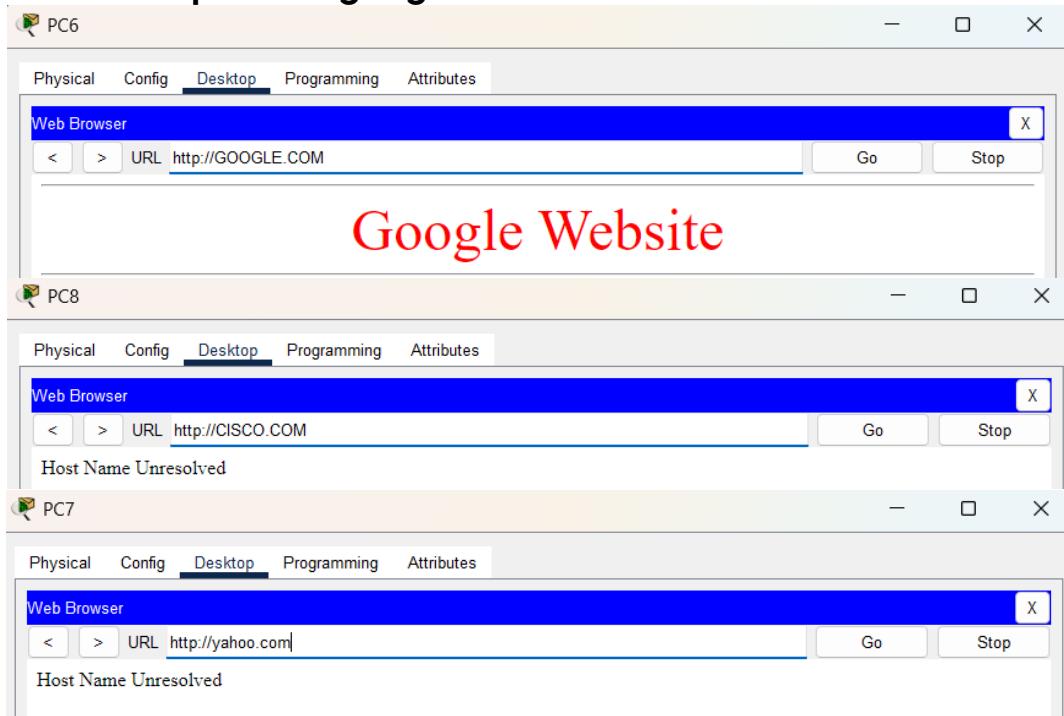
PC6 Configuration:

- Interface: FastEthernet0
- IP Configuration Type: DHCP (selected)
- IPv4 Address: 192.20.30.12
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.20.30.1
- DNS Server: 192.20.30.2

PC8 Configuration:

- Interface: FastEthernet0
- IP Configuration Type: DHCP (selected)
- IPv4 Address: 192.20.30.11
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.20.30.1
- DNS Server: 192.20.30.2

Web Service Request to google :



Conclusion: The network was successfully designed using DHCP to provide dynamic IP allocation for all departments. DNS and access control were configured to ensure users could only access authorized websites, meeting the organization's requirements efficiently.