

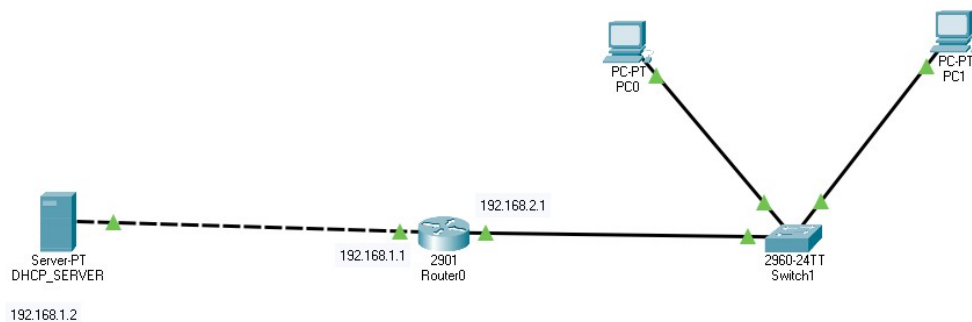
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Section : BCS-5A

Lab No 5

- **Lab Task is starting From Page 7**
- **Task1: Configuring an IP helper address:**
Step1: Create This Topology



Step2: After Creating this topology
Assign IP addresses to the Server.
Server: IP address: 192.168.1.2 Subnet mask:
255.255.255.0 Default gateway: 192.168.1.1

DHCP_SERVER

Physical
Config
Services
Desktop
Programming
Attributes

IP Configuration

IP Configuration

☐ DHCP
☒ Static

IPv4 Address
192.168.1.2

Subnet Mask
255.255.255.0

Default Gateway
192.168.1.1

DNS Server
0.0.0.0

IPv6 Configuration

☐ Automatic
☒ Static

IPv6 Address
/

Link Local Address
FE80::260:3EFF:FED3:D687

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication
MD5

Username

Password

☐ Top

Step3: Do Router Interface Configurations.

```

Router(config)#
Router(config-if)#
Router(config-if)#
Router(config-if)#interface Gi
Router(config-if)#interface Giga
Router(config-if)#interface Gigabit
Router(config-if)#interface GigabitEther
Router(config-if)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#interface Gi
Router(config-if)#interface GigabitEthernet 0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#

```

Ctrl+F6 to exit CLI focus

Router0

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- SWITCHING**
- VLAN Database
- INTERFACE**
- GigabitEthernet0/0
- GigabitEthernet0/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.C96C.0001

IP Configuration

IPv4 Address 192.168.1.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#interface Giga
Router(config-if)#interface Gigabit
Router(config-if)#interface GigabitEther
Router(config-if)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#interface Gi
Router(config-if)#interface GigabitEthernet 0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
```

Router0

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- SWITCHING**
- VLAN Database
- INTERFACE**
- GigabitEthernet0/0
- GigabitEthernet0/1

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.C96C.0002

IP Configuration

IPv4 Address 192.168.2.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-if)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#interface Gi
Router(config-if)#interface GigabitEthernet 0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
```

Step4: Enable DHCP services and create a pool of IP addresses.

DHCP_SERVER

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: sales

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

Start IP Address: 192 168 2 0

Subnet Mask: 255 255 255 0

Maximum Number of Users: 255

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
serverPool	192.168.1.1	0.0.0.0	192.168.1.1	255.255.255.255	255	0.0.0.0	0.0.0.0
sales	192.168.2.1	0.0.0.0	192.168.2.1	255.255.255.255	255	0.0.0.0	0.0.0.0

Step5: Add helper ip address using router cli.

```
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#interface Gi
Router(config-if)#interface GigabitEthernet 0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#interface GigabitEthernet0/1
Router(config-if)#ip helper-address 192.168.1.2
Router(config-if)#
```

Ctrl+F6 to exit CLI focus

Step6: Now go to the PC1 and enable **DHCP** in it IP addresses will be assigned.

The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The 'DHCP request successful.' message is displayed. The IP4 Address is 192.168.2.2, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.2.1, and DNS Server is 0.0.0.0. The IPv6 Configuration section shows 'Automatic' selected and 'Static' unselected. The IPv6 Address is empty, Link Local Address is FE80::201:97FF:FE6A:4751, Default Gateway is empty, and DNS Server is empty. The 802.1X section shows 'Use 802.1X Security' unchecked, Authentication set to MD5, Username empty, and Password empty.

Interface	FastEthernet0
IP Configuration	
<input checked="" type="radio"/> DHCP <input type="radio"/> Static DHCP request successful.	
IPV4 Address	192.168.2.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.1
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic <input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::201:97FF:FE6A:4751
Default Gateway	
DNS Server	
802.1X	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

Same goes for PC0.

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address: 192.168.2.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:5CFF:FEA5:2AC9

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

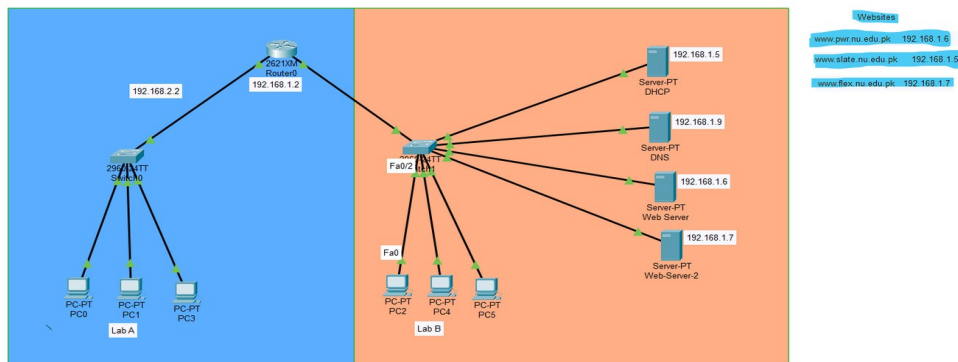
Lab Task:

Lab Task

Students should make the scenario exactly implemented in Lab 4 and implement the following:

1. We have three website each of them is stored on separate Web Server,
 - (www.slate.nu.edu.pk or state.nu.edu.pk) having IP address 192.168.1.5
 - (www.pwr.nu.edu.pk or pwr.nu.edu.pk) having IP address 192.168.1.6
 - (www.flex.nu.edu.pk or flex.nu.edu.pk) having IP address 192.168.1.7
2. A DHCP server and a DNS server configured as follow:
 - DHCP IP : 192.168.1.9
 - DNS Server IP : 192.168.1.4
3. We are going to make Two Labs "Lab A" and "Lab B". In each Lab there are three PC's. We want to use DHCP Server to avoid static IP's. We also have our own DNS Server. Use the Class C IP Address like 192.168.1.0 or 192.168.2.0

Step1: Create This Topology.



Step2: Assign Ip Addresses to the Router to both the wires **FastEthernet0/0** and **FastEthernet0/1**.

Router0

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

INTERFACE

- FastEthernet0/0
- FastEthernet0/1

FastEthernet0/0

Port Status ☒ On
Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto
Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto
MAC Address 00D0.BAE2.0B01

IP Configuration

IP Address 192.168.2.2
Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

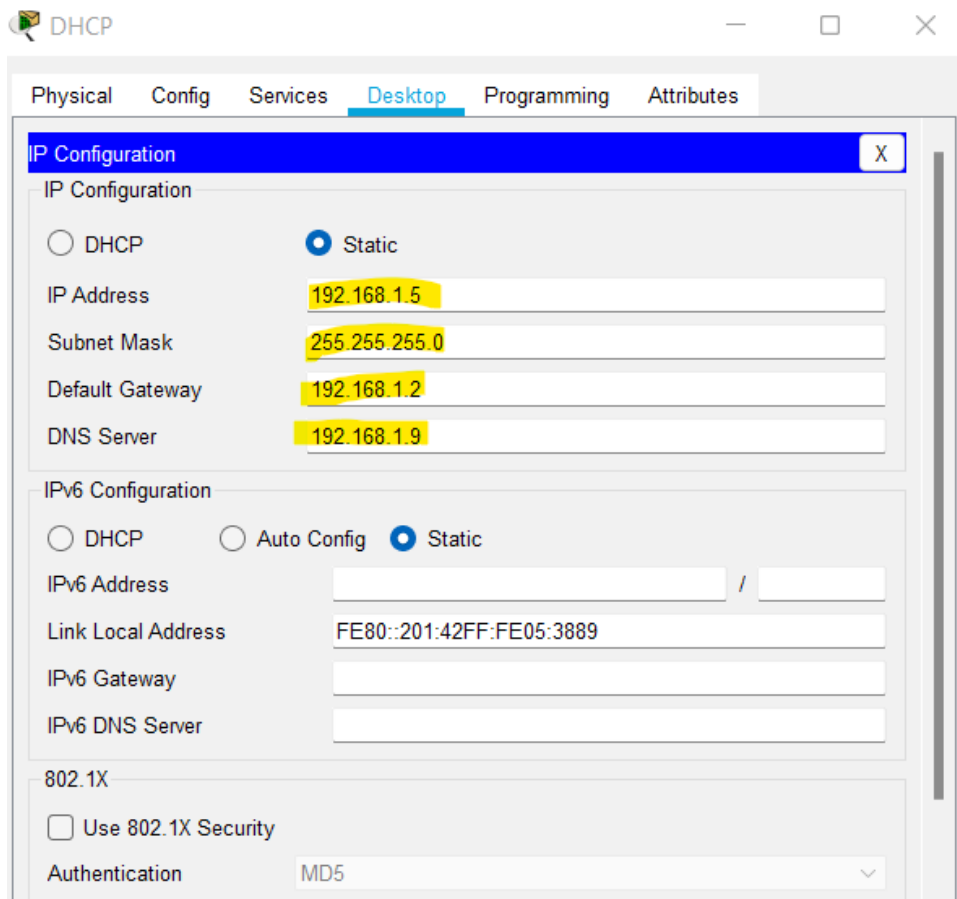
```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

Step3: Go to router CLI and Add Pool P1 and P2.

```
Router#
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#ip dhcp pool P1
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.2
Router(dhcp-config)#ip dhcp pool P2
Router(dhcp-config)#network 192.168.2.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.2.2
Router(dhcp-config)%%DHCPD-4-PING_CONFLICT: DHCP address
conflict: server pinged 192.168.2.2.
```

Step4: We need three servers to have three websites. Assign the given IP addresses to the three servers and edit the index file as per your need.

First Edit DHCP server 192.168.1.5 => slate



Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.5

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.2

DNS Server 192.168.1.9

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::201:42FF:FE05:3889

IPv6 Gateway

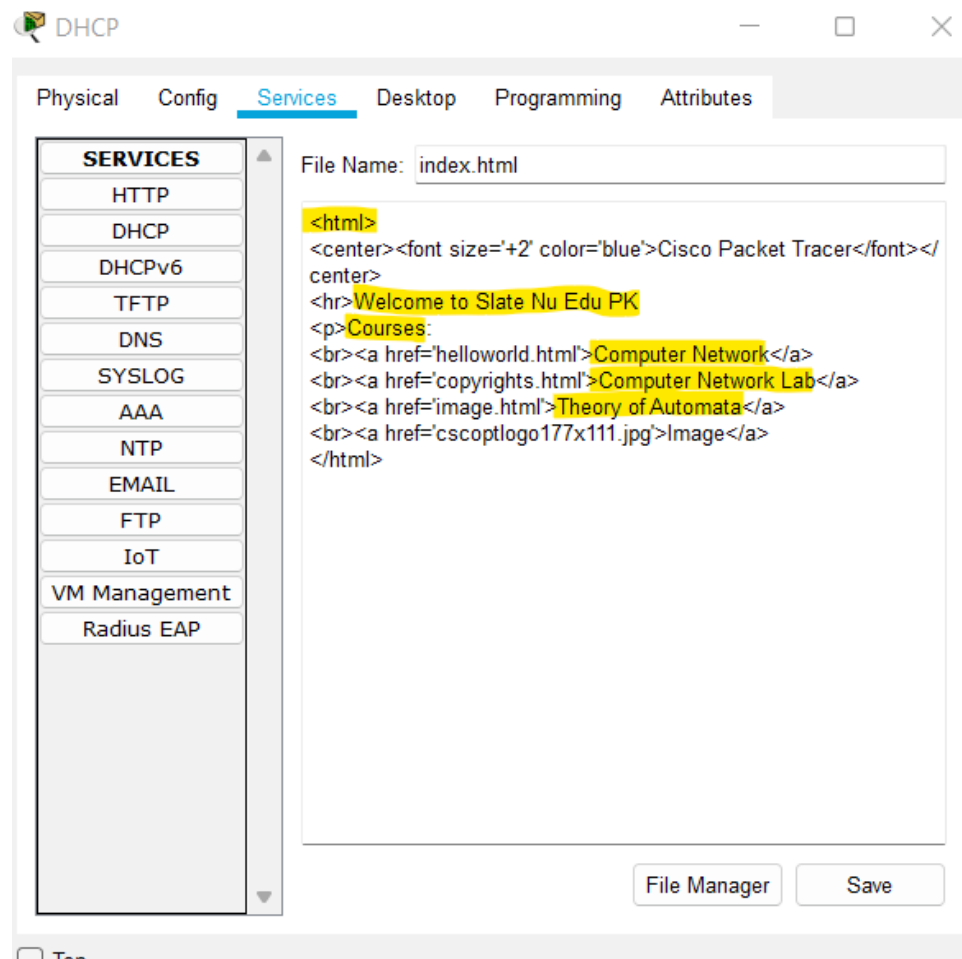
IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Go to the services and then Edit the index.html file.



Second Edit Web Server 192.168.1.6 => pwr.

The screenshot shows a window titled 'Web Server' with a standard Windows-style title bar (minimize, maximize, close buttons). Below the title bar is a tabbed interface with five tabs: 'Physical', 'Config', 'Services', 'Desktop' (which is selected and highlighted in blue), 'Programming', and 'Attributes'. The 'Desktop' tab contains two main sections: 'IP Configuration' and 'IPv6 Configuration'. The 'IP Configuration' section has a blue header bar with a close button 'X'. It contains two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below these are five text input fields: 'IP Address' (192.168.1.6), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (192.168.1.2), and 'DNS Server' (192.168.1.9). The 'IPv6 Configuration' section also has three radio buttons: 'DHCP' (unselected), 'Auto Config' (unselected), and 'Static' (selected). Below these are four text input fields: 'IPv6 Address' (empty), 'Link Local Address' (FE80::2D0:58FF:FEA2:956E), 'IPv6 Gateway' (empty), and 'IPv6 DNS Server' (empty). The text input fields for IP Address, Subnet Mask, Default Gateway, and DNS Server in the IP Configuration section, as well as the 'Static' radio button in both sections, are highlighted in yellow.

Web Server

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.6

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.2

DNS Server 192.168.1.9

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

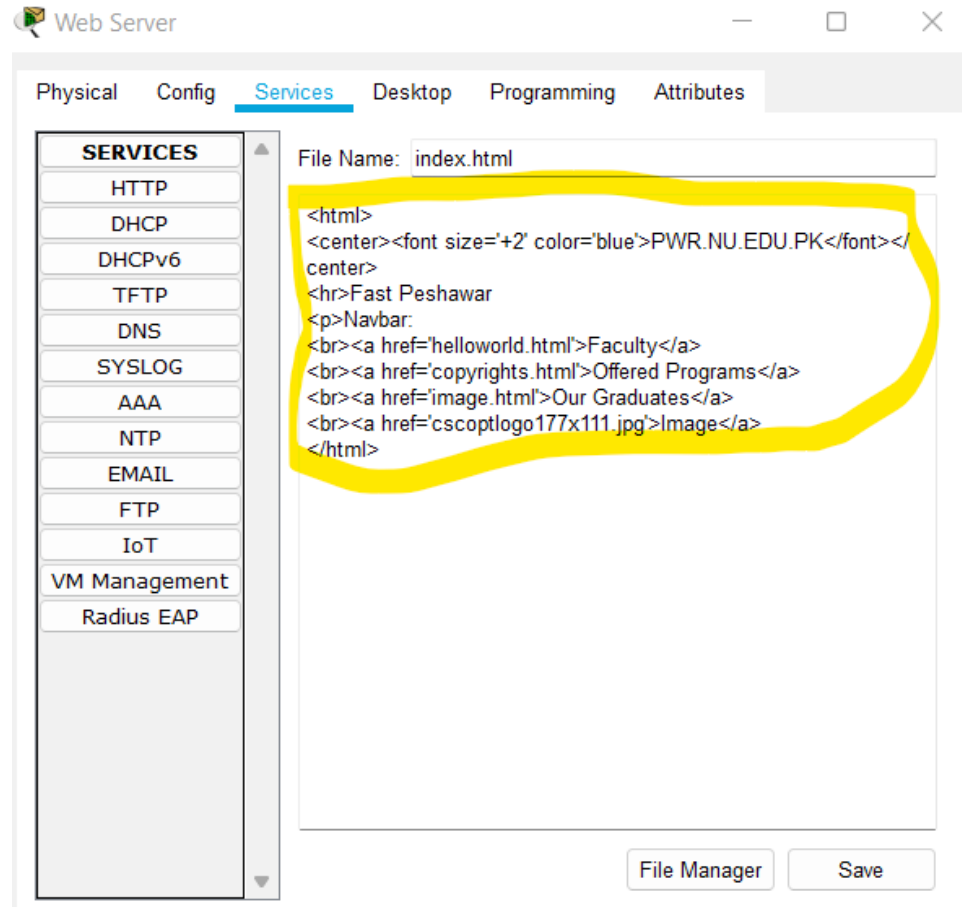
IPv6 Address /

Link Local Address FE80::2D0:58FF:FEA2:956E

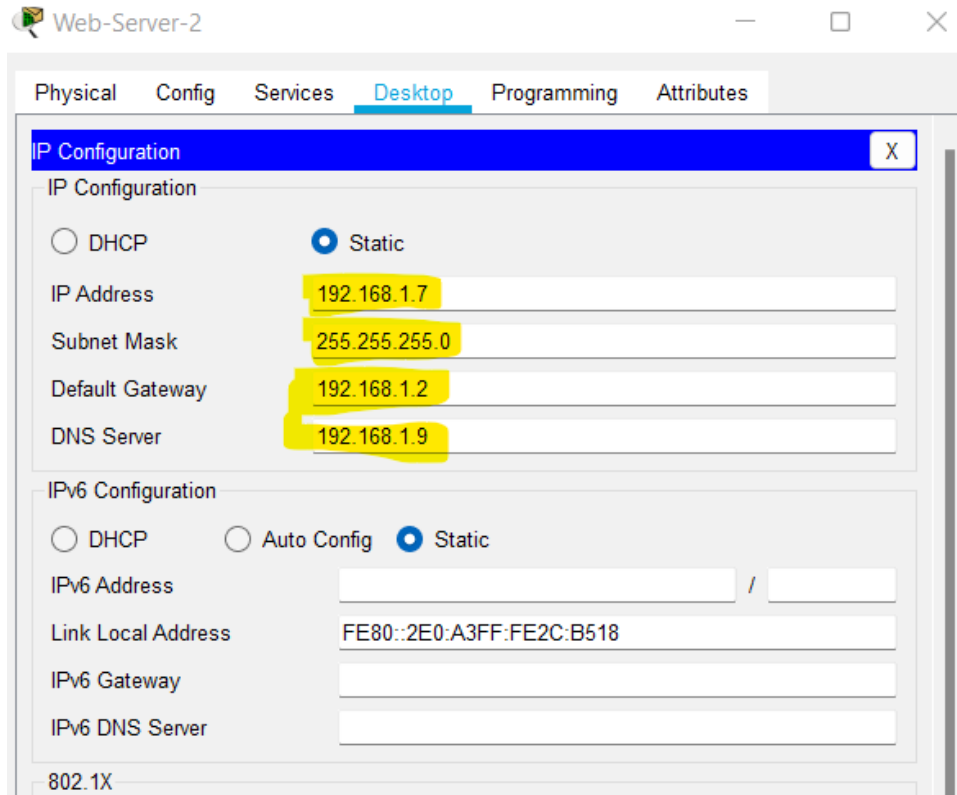
IPv6 Gateway

IPv6 DNS Server

Go to the Services Tab and Edit the index.html file as per your need.



Third Edit Web Server-2 server 192.168.1.7 => flex.



The screenshot shows the 'Web-Server-2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing the following settings:

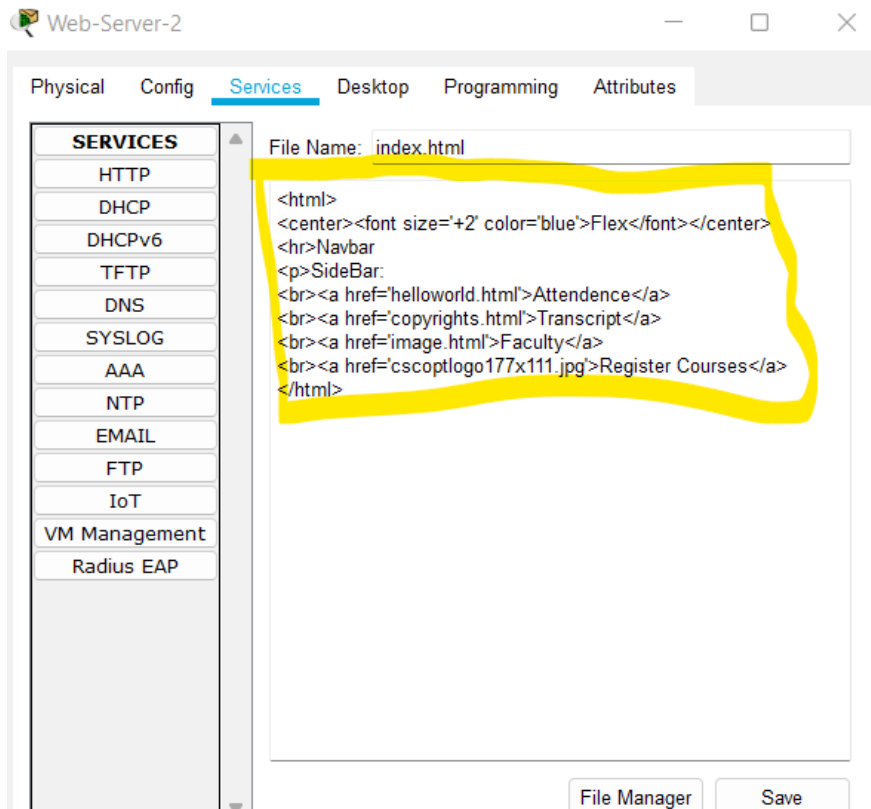
Field	Value
IP Address	192.168.1.7
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.2
DNS Server	192.168.1.9

The 'IPv6 Configuration' section is also visible, showing the following settings:

Field	Value
IPv6 Address	
Link Local Address	FE80::2E0:A3FF:FE2C:B518
IPv6 Gateway	
IPv6 DNS Server	

The 'Static' radio button is selected for both IP and IPv6 configurations.

Then Edit the index.html file.



After All this done now **On the http and https service** in the **DNS server** and then add the websites and the servers IP addresses in the DNS server.

DNS Service ☒ On ☐ Off

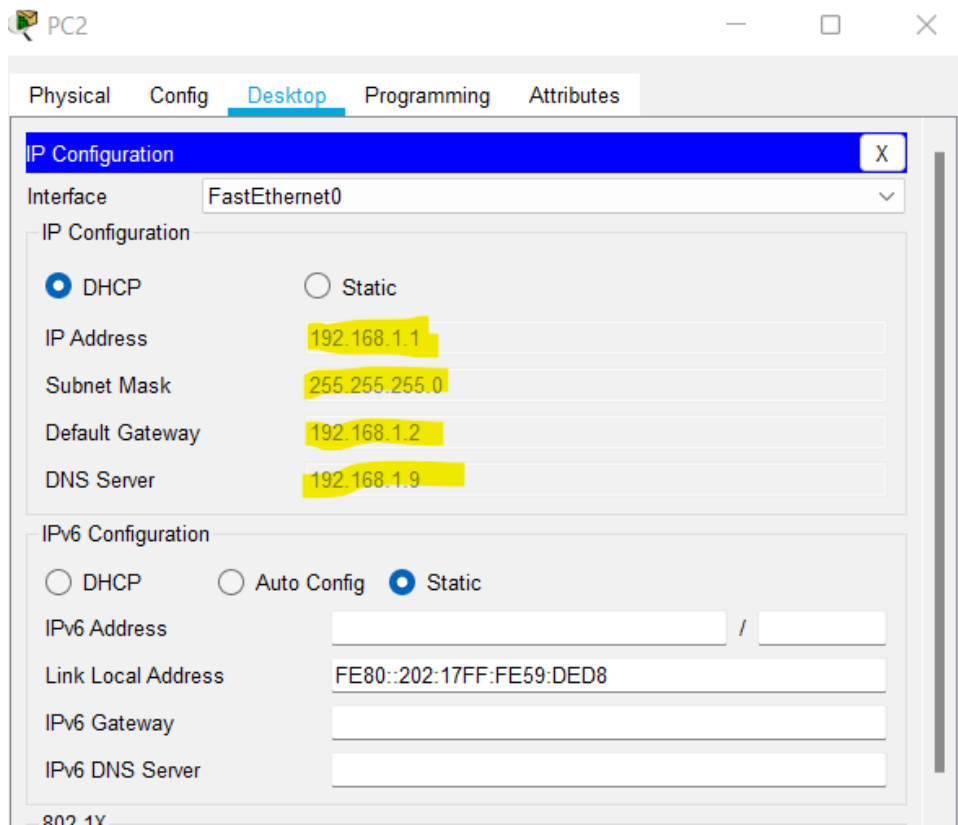
Resource Records

Name Type / A Record

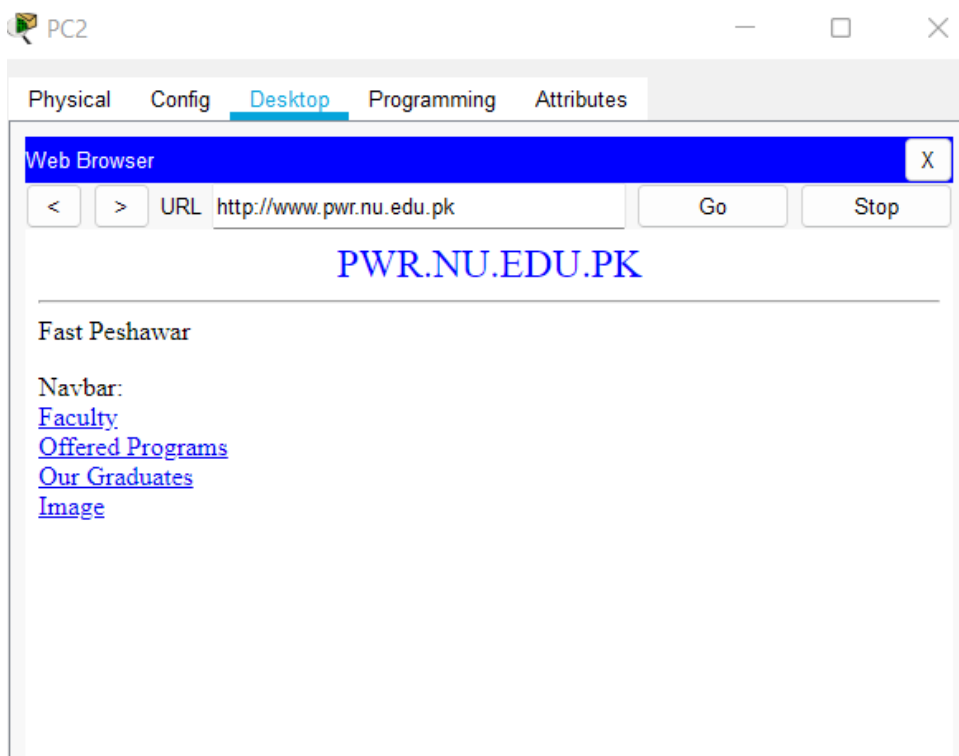
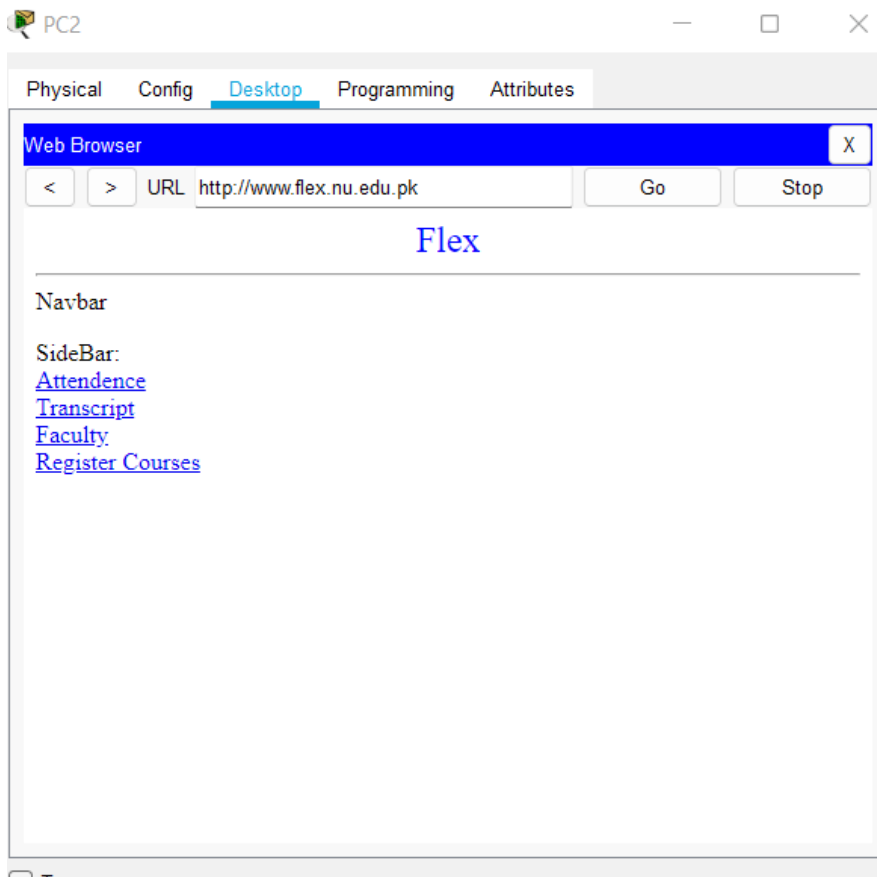
Address

No.	Add	Name	Type	Detail
0	www.slate.mn.edu.pk		A Record	192.168.1.6
1	www.flex.mn.edu.pk		A Record	192.168.1.7
2	www.pmt.mn.edu.pk		A Record	192.168.1.8

Now to Go the any Lab PC and then assign IP using the option DHCP. I am doing using the PC2.



Now open the browser and enter the website url. These are all the screenshots of proof.



PC2



Physical Config **Desktop** Programming Attributes

Web Browser

X



URL

Go

Stop

Cisco Packet Tracer

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