

Computer Networks Lab Task – 14

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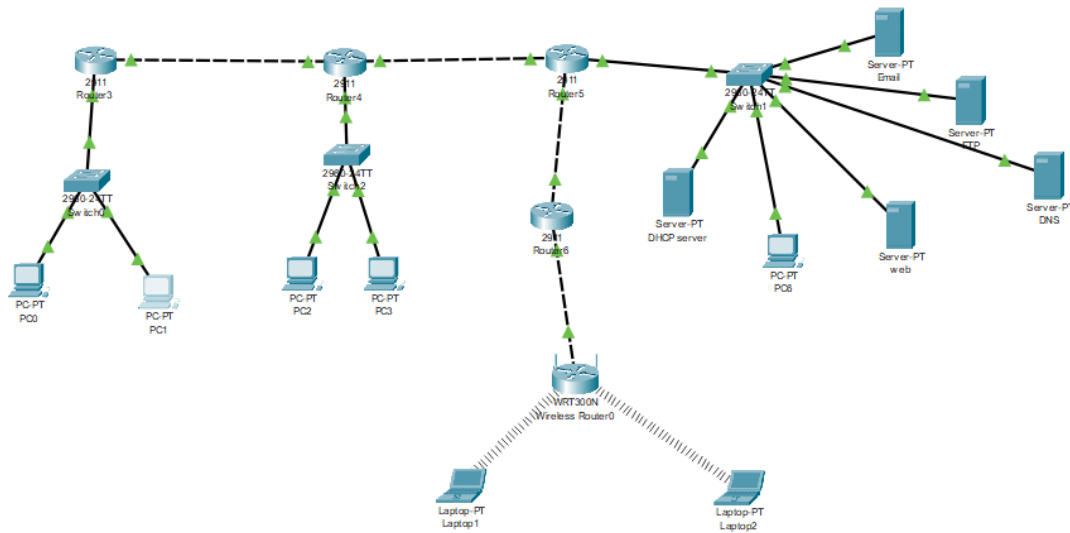
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Lab task Consider the FAST NU Peshawar Campus. Identify the requirements and design a Network topology in packet tracer.

First of all we make the network topology for this



After that we open the first router and assign ip to it

```
Router(config-if)#ip add 192.168.1.1 255.255.255.255
Bad mask 0xFFFFFFFF4 for address 192.168.1.1
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.2.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.1.33 255.255.255.224
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
```

Copy Paste

Then the second router

```
Router(config-if)#ip add 192.168.3.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.2.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.4.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
```

Copy

Paste

Then the third router

```
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip add 192.168.5.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.4.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.7.2 255.255.255.0
```

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Paste

After that we assign ip to the wireless router and keeps it connection static

Wireless Router0

Physical

Config

GUI

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Internet

LAN

Wireless

Internet Settings

IP Configuration

☐ DHCP

☒ Static

☐ PPPoE

UserName

Password

IPv4 Address

Subnet Mask

Default Gateway

DNS Server

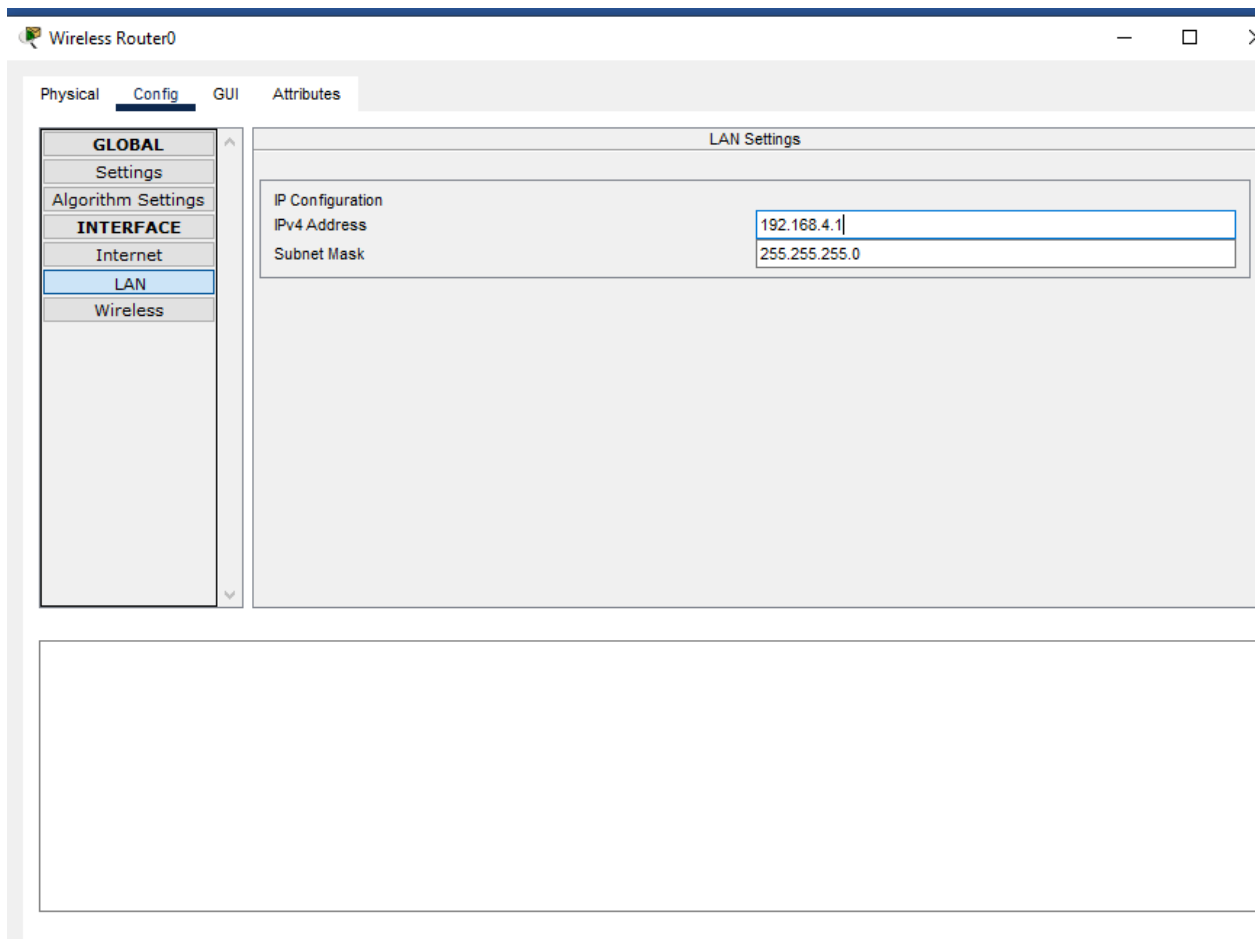
192.168.9.2

255.255.255.0

192.168.9.1

192.168.5.11

☐ Top



Now we will add another router which will be connected between the third router and the wireless router

```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip add 192.168.6.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.7.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
```

[Copy](#)[Paste](#)[Top](#)

Now all are routers are set and connected with the pc and the wireless router is connected with the laptop through wifi and all the switches with their gateway address with all the routers now the next step is to set the servers DNS FTP EMAIL WEB and DHCP servers and going to make a DHCP connection with all the computers

So first we set Email server

Physical **Config** Services Desktop Programming Attributes**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

## Global Settings

Display Name Email

## Gateway/DNS IPv4

☐ DHCP☒ Static

Default Gateway 192.168.8.10

DNS Server 192.168.5.12

## Gateway/DNS IPv6

☐ Automatic☒ Static

Default Gateway

DNS Server

☐ Top

New

Delete

Physical **Config** Services Desktop Programming Attributes**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

## FastEthernet0

Port Status

☒ On

Bandwidth

☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex

☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address

0001.C7A3.6DC3

## IP Configuration

☐ DHCP☒ Static

IPv4 Address

192.168.5.19

Subnet Mask

255.255.255.0

## IPv6 Configuration

☐ Automatic☒ Static

IPv6 Address

Link Local Address: FE80::201:C7FF:FEA3:6DC3



Physical Config Services **Desktop** Programming Attributes

## IP Configuration

X

## IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.5.19

Subnet Mask 255.255.255.0

Default Gateway 192.168.5.10

DNS Server 192.168.5.12

## IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address FE80::201:C7FF:FEA3:6DC3

Default Gateway

DNS Server

## 802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Email

—□×

Physical

Config

Services

Desktop

Programming

Attributes

Configure Mail

X

User Information

Your Name:

c1

EmailAddress

192.168.5.1

Server Information

Incoming Mail Server

192.168.4.2

Outgoing Mail Server

192.168.6.2

Logon Information

User Name:

c1

Password:

...

Save

Remove

Clear

Reset

☐ Top

Email

Physical

Config

Services

Desktop

Programming

Attributes

Configure Mail

X

User Information

Your Name:

c2

Email Address

192.168.5.3

Server Information

Incoming Mail Server

192.168.5.2

Outgoing Mail Server

192.168.6.2

Logon Information

User Name:

c2

Password:

...

Save

Remove

Clear

Reset

☐ Top

Now we set the FTP server

FTP

Physical

Config

Services

Desktop

Programming

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Global Settings

Display Name

FTP

Gateway/DNS IPv4

DHCP

Static

Default Gateway

192.168.7.10

DNS Server

192.168.5.12

Gateway/DNS IPv6

Automatic

Static

Default Gateway

DNS Server

Top

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00E0.F70C.0116

Subnet Mask

255.255.255.0

IPv6 Address

Link Local Address: FE80::2E0:F7FF:FE0C:116

FTP

Physical Config Services **Desktop** Programming Attributes

**IP Configuration** X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.5.15

Subnet Mask 255.255.255.0

Default Gateway 192.168.5.10

DNS Server 192.168.5.12

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:F7FF:FE0C:116

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Now after giving the ip addresses to it we configure it services we go on ftp and write down the file name and give access to the file read write and everything

FTP

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

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

FTP

Service ☒ On ☐ Off

User Setup

Username  Password

☒ Write ☒ Read ☒ Delete ☒ Rename ☒ List

	Username	Password	Permission	
1	cisco	cisco	RWDNL	<input type="button" value="Add"/>

File

1	asa842-k8.bin
2	asa923-k8.bin
3	c1841-advipservicesk9-mz.124-15.T1.bin
4	c1841-ipbase-mz.123-14.T7.bin
5	c1841-ipbasek9-mz.124-12.bin

☐ Tftp

After that we move to the DNS server

Physical **Config** Services Desktop Programming Attributes**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

## Global Settings

Display Name 

Gateway/DNS IPv4

☐ DHCP☒ StaticDefault Gateway DNS Server 

Gateway/DNS IPv6

☐ Automatic☒ StaticDefault Gateway DNS Server



DNS

Physical

Config

Services

Desktop

Programming

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

FastEthernet0

Port Status

On

Bandwidth

100 Mbps

10 Mbps

Auto

Duplex

Half Duplex

Full Duplex

Auto

MAC Address

0001.9652.BD3B

IP Configuration

DHCP

Static

IPv4 Address

192.168.5.12

Subnet Mask

255.255.255.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80::201:96FF:FE52:BD3B

Top

Then we go to the services and go to the DNS and on it and then we add the name and address

DNS

PhysicalConfigServicesDesktopProgrammingAttributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

DNS

DNS Service

☒ On☐ Off

Resource Records

Name

gmail.com

Type

A Record

Address

192.168.5.19

Add

Save

Remove

No.	Name	Type	Detail
0	gmail.com	A Record	192.168.5.19

DNS

PhysicalConfigServicesDesktopProgrammingAttributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service

☒ On☐ Off

Resource Records

Name

index.html

Type

A Record

Address

192.168.5.13

Add

Save

Remove

No.	Name	Type	Detail
0	gmail.com	A Record	192.168.5.19
1	index.html	A Record	192.168.5.13

DNS

Physical

Config

Services

Desktop

Programming

Attributes

IP Configuration

X

IP Configuration

☐ DHCP

☒ Static

IPv4 Address

192.168.5.12

Subnet Mask

255.255.255.0

Default Gateway

192.168.5.10

DNS Server

192.168.5.12

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

/

Link Local Address

FE80::201:96FF:FE52:BD3B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top

Now we move to the Web server

web

Physical

Config

Services

Desktop

Programming

Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Global Settings

Display Nameweb

Gateway/DNS IPv4

DHCP

Static

Default Gateway192.168.7.10

DNS Server192.168.5.12

Gateway/DNS IPv6

Automatic

Static

Default Gateway

DNS Server

Top

We assign the ip address to it

web

Physical Config Services **Desktop** Programming Attributes

**IP Configuration** X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.5.13

Subnet Mask 255.255.255.0

Default Gateway 192.168.7.10

DNS Server 192.168.5.12

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::202:17FF:FE06:45CC

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

And then we go to the services and go to http

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

HTTP

☒ On ☐ Off

HTTPS

☒ On ☐ Off

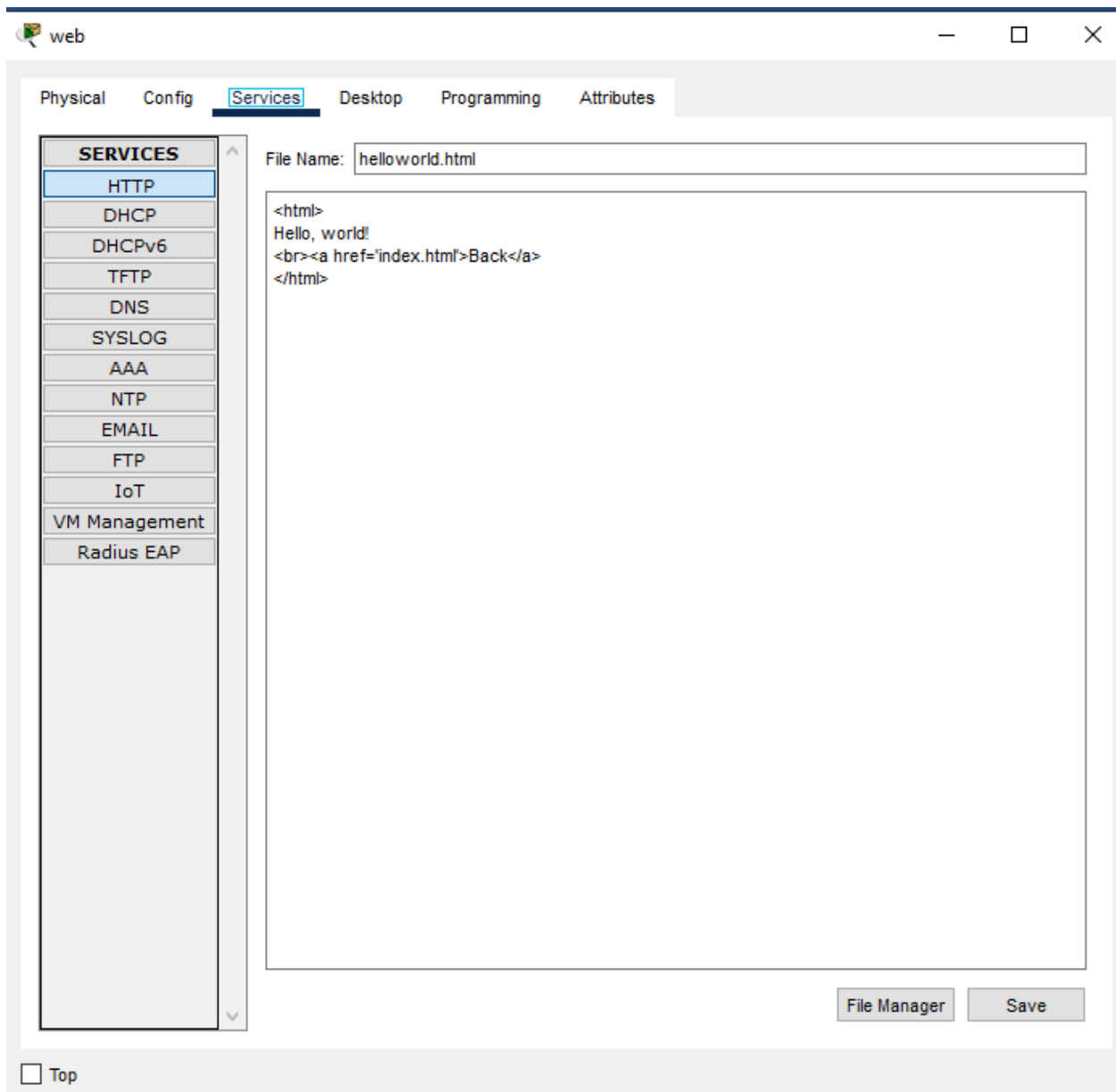
File Manager

	File Name	Edit	Delete
1	copyrights.html	(edit)	(delete)
2	cscoptlogo177x111.jpg		(delete)
3	helloworld.html	(edit)	(delete)
4	image.html	(edit)	(delete)
5	index.html	(edit)	(delete)

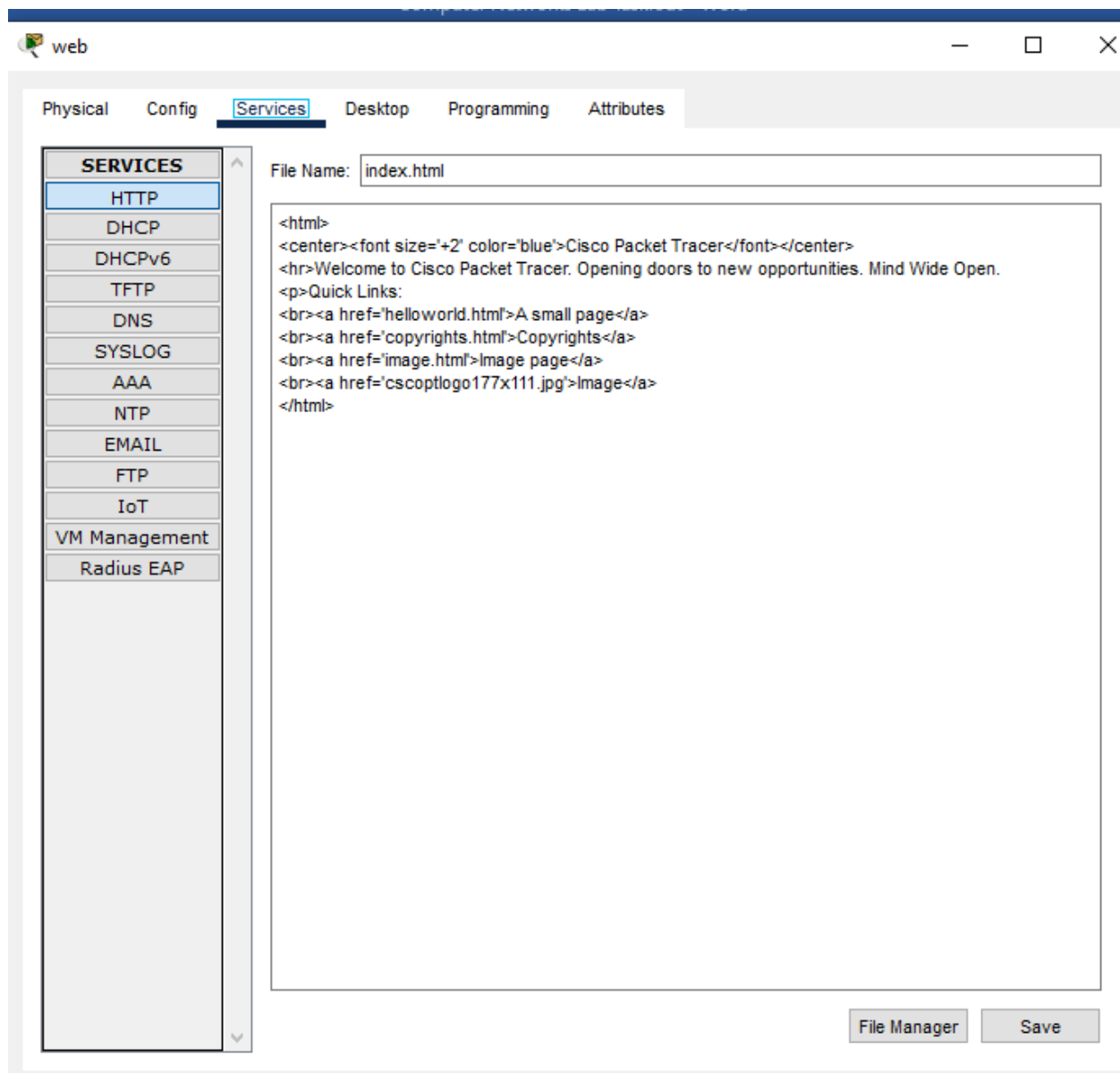
New File

Import

Then we make a new file name helloworld



And then add it to the index file



Now at the end we set the DHCP server so we can give ip addresses to the pc through DHCP



Physical **Config** Services Desktop Programming Attributes**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

## Global Settings

Display Name DHCP server

Gateway/DNS IPv4

☐ DHCP☒ Static

Default Gateway 192.168.7.10

DNS Server 192.168.5.12

Gateway/DNS IPv6

☐ Automatic☒ Static

Default Gateway

DNS Server

☐ Top

New

Delete

DHCP server

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.5.11

Subnet Mask 255.255.255.0

Default Gateway 192.168.7.10

DNS Server 192.168.5.12

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:D3FF:FE79:79C2

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

new delete

Now after assigning the ip address to it we add server pool in the DHCP

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: serverPool

Default Gateway: 192.168.5.10

DNS Server: 192.168.5.12

Start IP Address: 192 168 5 0

Subnet Mask: 255 255 255 0

Maximum Number of Users: 245

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

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: serverPool2

Default Gateway: 192.168.3.10

DNS Server: 192.168.5.12

Start IP Address: 192 168 3 11

Subnet Mask: 255 255 255 0

Maximum Number of Users: 245

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

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: serverPool3

Default Gateway: 192.168.1.1

DNS Server: 192.168.5.12

Start IP Address: 192 168 1 12

Subnet Mask: 255 255 255 224

Maximum Number of Users: 20

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

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: serverPool4

Default Gateway: 192.168.1.33

DNS Server: 192.168.5.12

Start IP Address: 192 168 1 35

Subnet Mask: 255 255 255 224

Maximum Number of Users: 29

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

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

serverPool5

Default Gateway

192.168.6.10

DNS Server

192.168.5.12

Start IP Address :

192

168

6

0

Subnet Mask:

255

255

255

0

Maximum Number of Users :

245

TFTP Server:

0.0.0.0

WLC Address:

0.0.0.0

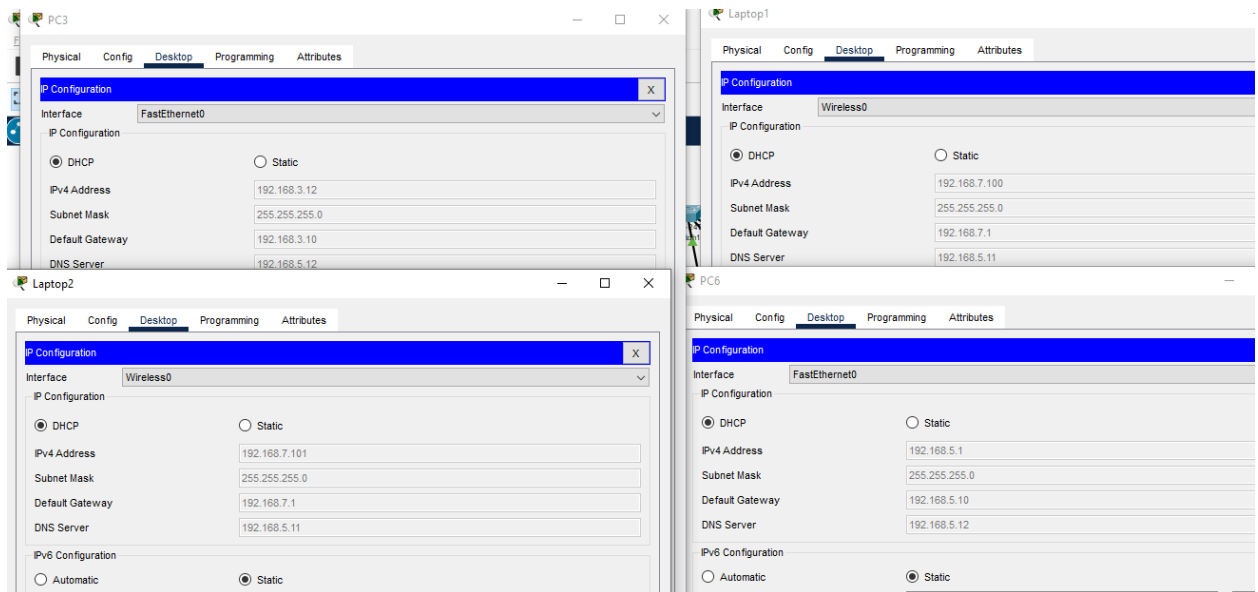
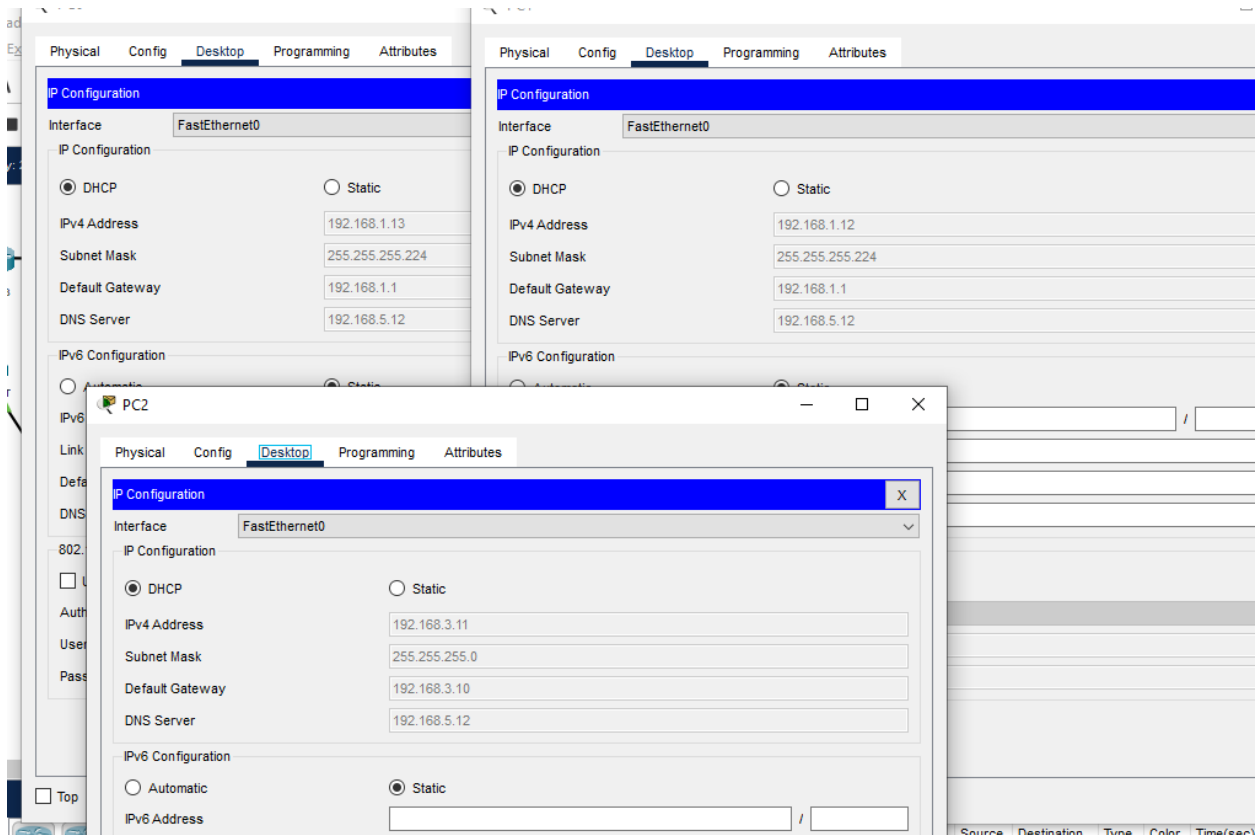
Add

Save

Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool5	192.168....	192.168....	192.168....	255.255....	245	0.0.0.0	0.0.0.0
serverPool4	192.168....	192.168....	192.168....	255.255....	29	0.0.0.0	0.0.0.0
serverPool3	192.168....	192.168....	192.168....	255.255....	20	0.0.0.0	0.0.0.0
serverPool2	192.168....	192.168....	192.168....	255.255....	245	0.0.0.0	0.0.0.0
serverPool	192.168....	192.168....	192.168....	255.255....	245	0.0.0.0	0.0.0.0

Now since all this is done we go to the pc to check if their connection is successful



All the DHCP connections are successful

And now we test the web by opening the browser



As you can see it is displaying