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### Lab Practical #06:

Study the application layer protocol DNS, DHCP, FTP.

### Practical Assignment #06:

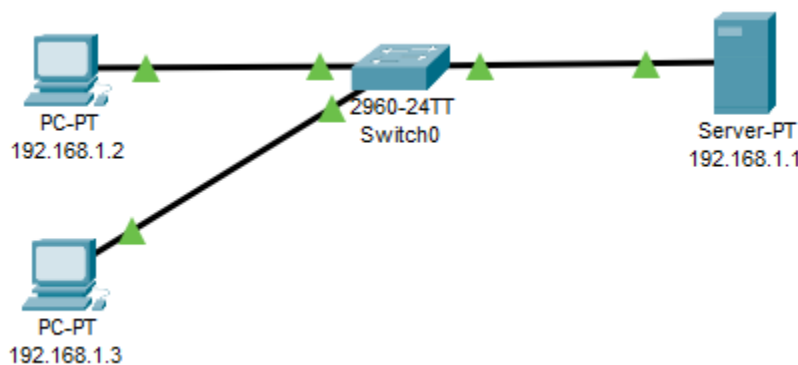
**1. Implement the application layer protocol DNS, DHCP, and FTP. Also check connectivity between them using ping command or PDU utility.**

#### Instructions:

1. Protocol-wise configuration setup screenshot.
2. Mention IP address of each pc as label.
3. Ping command or PDU screenshot between two pcs.

### 1. DNS

**Step-1 :** Build the network topology.



**Step-2:** Configure static IP addresses on the PCs and the server.

Server =>

**IP address:** 192.168.1.1   **Subnet mask:** 255.255.255.0   **Default gateway:** 0.0.0.0   **DNS Server:** 192.168.1.1

PC0 =>

**IP address:** 192.168.1.2   **Subnet mask:** 255.255.255.0   **Default gateway:** 0.0.0.0   **DNS server:** 192.168.1.1

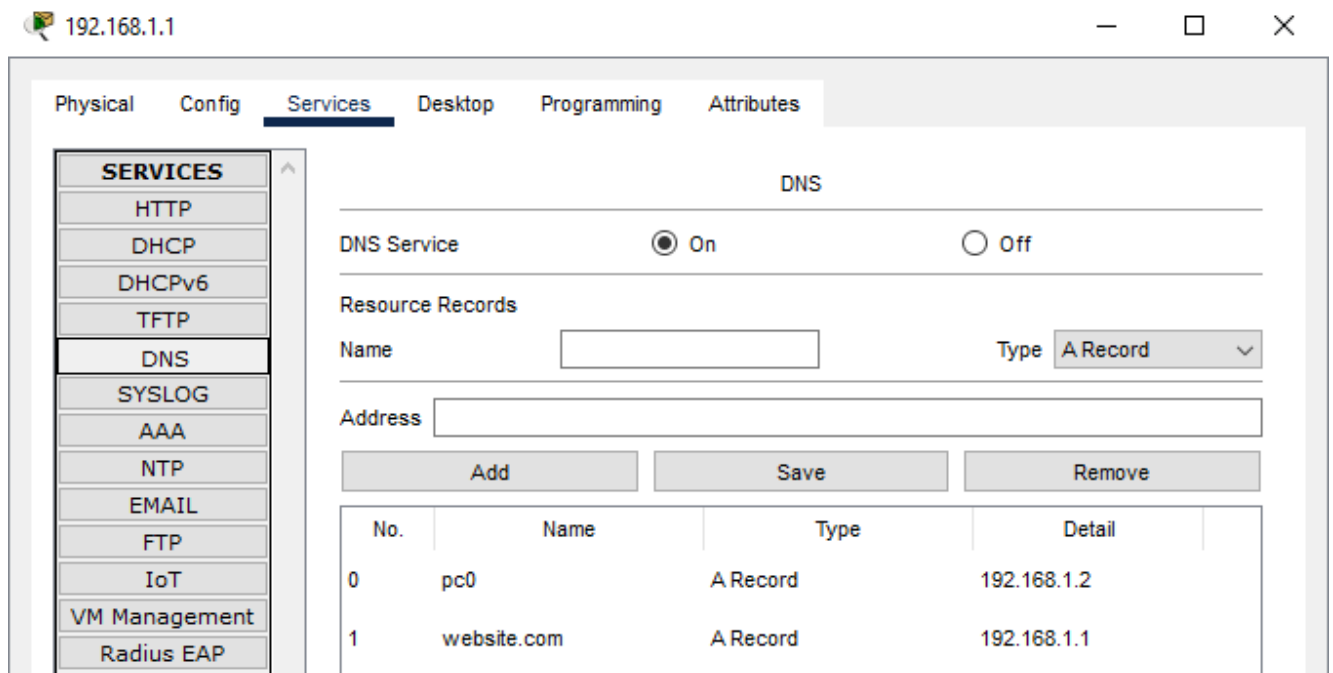
PC1 =>

**IP address:** 192.168.1.3   **Subnet mask:** 255.255.255.0   **Default gateway:** 0.0.0.0   **DNS Server:** 192.168.1.1

**Step-3:** Configure DNS service on the generic server.

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- To do this, click on the server, then Click on Services tab. Click on DNS server from the menu. First turn ON the DNS service, then define names of the hosts and their corresponding IP addresses.
- For example, to specify the DNS entry for PC0: In the name and address fields, type:
- Name: pc0 Address: 192.168.1.2
- Click on add then save.
- Once you're done, your DNS entries will look like this:



The screenshot shows a web-based configuration interface for a server. The top navigation bar includes tabs: Physical, Config, Services (selected), Desktop, Programming, and Attributes. On the left, a 'SERVICES' menu lists various services: HTTP, DHCP, DHCPv6, TFTP, DNS (selected), SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The main panel is titled 'DNS' and contains the following elements:

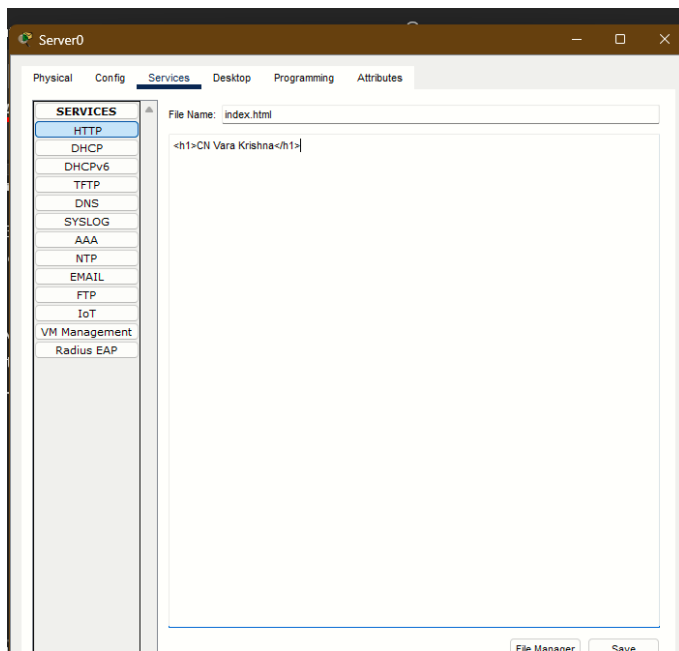
- DNS Service:** A toggle switch set to 'On'.
- Resource Records:** A section for adding and managing DNS records.
- Name and Address fields:** Input fields for defining a record.
- Type:** A dropdown menu set to 'A Record'.
- Buttons:** 'Add', 'Save', and 'Remove' buttons.
- Table:** A table displaying the current DNS records.

No.	Name	Type	Detail
0	pc0	A Record	192.168.1.2
1	website.com	A Record	192.168.1.1

**Step-4:** Go to HTTP and click on index.html => edit

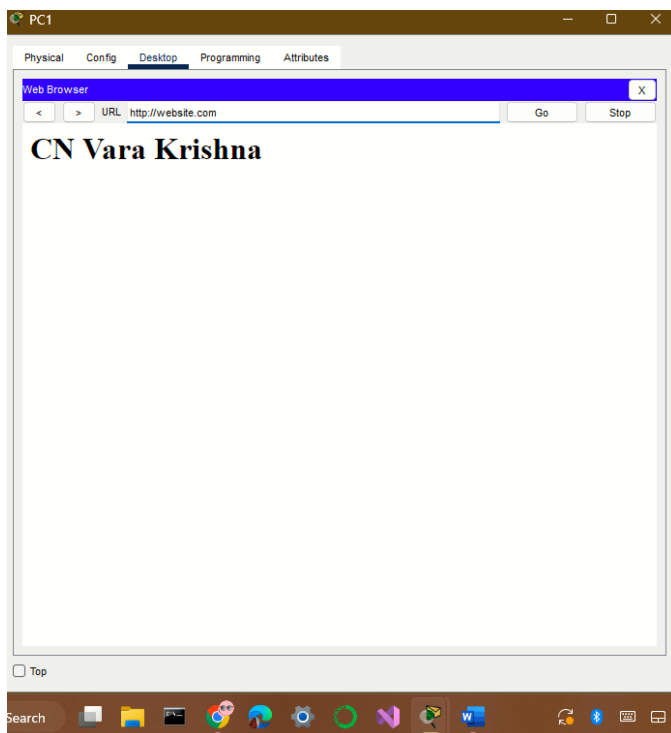
In this file you can over-write whatever you want to showcase in your web page then click on save

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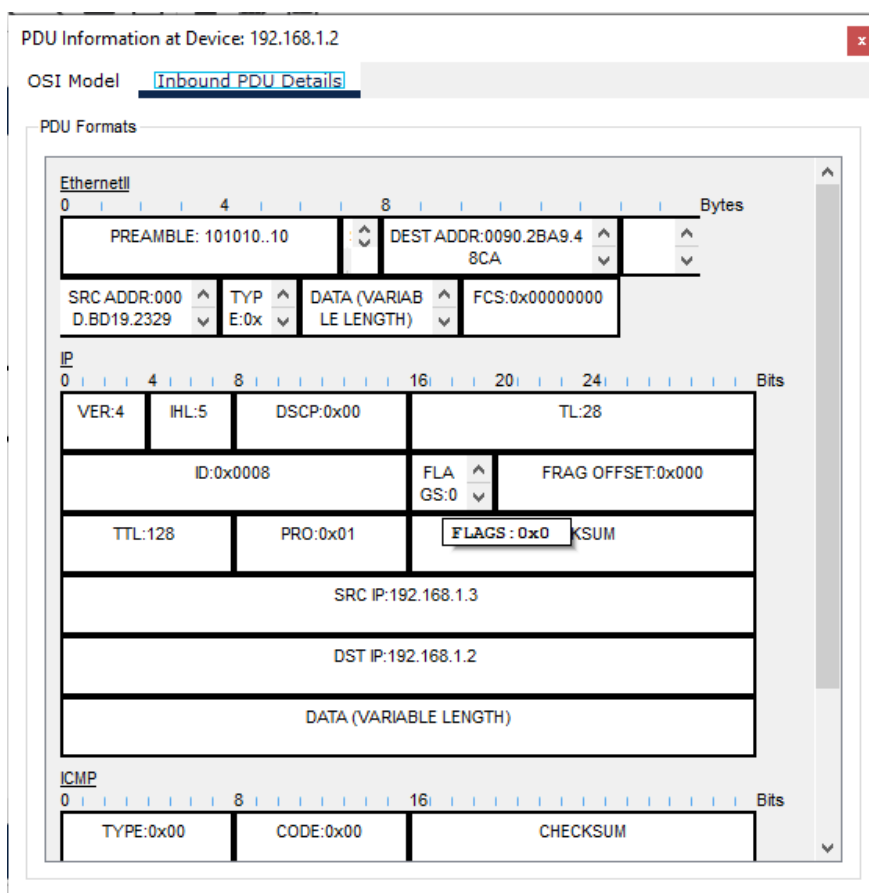
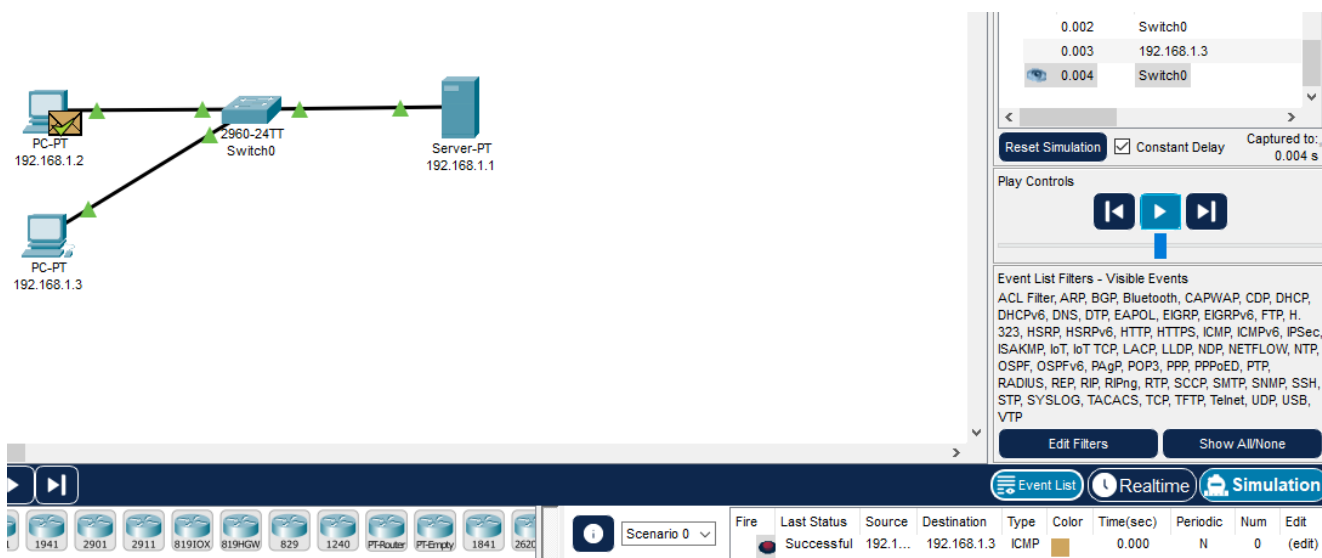


**Step-5:** Now you can go to any pc and check your web page by writing your web page name rather than writing IP address.

PC1(192.168.1.3) >> Desktop >> web browser >> URL



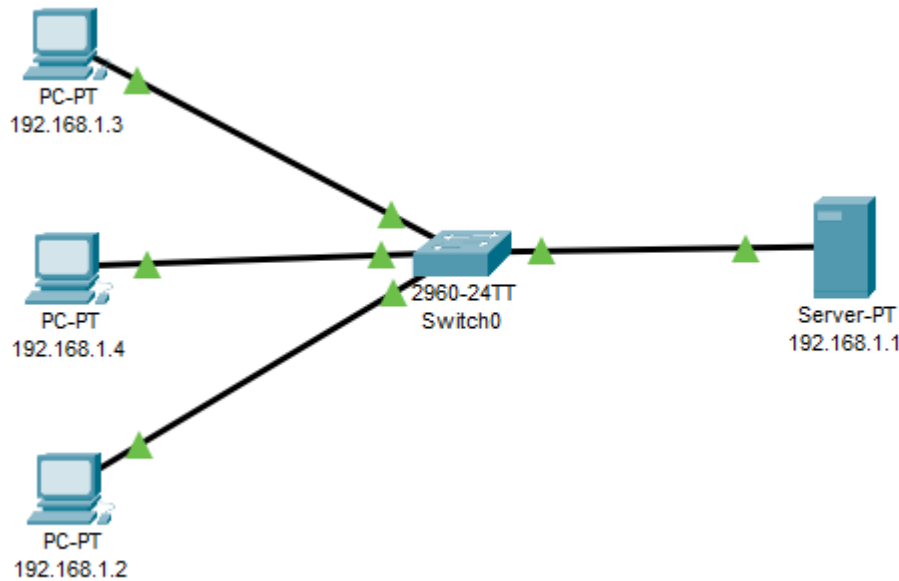
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## 2. DHCP

**Step-1:** Build the network topology in packet tracer.

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**Step-2:** Configure static IP address on the server 192.168.1.1

**Step-3:** Now configure DHCP service on the generic server.

- Turn **on** the DHCP service.
- To do this, click on the server, then click on Services tab. You will pick DHCP on the menu. Then proceed to define the DHCP network parameters as follows:
- **Pool name:** serverPool
- **Default Gateway:** 192.168.1.0
- **DNS Server:** 0.0.0.0
- **Start IP Address:** 192.168.1.1
- **Subnet Mask:** 255.255.255.0
- **Maximum Number of users:** 255
- Click on add then Save. The DHCP entry is included in the list.

Here are the configurations on the server :

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192.168.1.1

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: 192.168.1.0

DNS Server: 0.0.0.0

Start IP Address: 192 168 1 1

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	192.168.1.0	0.0.0.0	192.168.1.1	255.255.255.0	255	0.0.0.0	0.0.0.0

**Step-4:** Finally, enable DHCP configuration on each PC. The three PCs should get automatically configured.

As an example, here is the DHCP configuration on 192.168.1.2 PC :

192.168.1.2

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface: FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address: 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

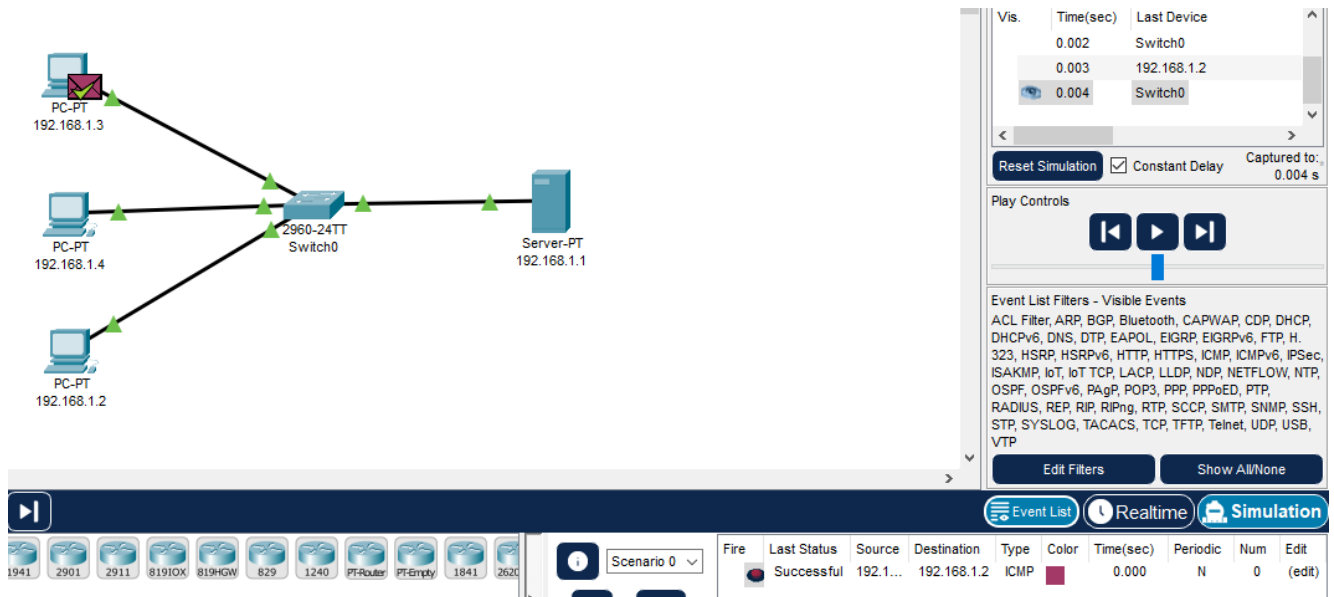
IPv6 Address: /

Link Local Address: FE80::260:3EFF:FE1B:1C2B

Default Gateway:

DNS Server:

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**Event List**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
<input checked="" type="checkbox"/>	Successful	192.1...	192.168.1.2	ICMP		0.000	N	0	(edit)

PDU Information at Device: 192.168.1.3

OSI Model [Inbound PDU Details](#)

PDU Formats

**EthernetII**

0		4		8		Bytes	
PREAMBLE: 101010..10				DEST ADDR: 00D0.D309.A8B5			
SRC ADDR: 0060.3E1B.1C2B		TYP: E:0x		DATA (VARIABLE LENGTH)		FCS: 0x00000000	

**IP**

0		4		8		16		20		24		Bits	
VER: 4		IHL: 5		DSCP: 0x00		TL: 28							
ID: 0x0005						FLA: 0		FRAG OFFSET: 0x000					
TTL: 128				PRO: 0x01				CHKSUM					
SRC IP: 192.168.1.2													
DST IP: 192.168.1.3													
DATA (VARIABLE LENGTH)													

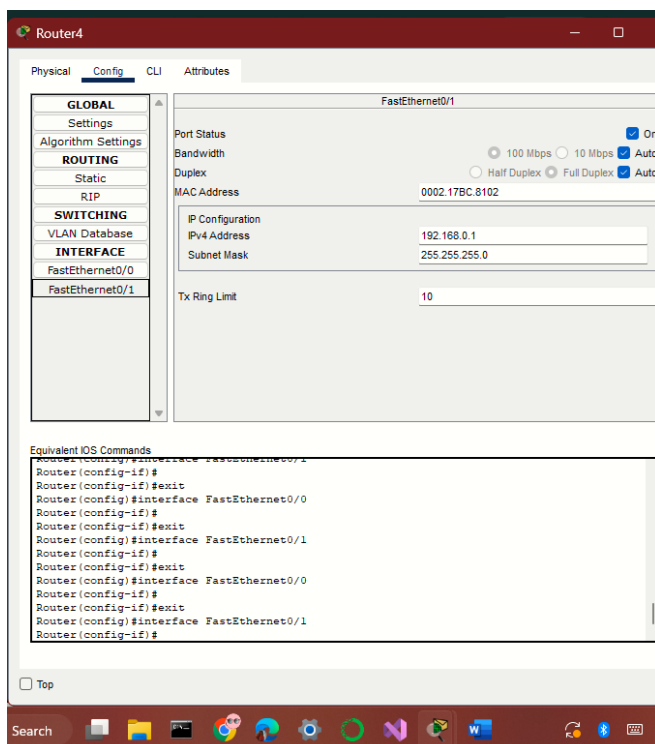
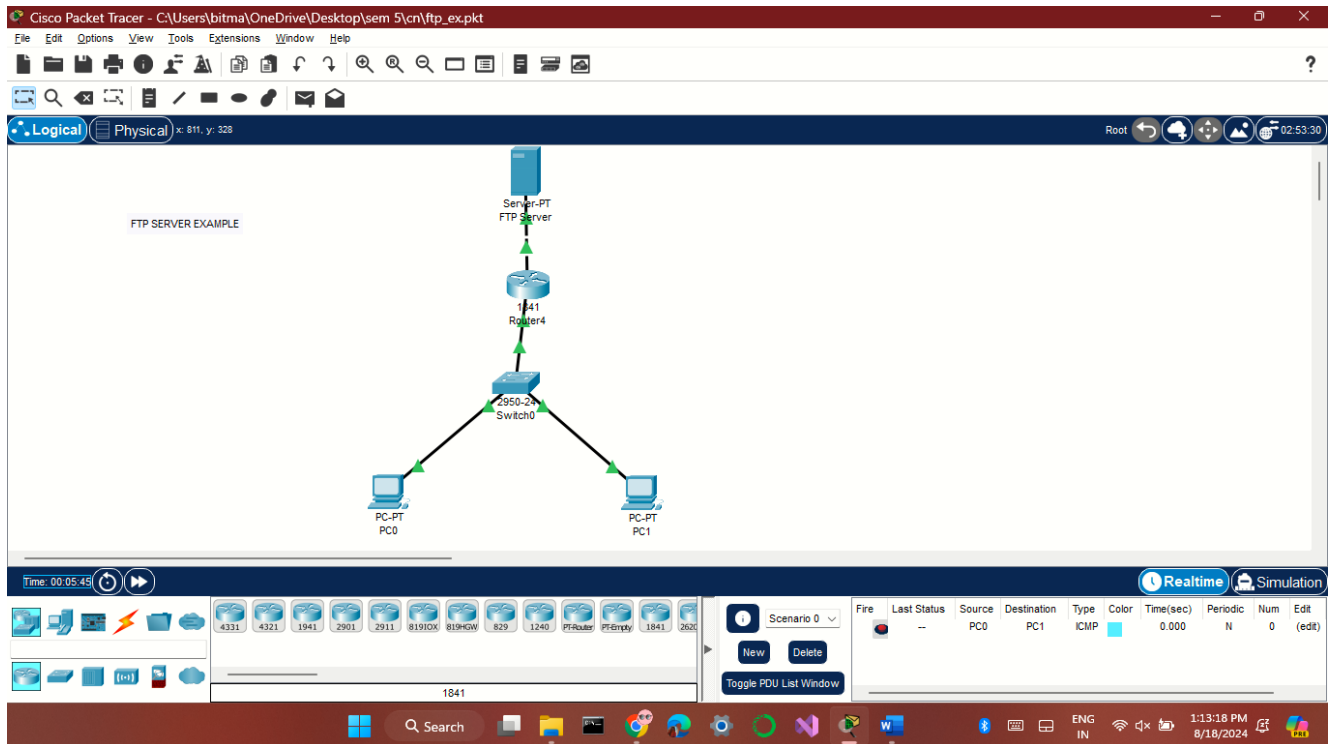
**ICMP**

0		8		16		Bits	
TYPE: 0x00		CODE: 0x00		CHECKSUM			

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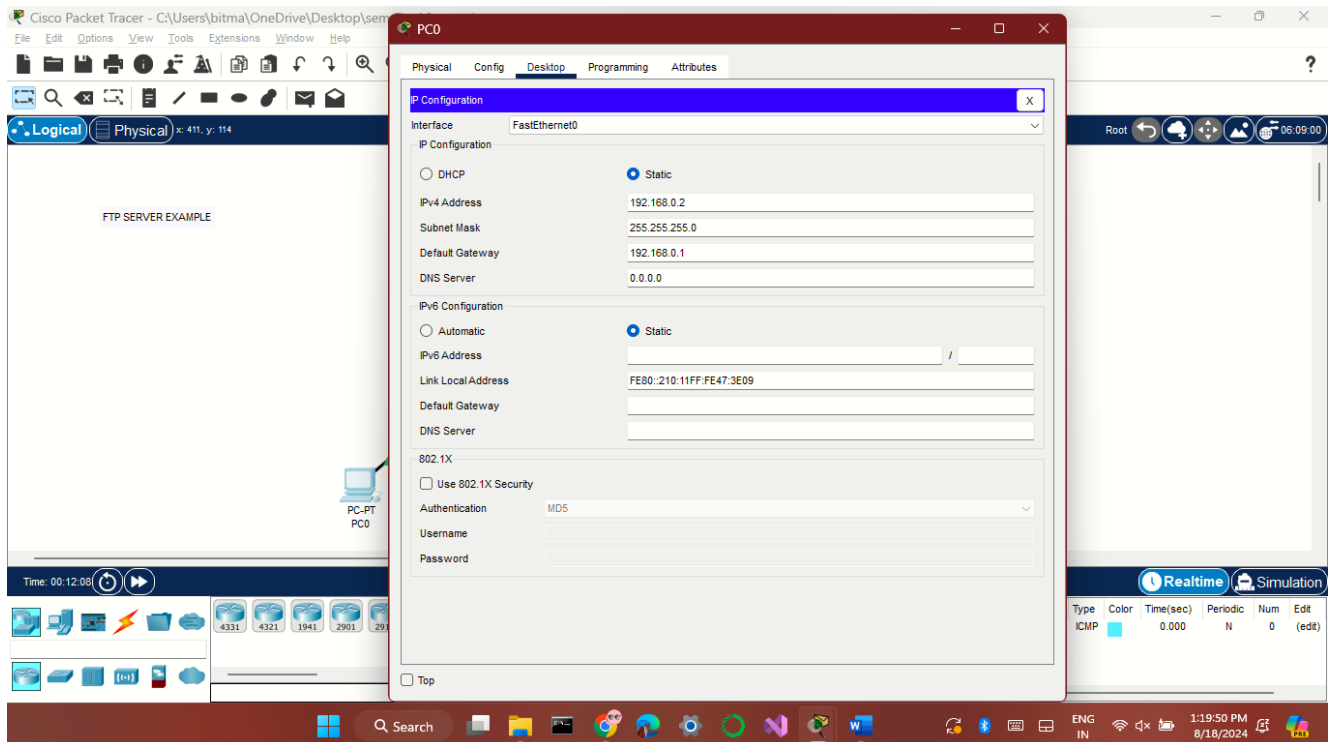
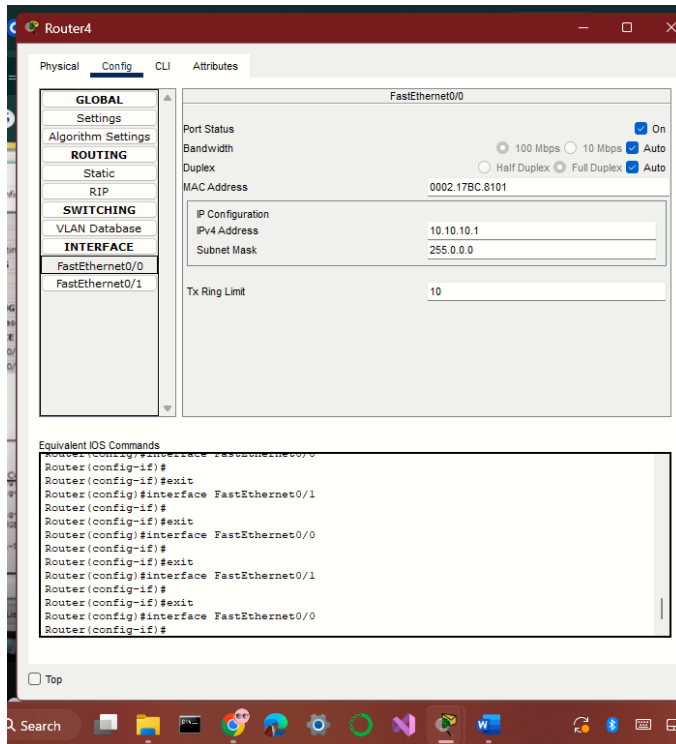
- **FTP**

**Step-1:** Build the network topology in packet tracer and config to PC's.

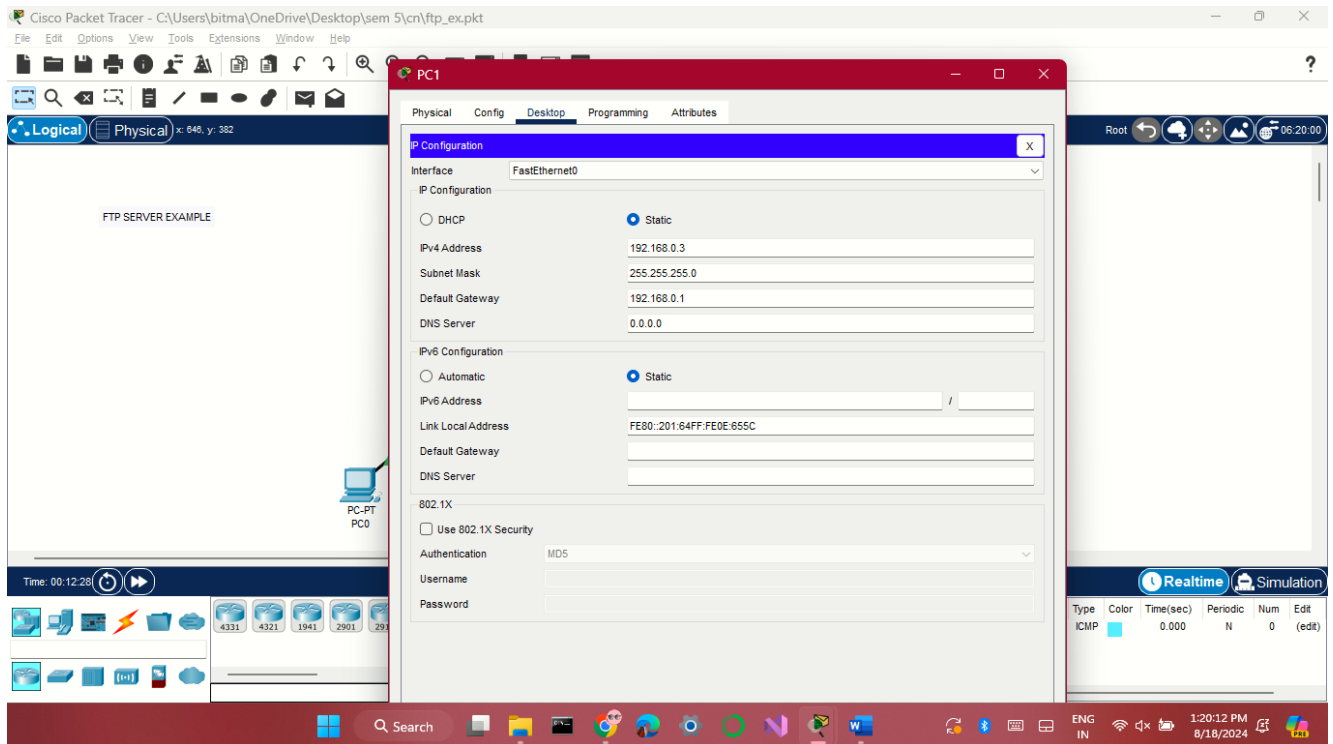
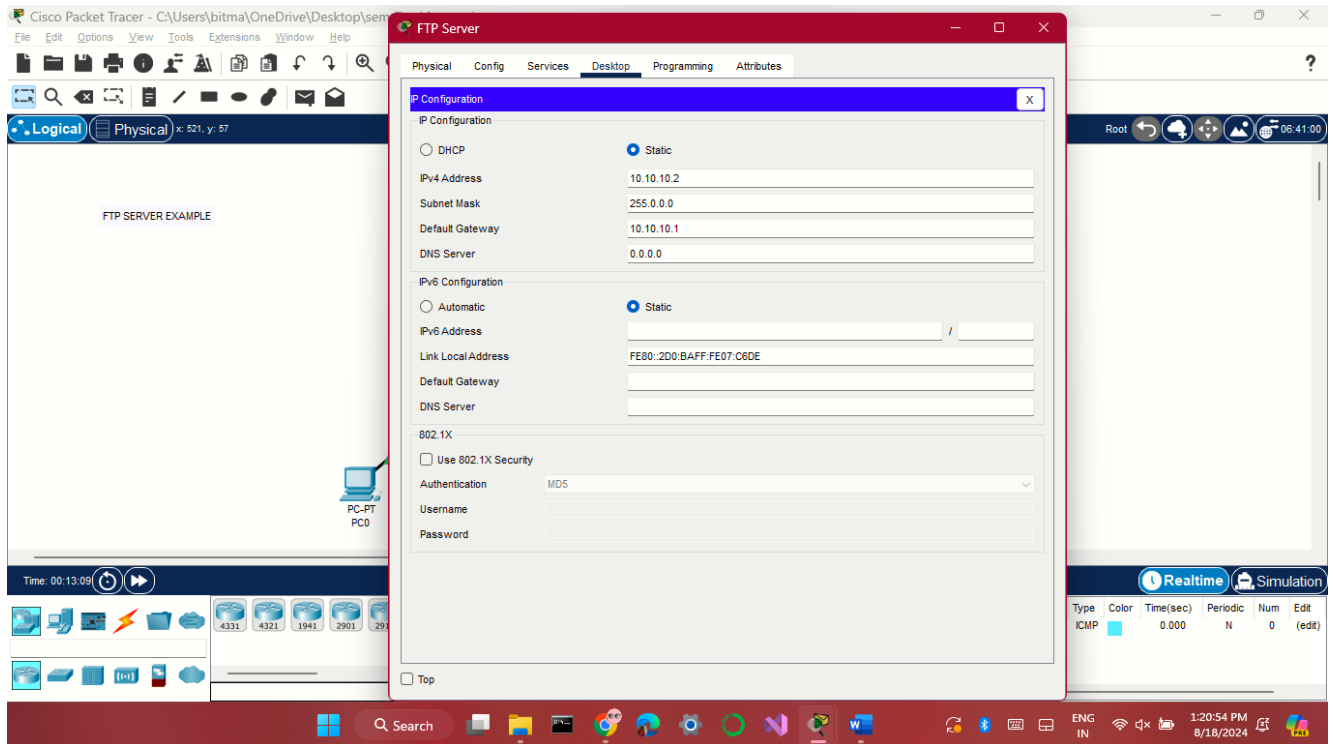




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**Step-2:** go to 1841 Router1 => config

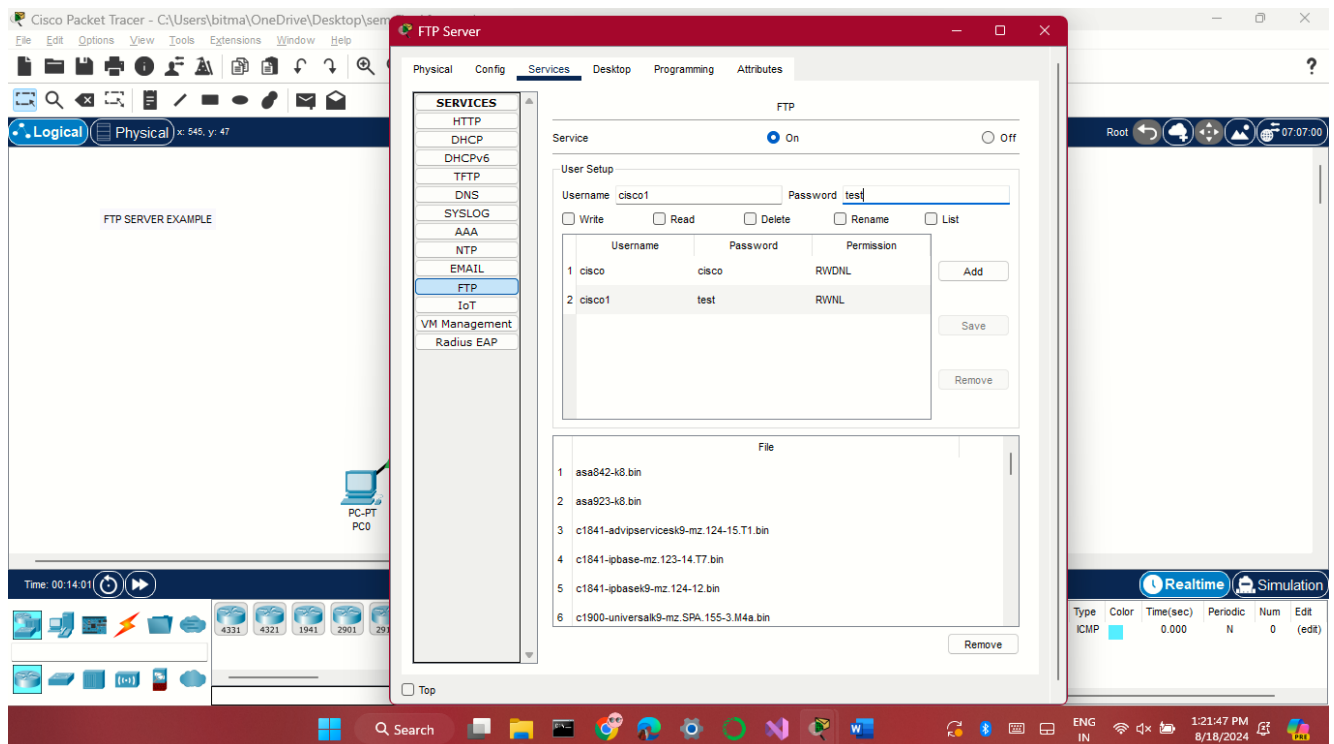
- Click on FastEthernet0/0 enable on port then add **IP address: 10.10.10.1** and **SubnetMask: 255.0.0.0** again

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- Click on FastEthernet0/1 enable on port then add **IP address: 192.168.0.1** and **SubnetMask: 255.255.255.0**

**Step-3:** configuration of server

- Go to config tab write FTP server in display name if you want to change
- Then click on desktop => ip configuration add  
**IP address: 10.10.10.2**  
**Subnet Mask: 255.0.0.0**  
**Default gateway: 10.10.10.1**  
**DNS server: 0.0.0.0**
- Go to service tab click on FTP add  
Username: cisco1  
Password: test  
Tick on write, read, rename and click on add button

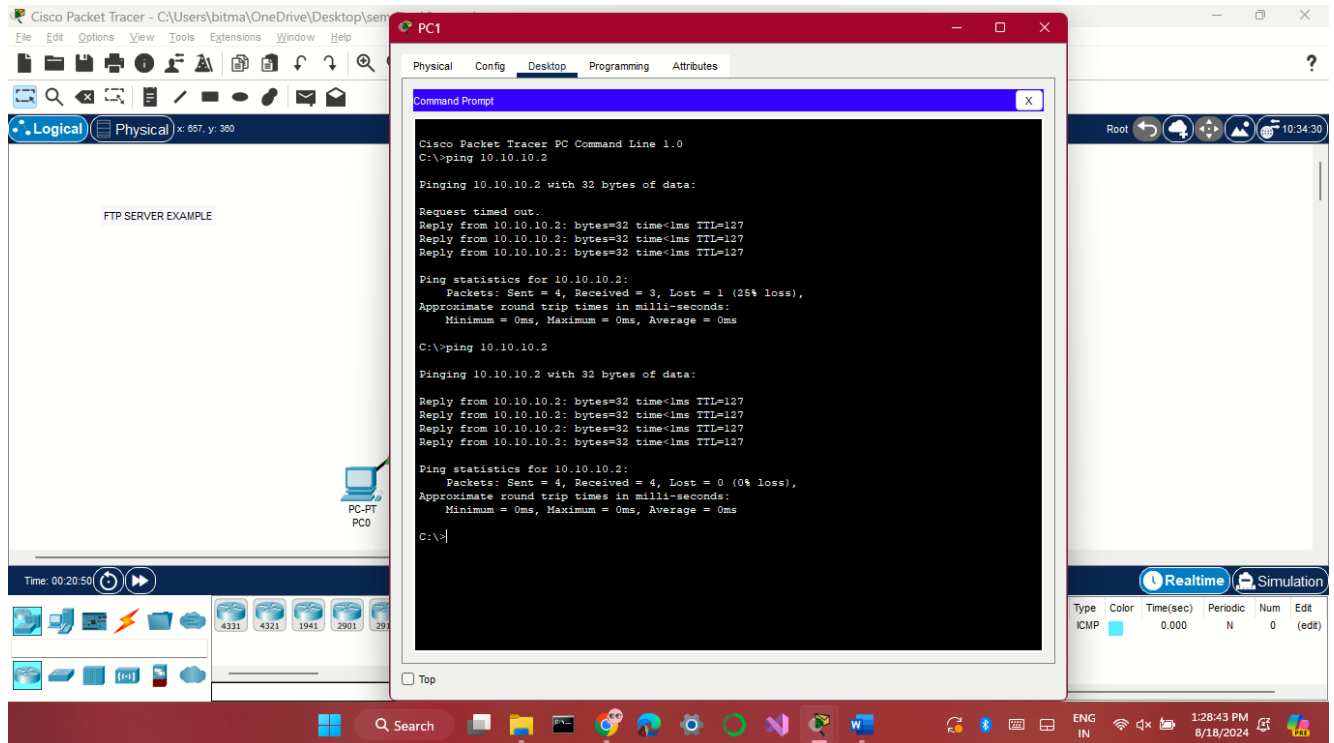


- Step-4:** PC0(192.168.0.2) => desktop => text editor => write something => then click on save  
Enter file name => demo

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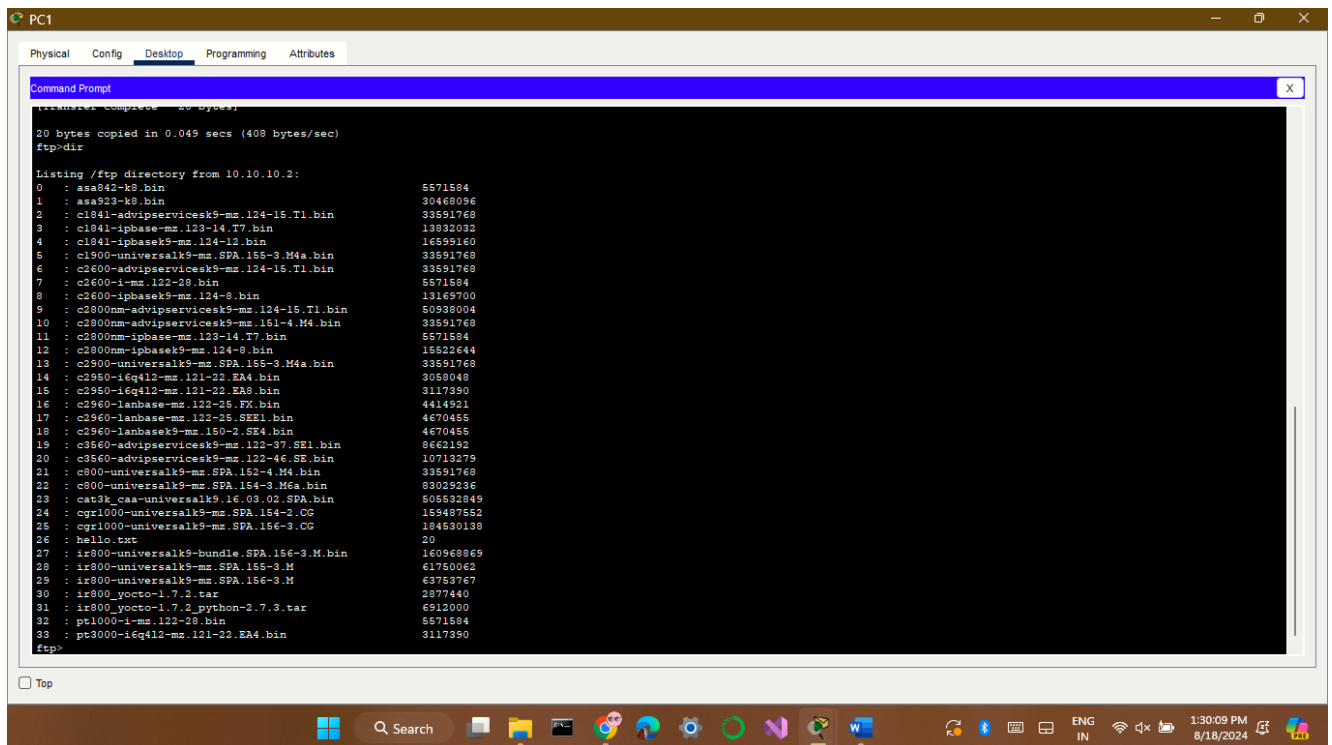
**Step-5:** perform below task

- Write put your-file name



- Write dir

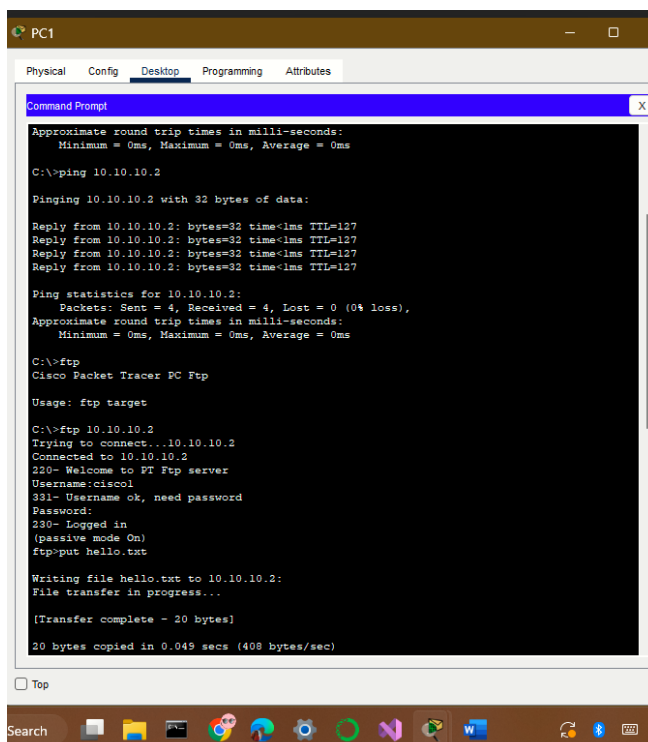
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```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
(Transfer complete - 20 bytes)
20 bytes copied in 0.049 secs (408 bytes/sec)
ftp>dir
Listing /ftp directory from 10.10.10.2:
 0 : asa842-k9.bin                    5571584
 1 : asa822-k9.bin                    30468096
 2 : c1841-advipservicesk9-ms.124-15.T1.bin 33591768
 3 : c1841-ipbase-ms.123-14.T7.bin      13832032
 4 : c1841-ipbasek9-ms.124-12.bin       16599160
 5 : c1900-universalk9-ms.SPA.155-3.M4a.bin 33591768
 6 : c2600-advipservicesk9-ms.124-15.T1.bin 33591768
 7 : c2600-i-mz.122-28.bin             5571584
 8 : c2600-ipbasek9-ms.124-8.bin        13165700
 9 : c2800nm-advipservicesk9-ms.124-15.T1.bin 50938004
10 : c2800nm-advipservicesk9-ms.151-4.M4.bin 33591768
11 : c2800nm-ipbase-ms.123-14.T7.bin     5571584
12 : c2800nm-ipbasek9-ms.124-8.bin       15622644
13 : c2900-universalk9-ms.SPA.155-3.M4a.bin 33591768
14 : c2950-16q412-ms.121-22.EA4.bin     3058048
15 : c2950-16q412-ms.121-22.EA8.bin     3117390
16 : c2960-lanbase-ms.122-25.FX.bin      4414921
17 : c2960-lanbase-ms.122-25.SE1.bin     4670455
18 : c2960-lanbasek9-ms.150-2.SE4.bin     4670455
19 : c3560-advipservicesk9-ms.122-37.SE1.bin 8662192
20 : c3560-advipservicesk9-ms.122-46.SE1.bin 10713279
21 : c800-universalk9-ms.SPA.152-4.M4a.bin 33591768
22 : c800-universalk9-ms.SPA.154-3.M6a.bin 83029236
23 : cat3k_caa-universalk9.16.03.02.SPA.bin 505532949
24 : cgr1000-universalk9-ms.SPA.154-2.CG 159487552
25 : cgr1000-universalk9-ms.SPA.156-3.CG 184530138
26 : Hello.txt                        20
27 : ir800-universalk9-bundle.SPA.156-3.M.bin 150968869
28 : ir800-universalk9-ms.SPA.156-3.M    61750062
29 : ir800-universalk9-ms.SPA.156-3.M    63753767
30 : ir800_yocto-1.7.2.tar              2877440
31 : ir800_yocto-1.7.2_python-2.7.3.tar 6912000
32 : pt1000-i-mz.122-28.bin             5571584
33 : pt3000-16q412-ms.121-22.EA4.bin     3117390
ftp>
```

Step-6: go to PC1(192.168.0.3) desktop => command port

- Write get your-filename



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Reply from 10.10.10.2: bytes=32 time<1ms TTL=127
Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
      Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ftp
Cisco Packet Tracer PC Ftp
Usage: ftp target
C:\>ftp 10.10.10.2
Trying to connect...10.10.10.2
Connected to 10.10.10.2
220- Welcome to FT Ftp server
Username: cisco1
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put hello.txt
Writing file hello.txt to 10.10.10.2:
File transfer in progress...
(Transfer complete - 20 bytes)
20 bytes copied in 0.049 secs (408 bytes/sec)
```

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