* Practical 1: IPv4 Addressing and subnetting

1] An address in a block is given as 10.4.17.8 find the number of addresses in the block, the first address and the last address

Solution
∵ the given address is of class A ∴ n = 8
∴
Numbers of address = $N = 2^{32-n}$
$= 2^{32-8}$
$= 2^{24}$
$= 16777216$
∴ Number of addresses are 16777216

First address
for class A net id is 16 ∴ subnet mask is 255.0.0.0
to find the first address we logically given address with subnet mask

given address	10	4	17	8
Network mask	255	0	0	0
AND operation	10	0	0	0

∴ first address is 10.0.0.0

last address
to find last address we logically OR the given address with complement of Network mask

Network Mask	255	0	0	0
Complement	0	255	255	255

given address	10	4	17	8
complement of mask	0	255	255	255
OR operation	10	255	255	255

∴ last address is 10.255.255.255

hence we conclude that

a) Network address : the first address is Network address is 10.0.0.0

b) Network broadcast address : the last address is 10.255.255.255

c) total no of host bits are 8

d) Number of host : 16777216 (16777216-2)

2] An address in a block is given by 180.8.17.9 find number of addresses in the block, first address, last address

solution

the given address is of class B ∴ n=16

No of address = $N = 2^{32-n}$
$= 2^{32-16}$
$= 2^{16}$
$= 65536$

∴ total number of address is 65536

First address

∴ address is of class B ∴ net id = 16
therefore network mask is 255.255.0.0
to find the first address we logically AND given address with Network mask

given address	180	8	17	9
Network address	255	255	0	0
AND operation	180	8	0	0

∴ first address is 180.8.0.0

last address

to find last address we logically OR given address with complement of network mask

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Network mask	255	155	0	0
complement	0	0	255	255

given address	180	7	17	9
complement of mask	0	0	255	255
OR operation	180	8	255	255

∴ ~~given~~ last address is 180.8.255.255

Here we conclude that

a) Network address : the first address is 180.8.0.0
b) Network broadcast : the last address is 180.8.255.255
c) total number of host bit is 16
d) Number of host 65534 (65536 - 2)

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3) ~~An~~ address in a block is given as 194.7.15.8 find the number of address in the block the first address and last address

solution
the given address is of class c ∴ n = 24

No of addresses = N = 2^{32-n}
$= 2^{32-24}$
$= 2^8$
$= 256$

∴ number of addresses are 256

first address
for class c Net Id is 24
∴ network mask is 255.255.255.0
to find first address we logically AND given address and Network address mask

given address	194	7	15	8
Network mask	255	255	255	0
AND operation	194	7	15	0

∴ first address is 194.7.15.0

Last address

to find last address we logically OR given address with complement of network mask

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Network mask	255	255	255	0
complement	0	0	0	255

given address	194	7	15	3
complement of Network mask	0	0	0	255
OR Operation	194	7	15	255

∴ last address is 194.7.15.255

hence we conclude that

a) the first address is 194.7.15.0

b) the last address is 194.7.15.255

c) total number of host bit is 24

d) number of hosts 256(256-1)

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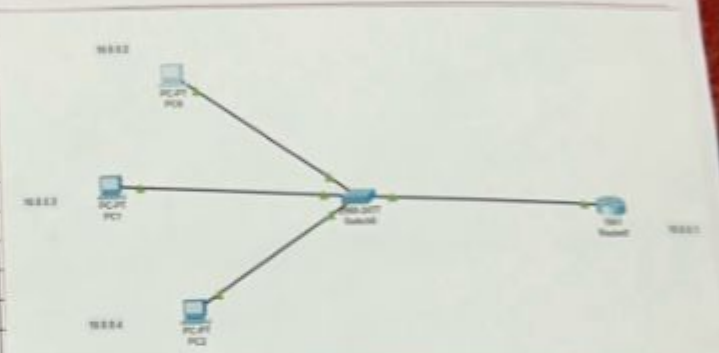
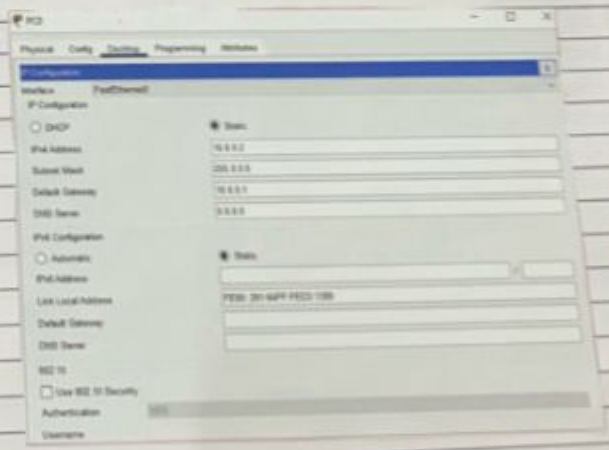
* practical 2: use of various command utilities





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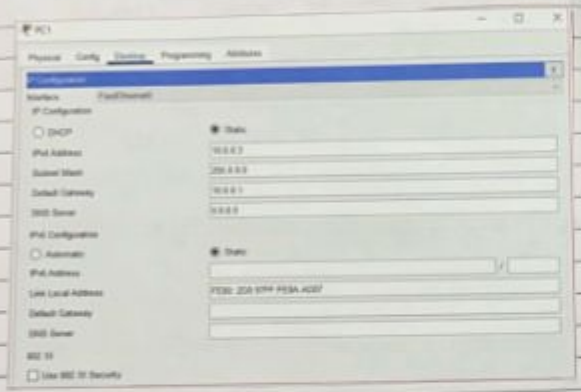

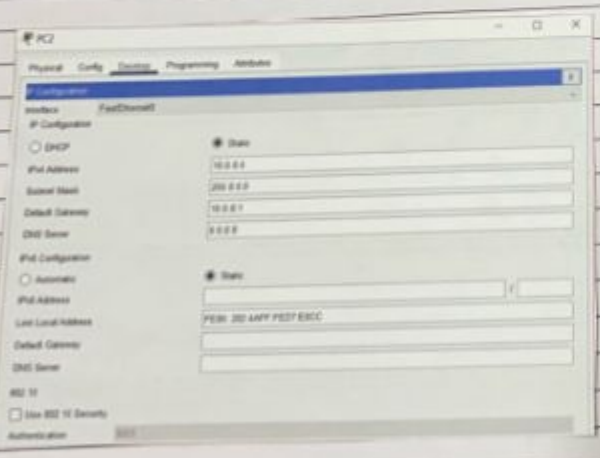

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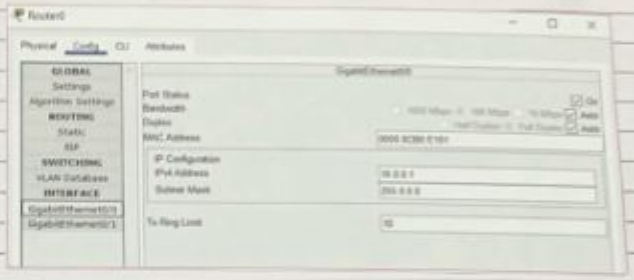

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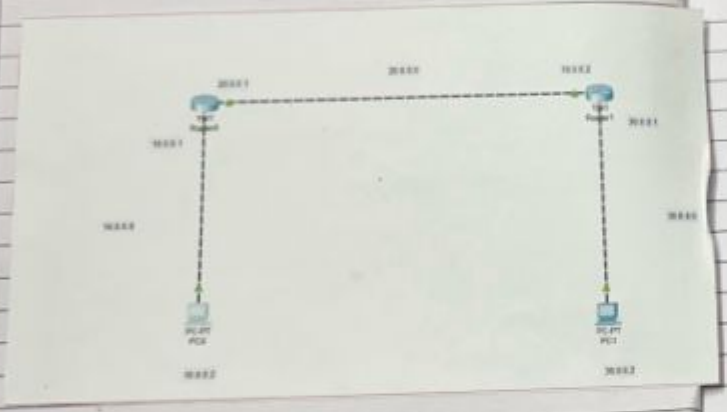
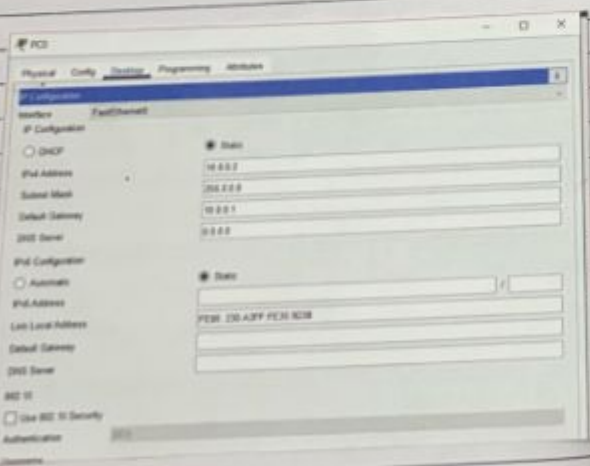
Practical 3: Static Routing





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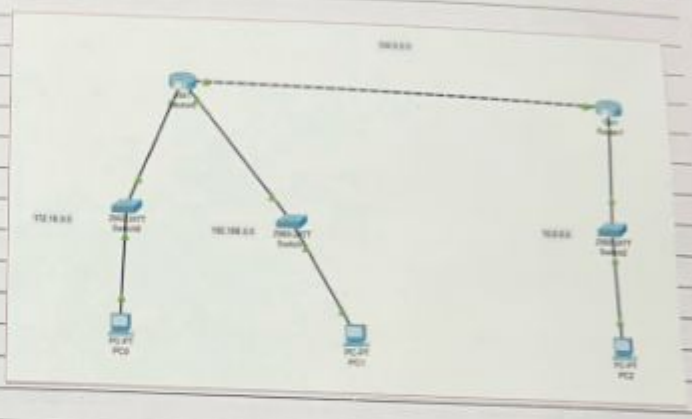
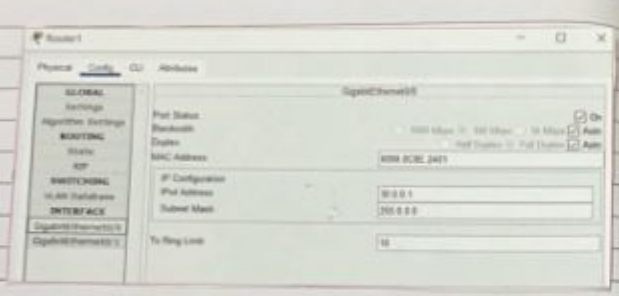
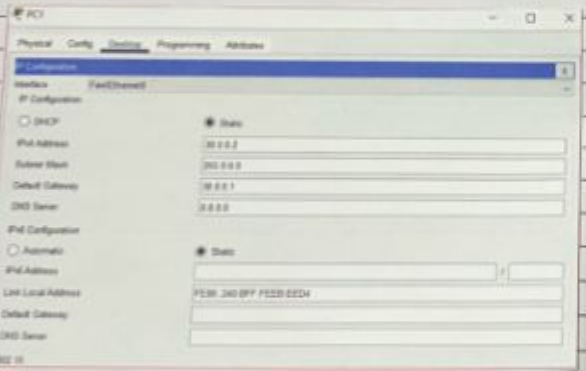
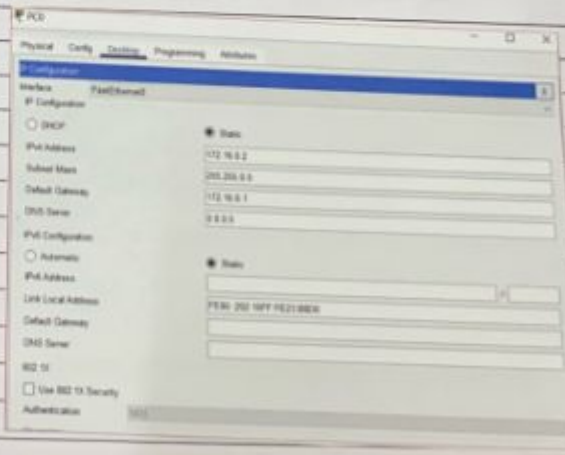
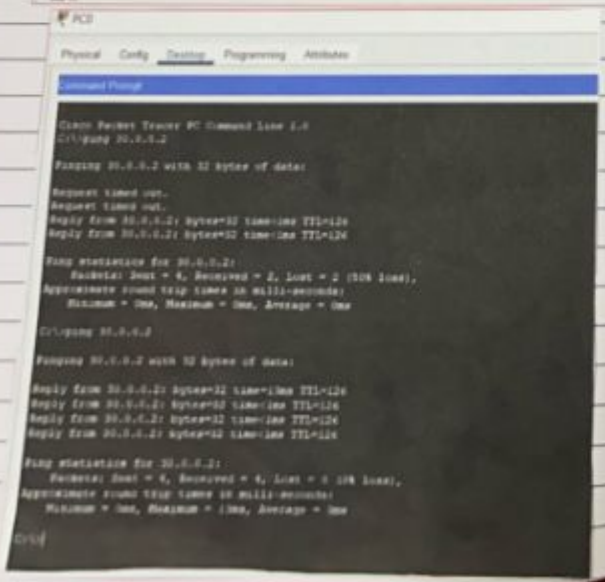
practical 4: RIP (Routing information protocol)











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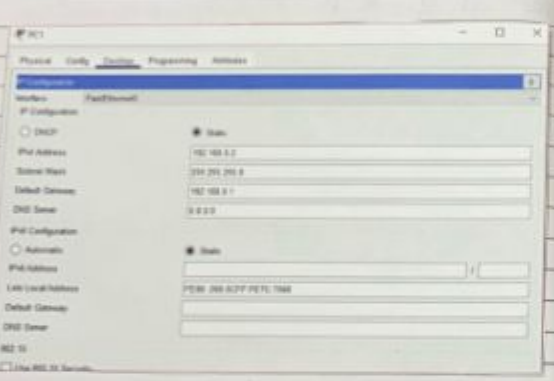

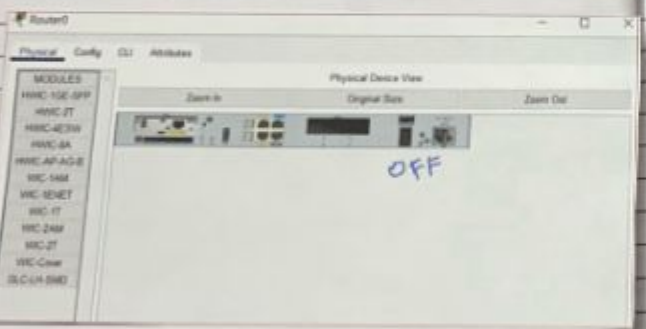

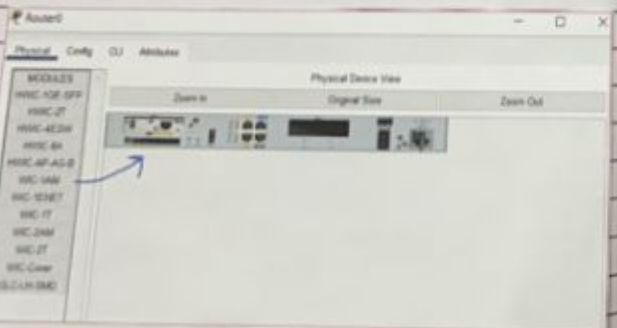

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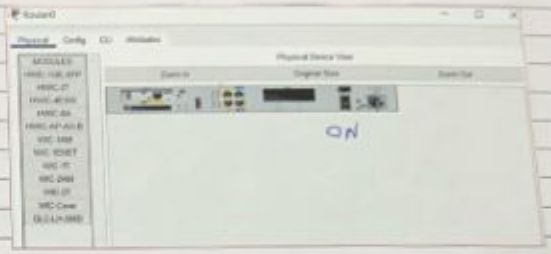

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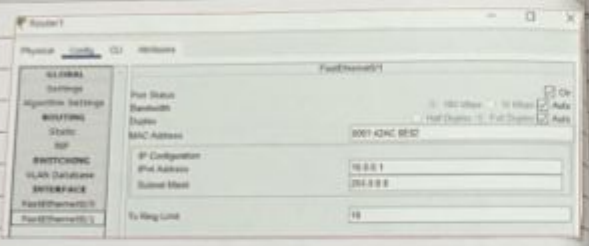

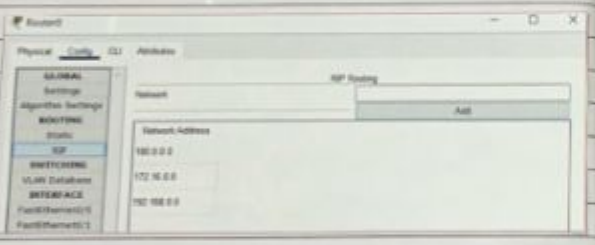

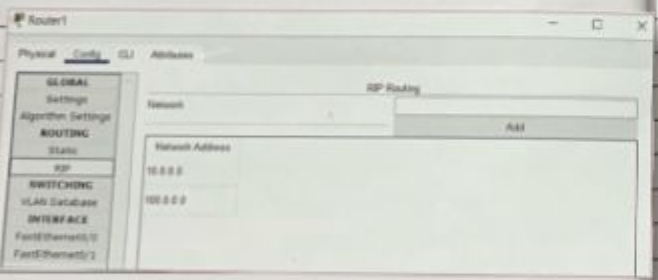

```
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=126
Reply from 10.0.0.2: bytes=32 time<1ms TTL=126
Reply from 10.0.0.2: bytes=32 time<1ms TTL=126
Reply from 10.0.0.2: bytes=32 time=10ms TTL=126

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 2ms
```

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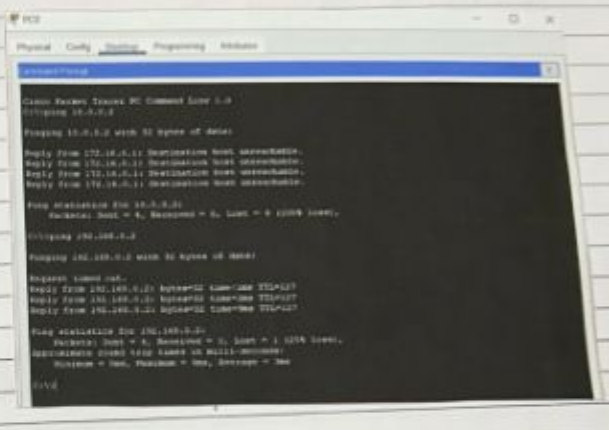

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Practical 5: Simple OSPF (open shortest

PC3

PC2

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Router0

Router1

Router1

Router1

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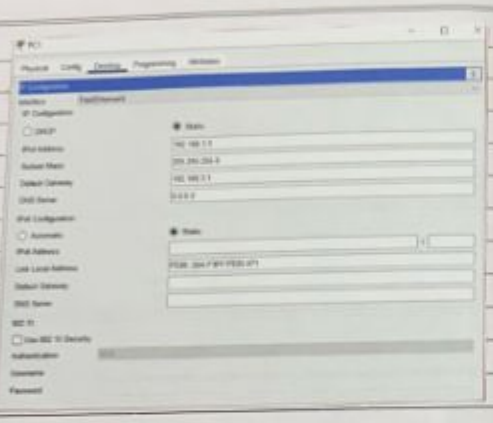

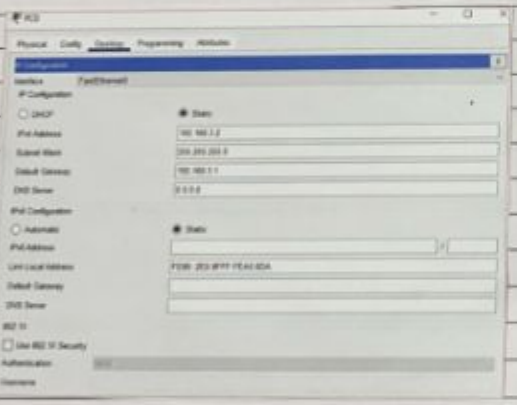

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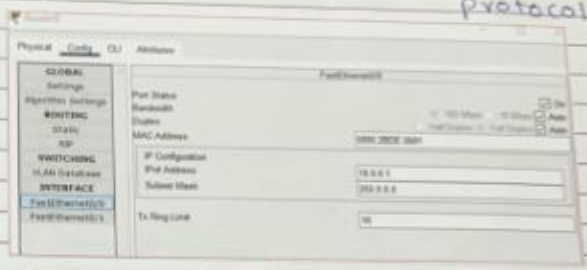
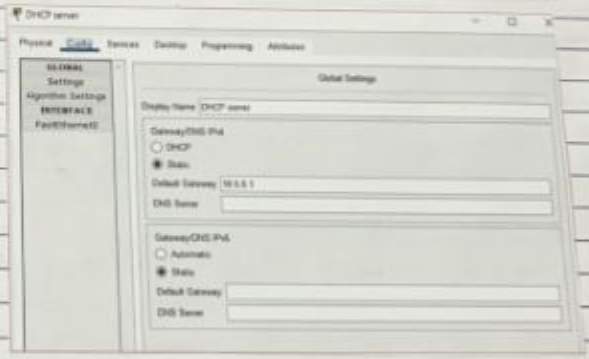
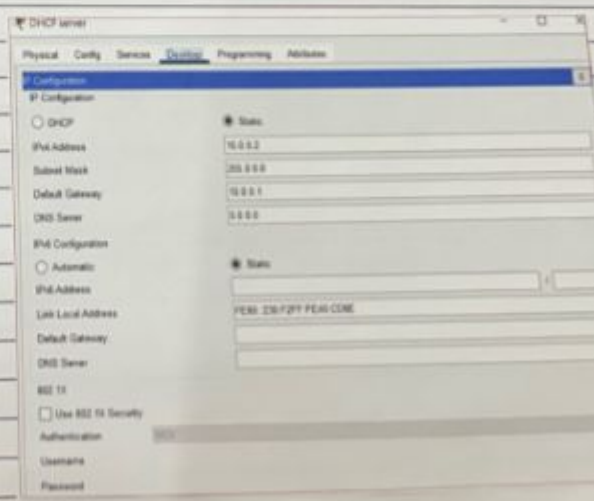
practical 6: DHCP (Dynamic Host Configuration protocol)







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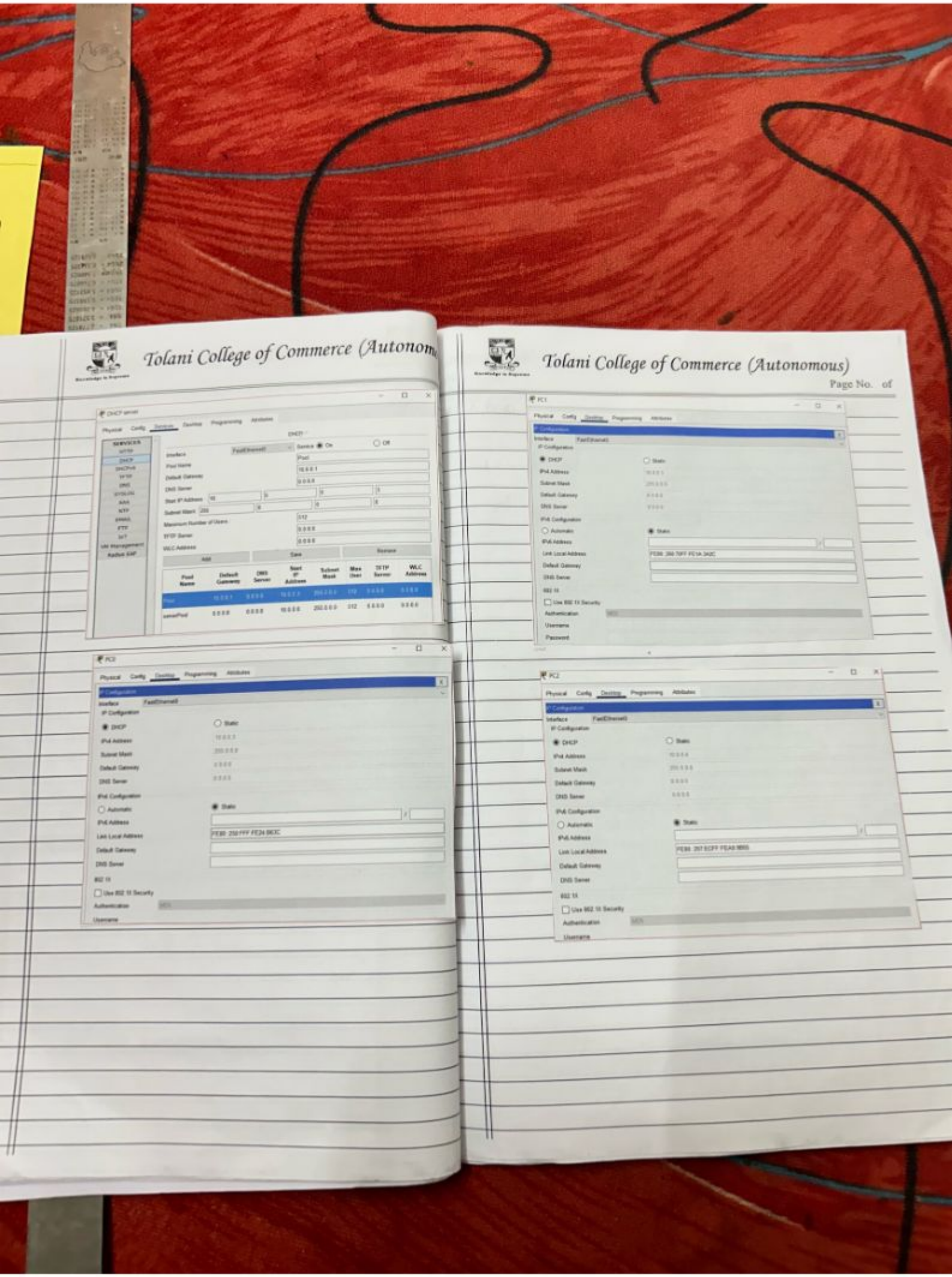

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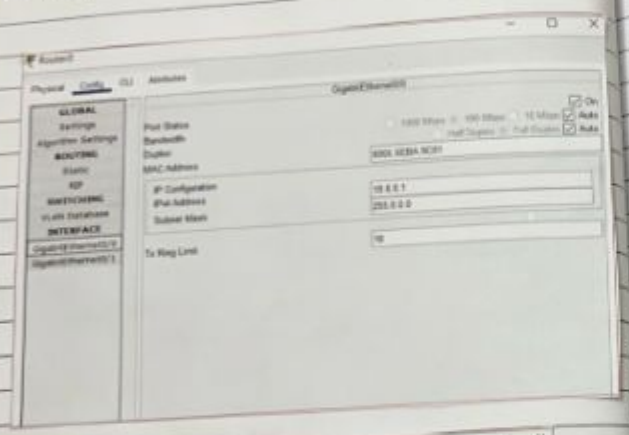
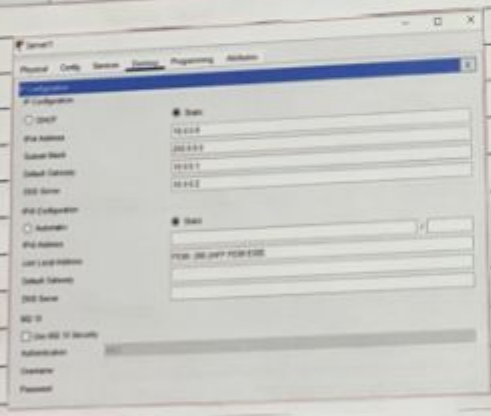
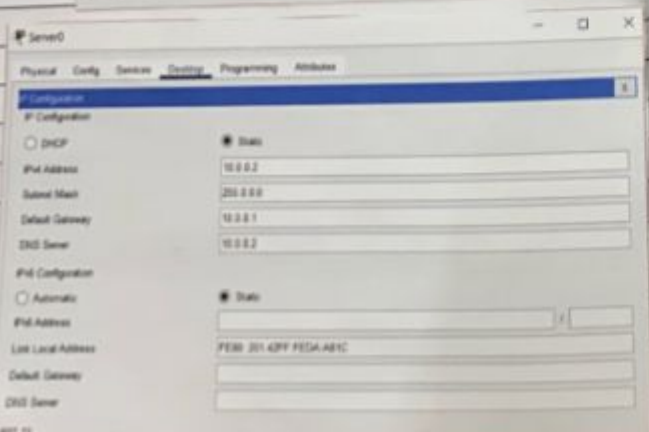
* Practical 8 : Configuring DNS Server and C







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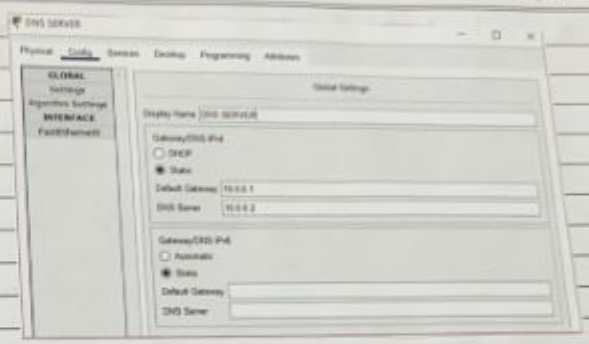

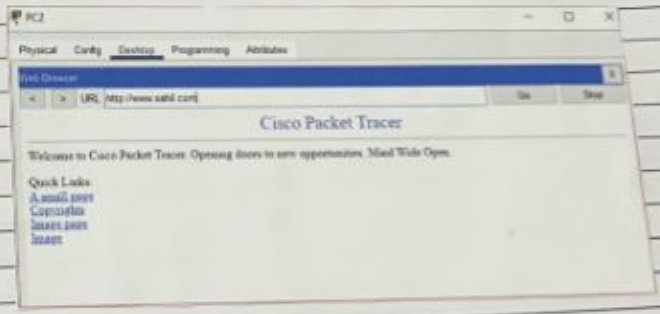

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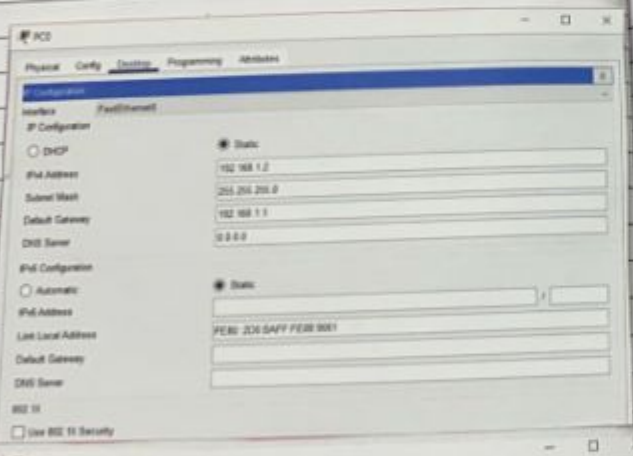
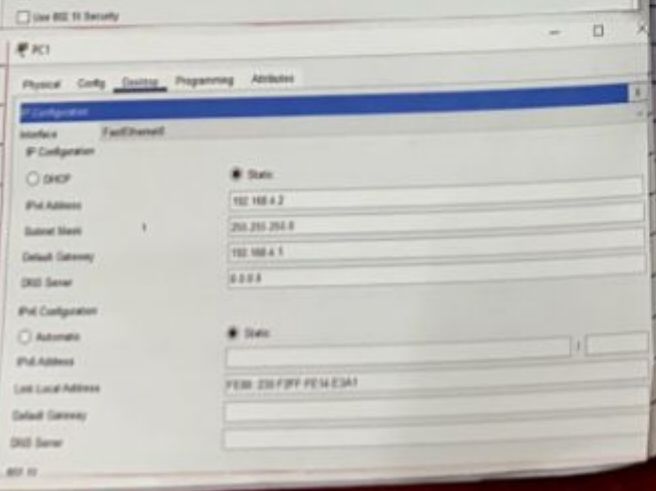
Practical 9: OSPf with multiple Areas





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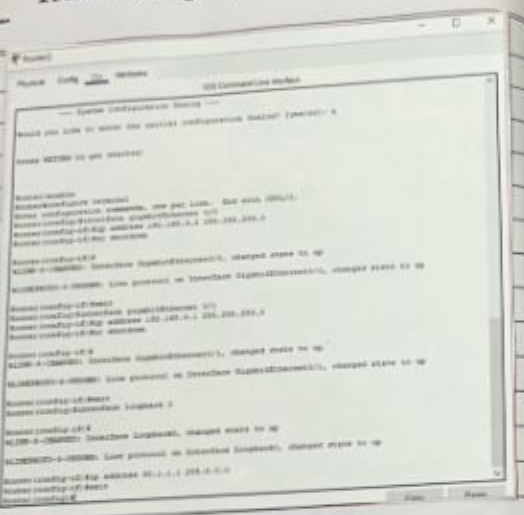

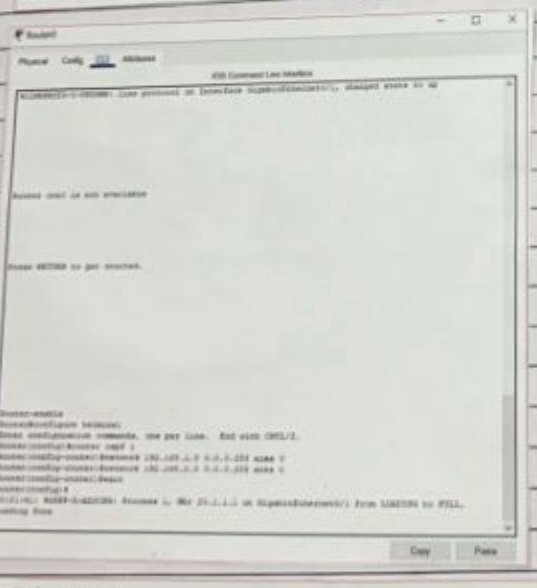

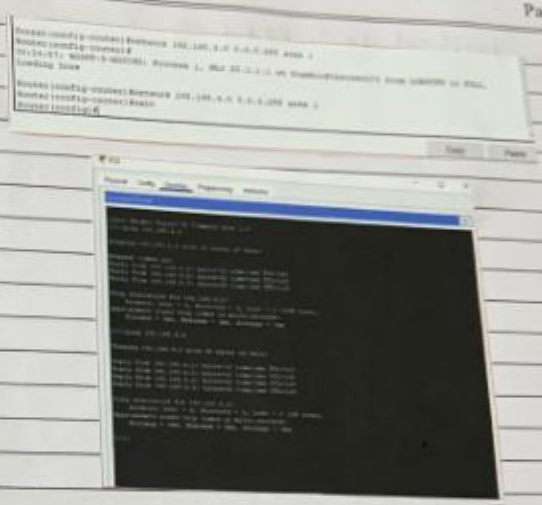

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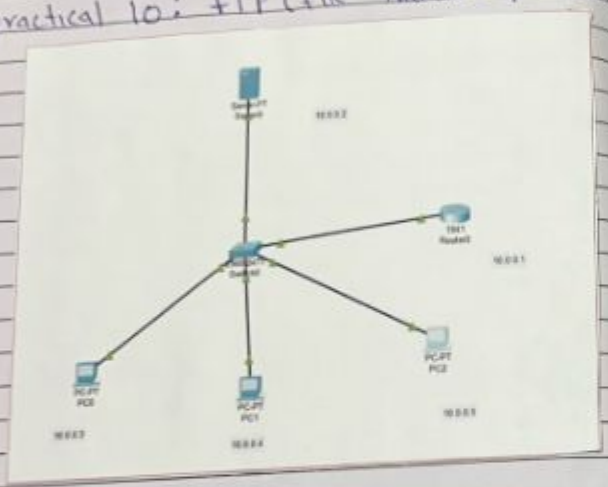
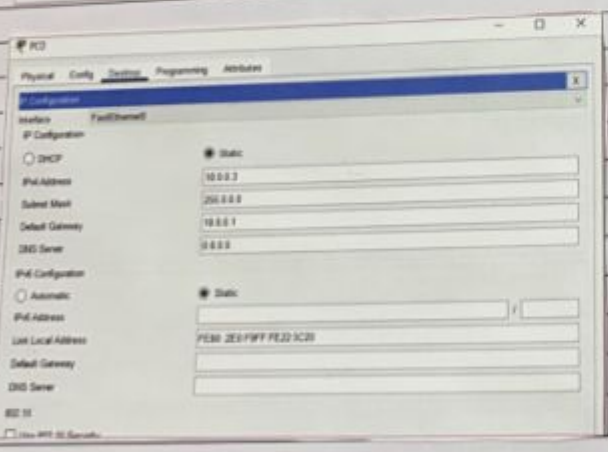
* practical 10: FTP (file transfer protocol)





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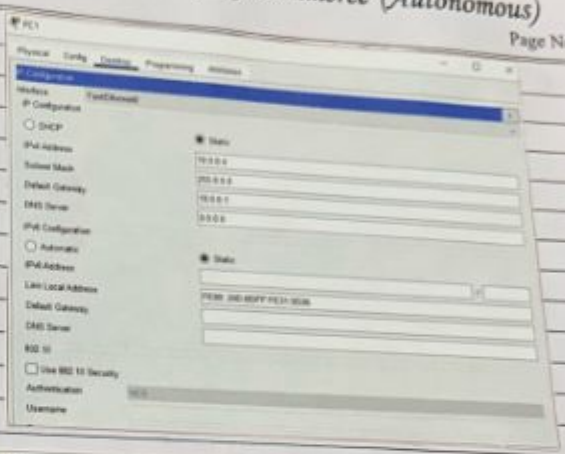

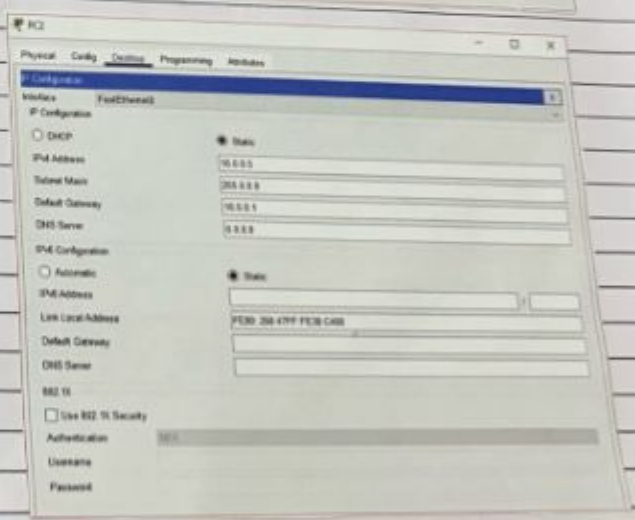

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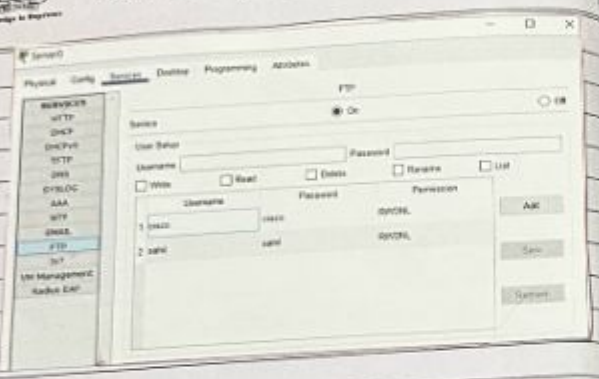

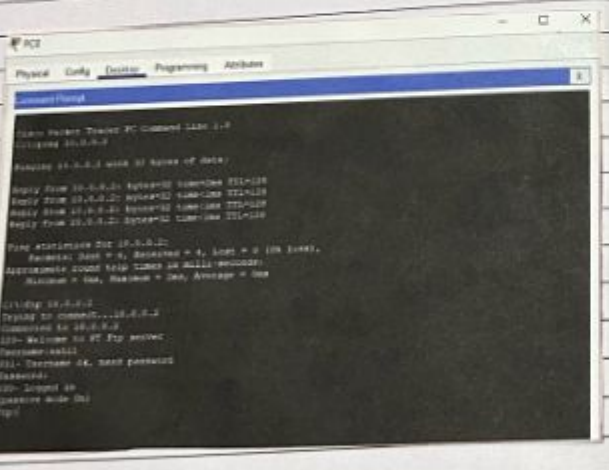

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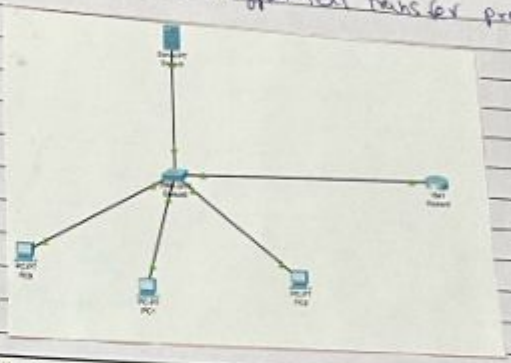
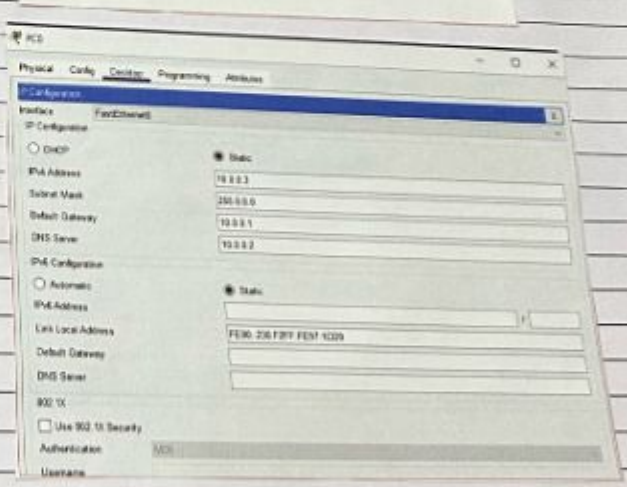
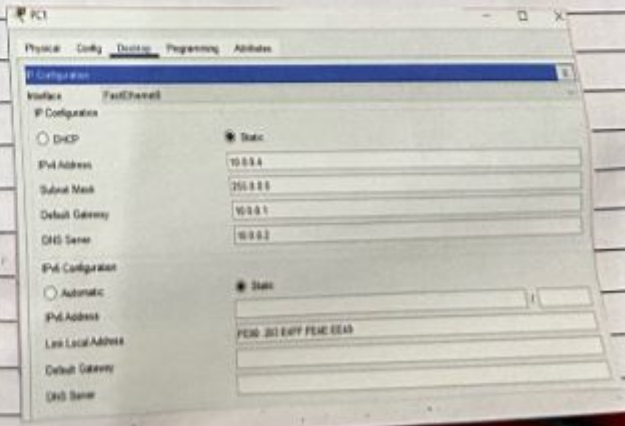
practical 11: HTTP (Hyper text transfer protocol)







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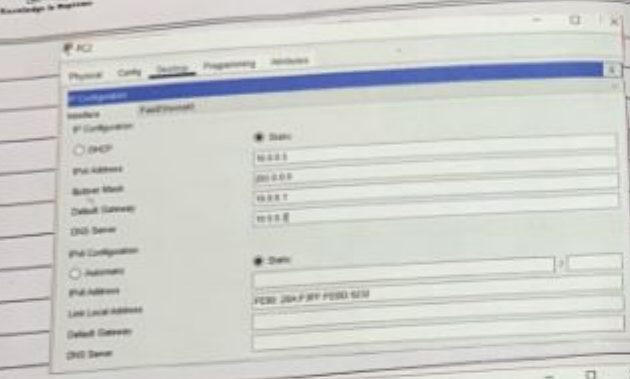

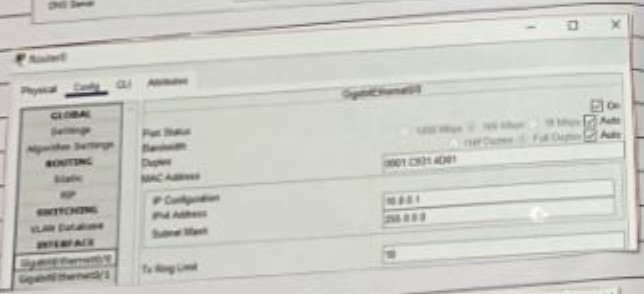

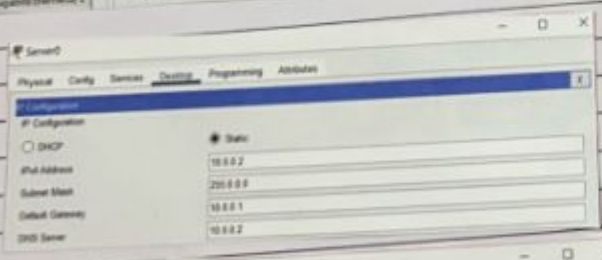

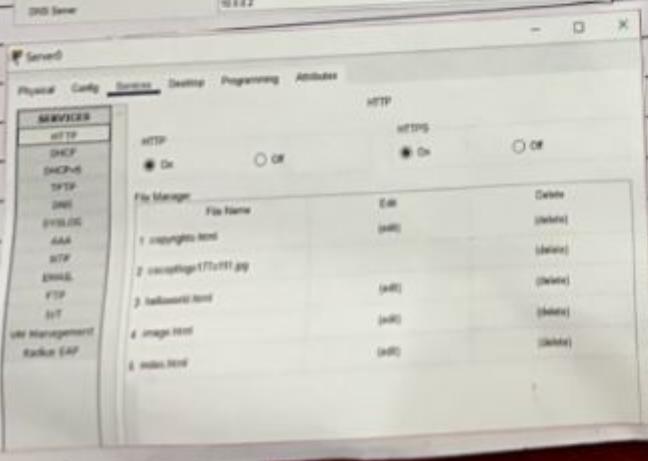

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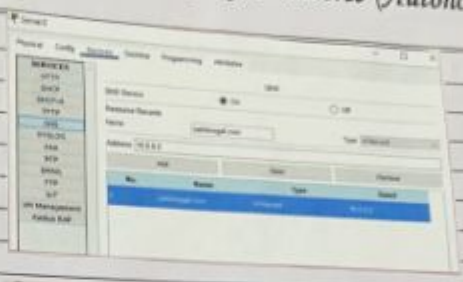

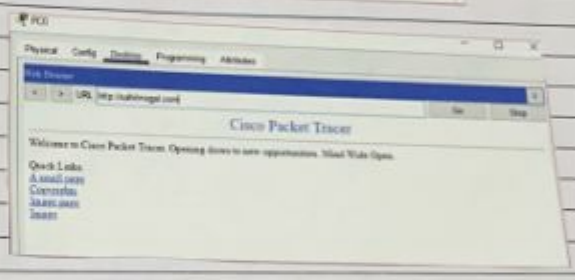

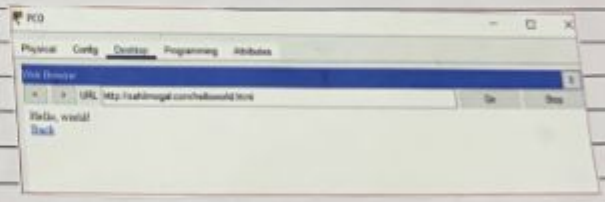

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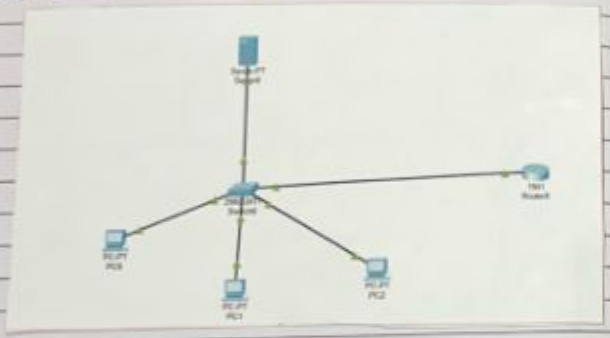

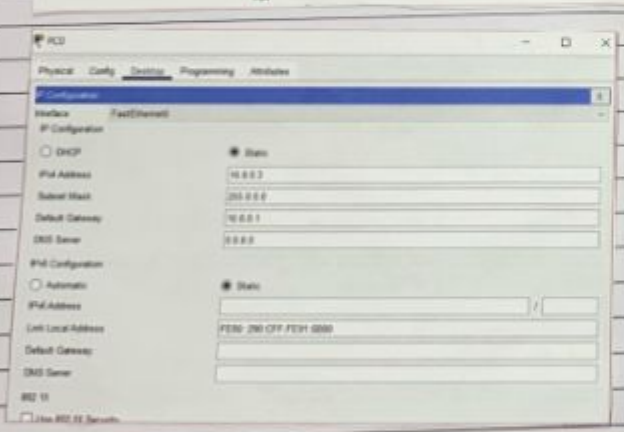

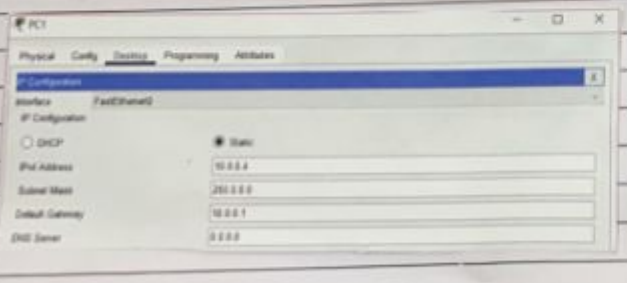

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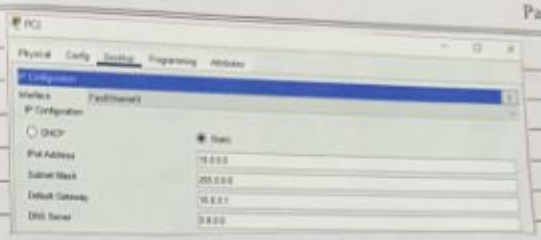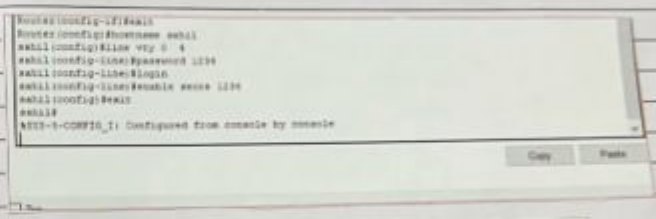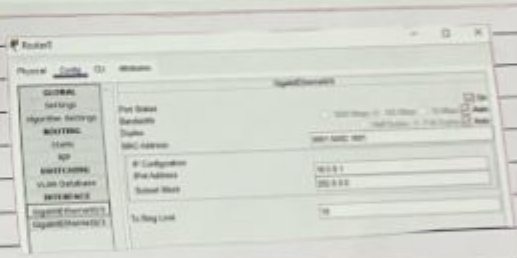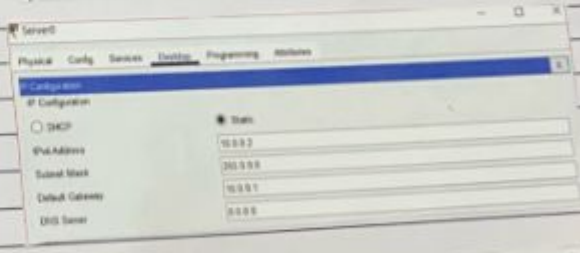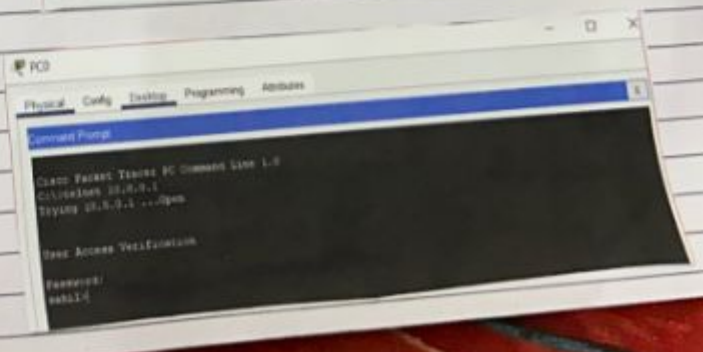
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