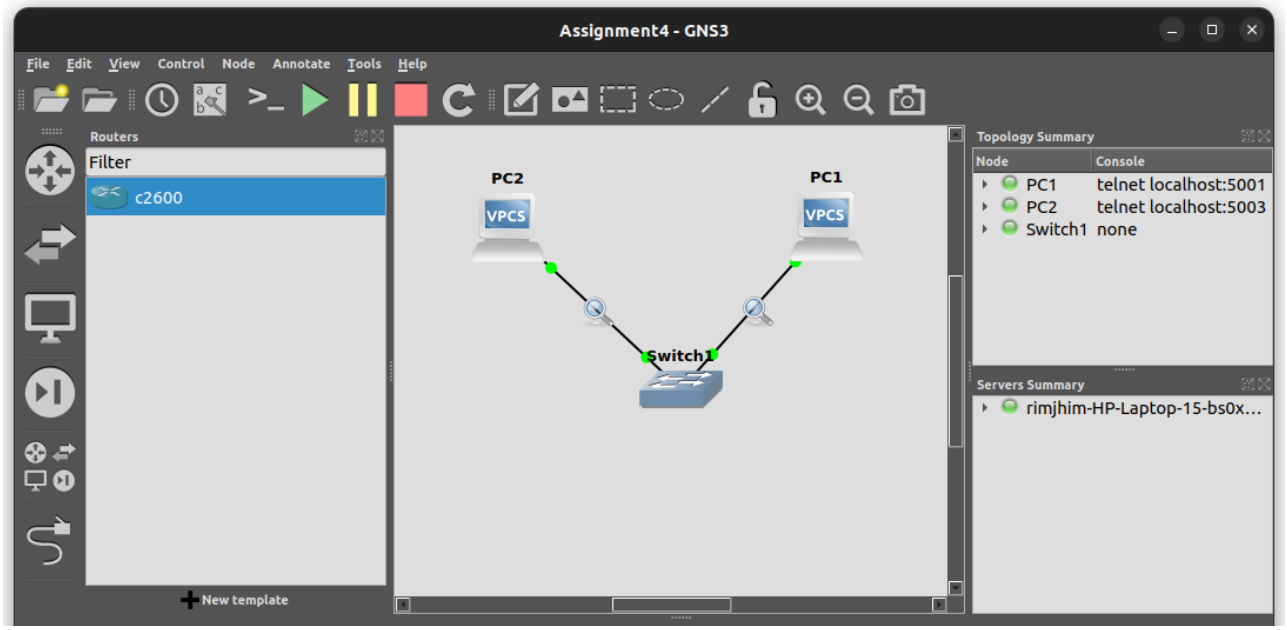
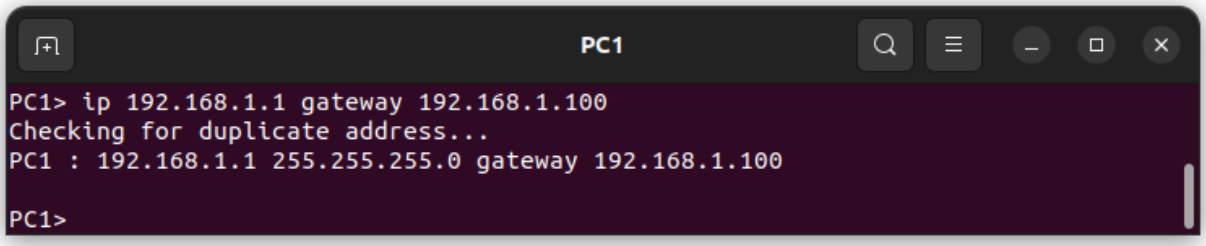
LAB: Assignment 5

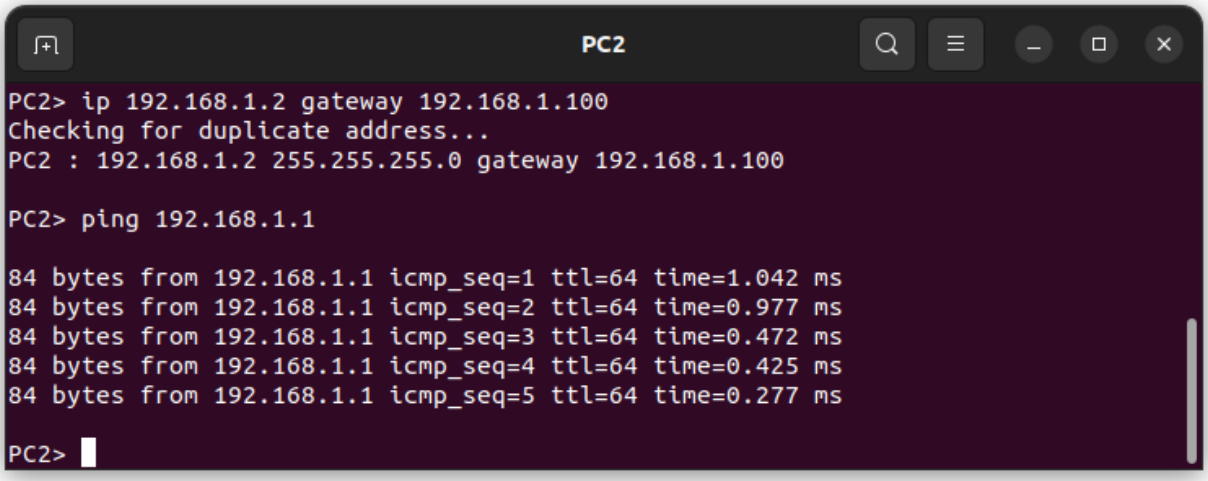
Submitted by- Rimjhim Mittal (102103430- 2CO16)

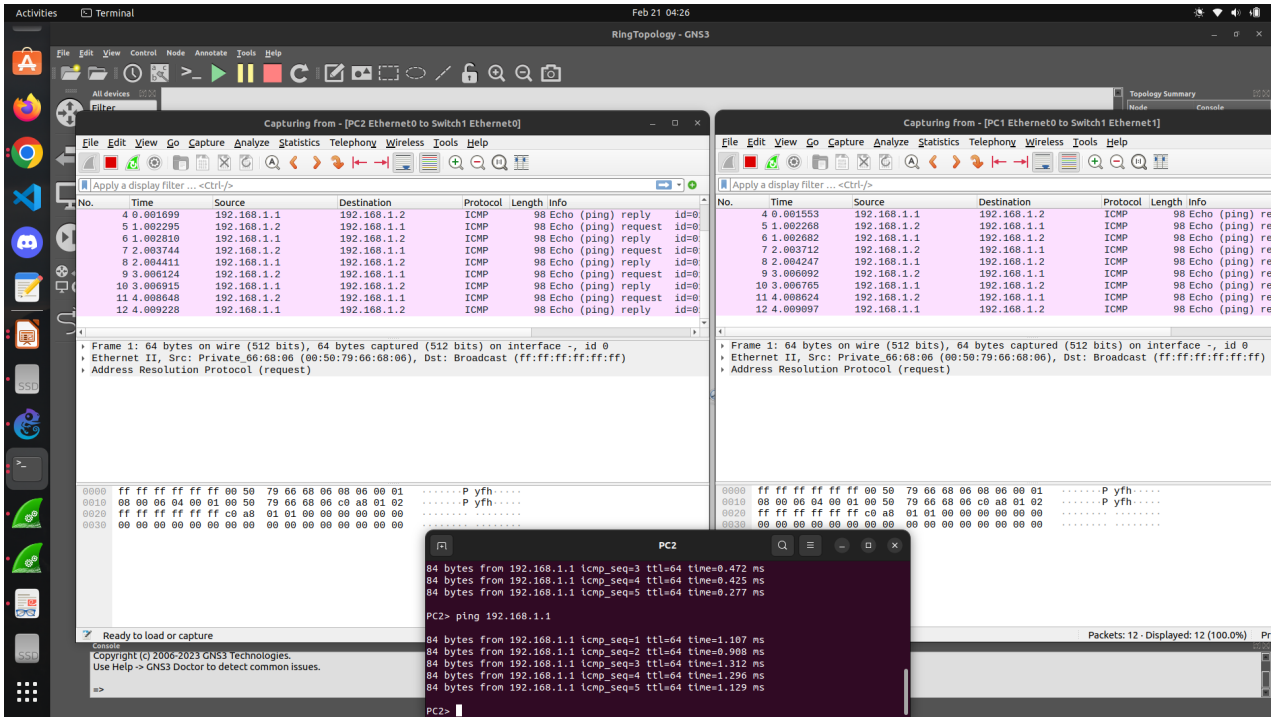
Objective: To create simple Network Topologies Using GNS.

Q1. Demonstrate the working of Address Resolution Protocol (ARP Protocol) with using Wireshark.

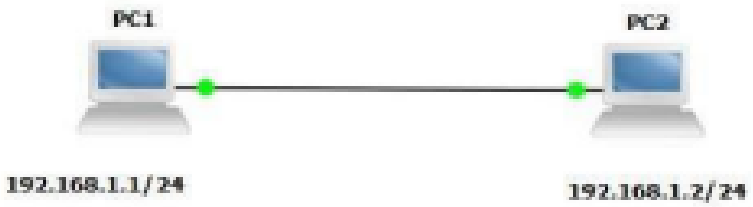


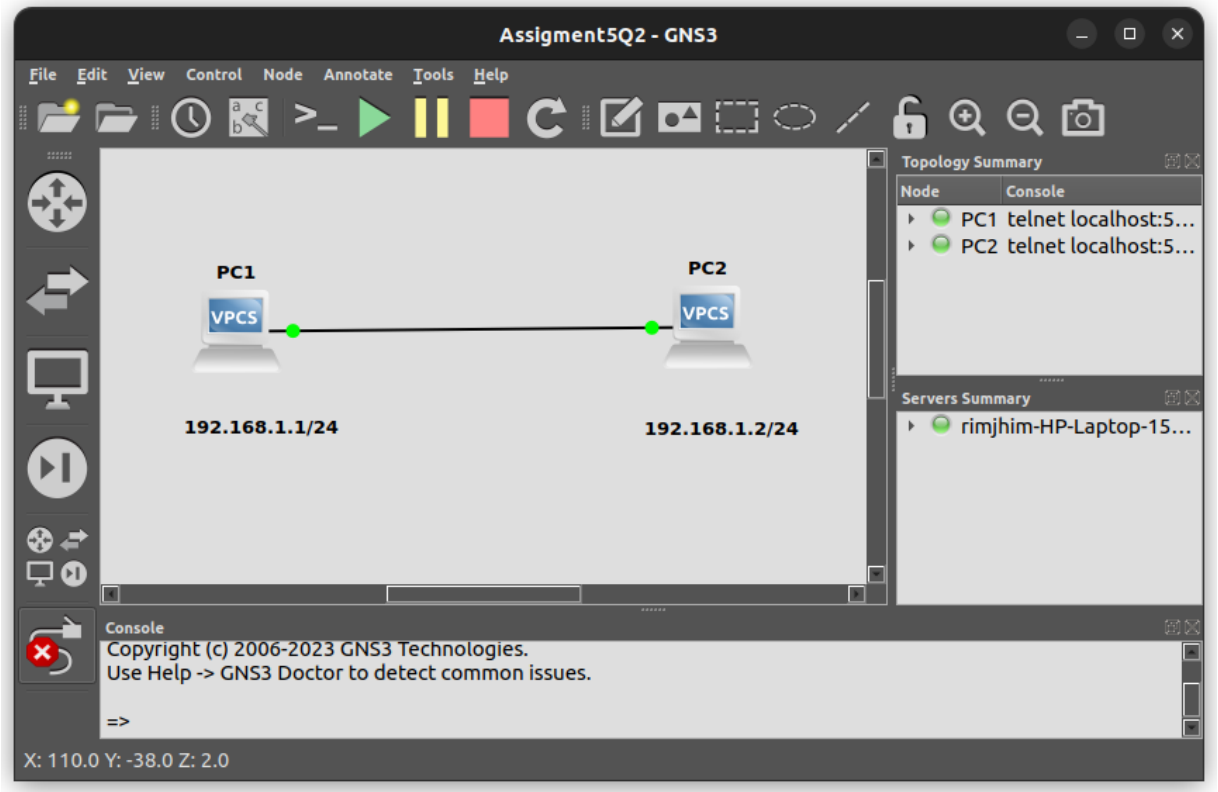


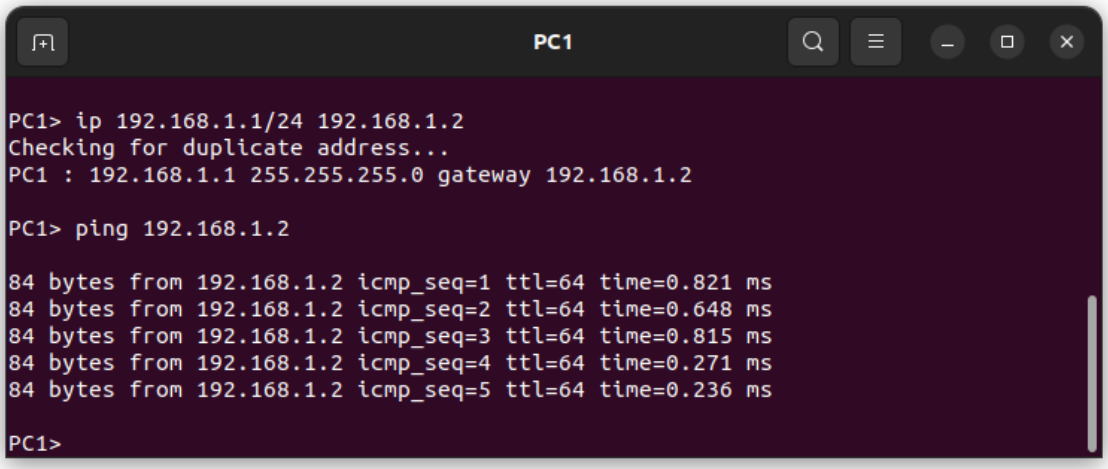


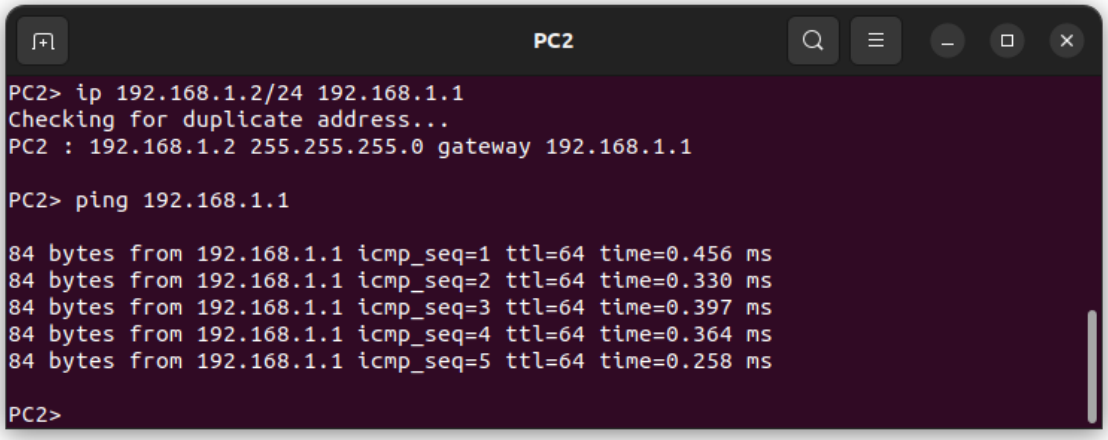

Activities
Terminal
Feb 21 04:26
RingTopology - GNS3
Capturing from - [PC2 Ethernet0 to Switch1 Ethernet0]
Capturing from - [PC1 Ethernet0 to Switch1 Ethernet1]
PC2
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.472 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=0.425 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.277 ms
PC2> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.107 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.908 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=1.312 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=1.296 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=1.129 ms
PC2>

Q2. Connect one PC with another PC as per diagram below.

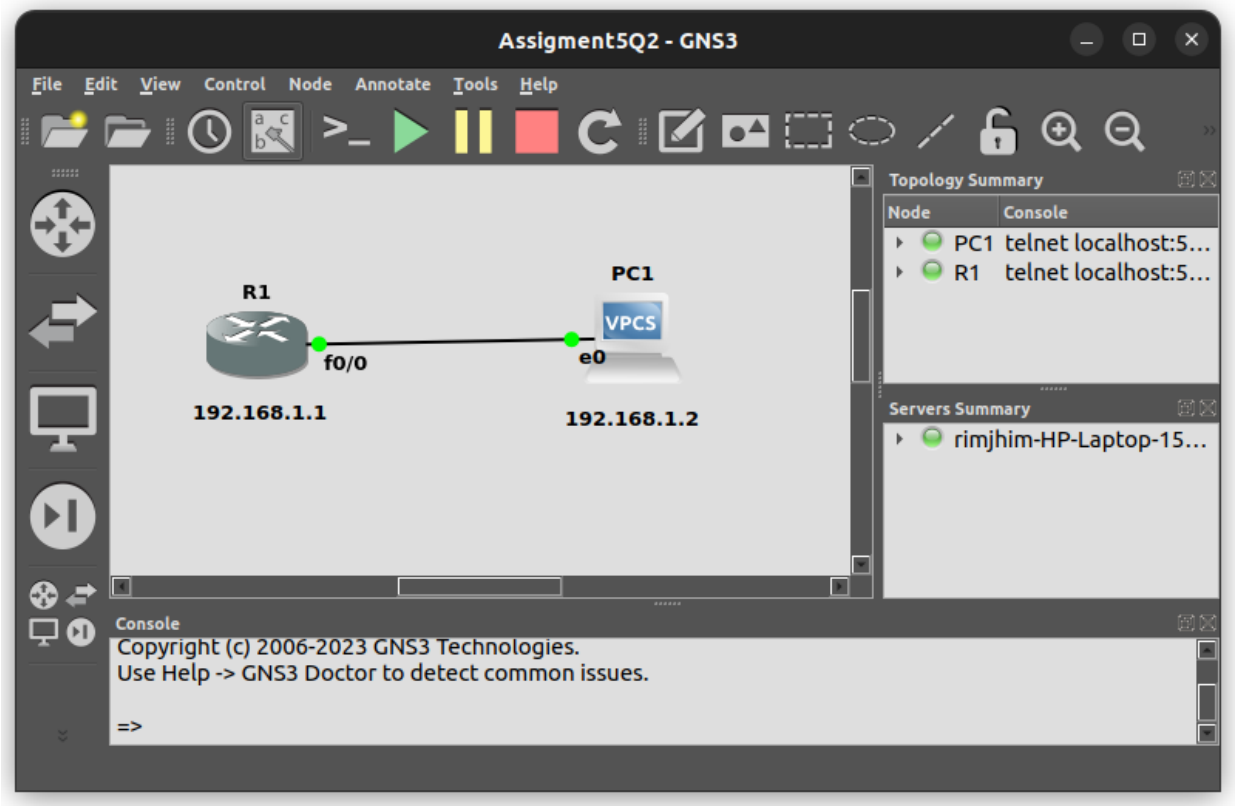


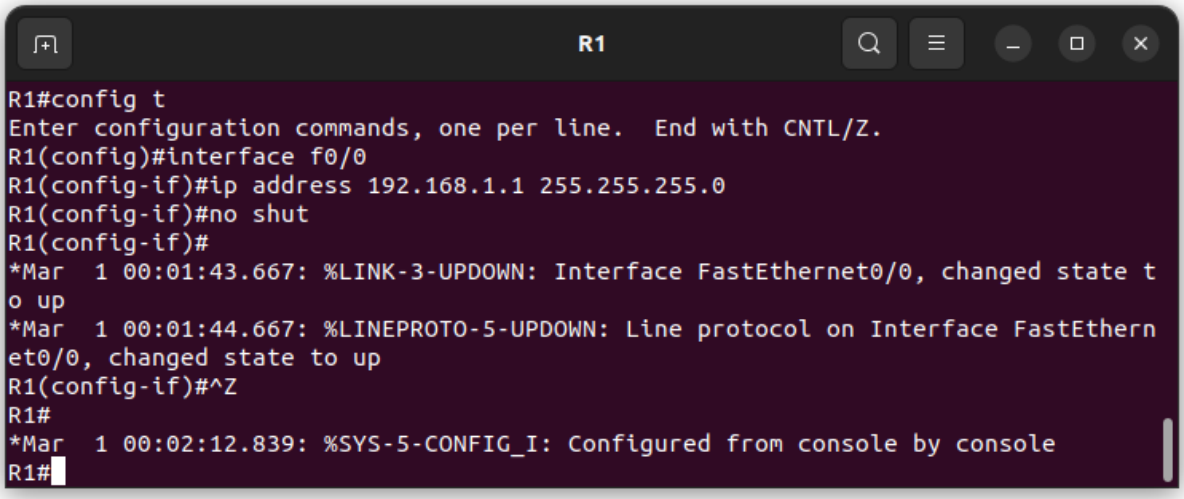




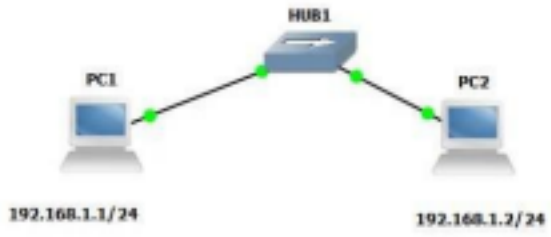

PC2
PC2> ip 192.168.1.2/24 192.168.1.1
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.1
PC2> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=0.456 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.330 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.397 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=0.364 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.258 ms
PC2>

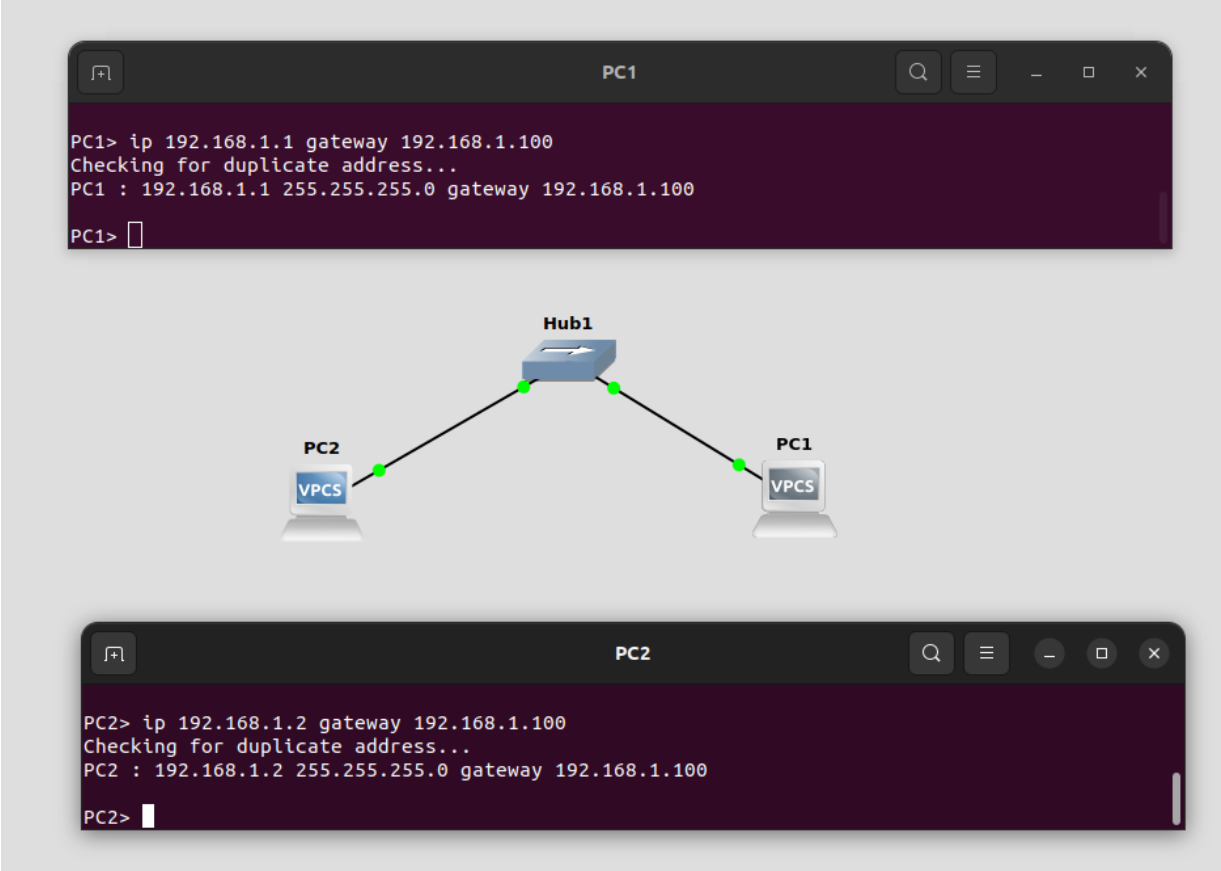
Q3. Connect a PC with Router Ethernet port as shown below.



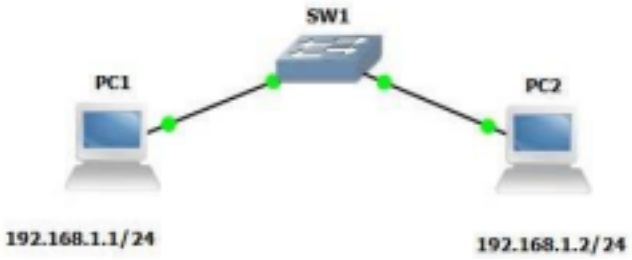

R1
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface f0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#
*Mar 1 00:01:43.667: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:01:44.667: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#^Z
R1#
*Mar 1 00:02:12.839: %SYS-5-CONFIG_I: Configured from console by console
R1#

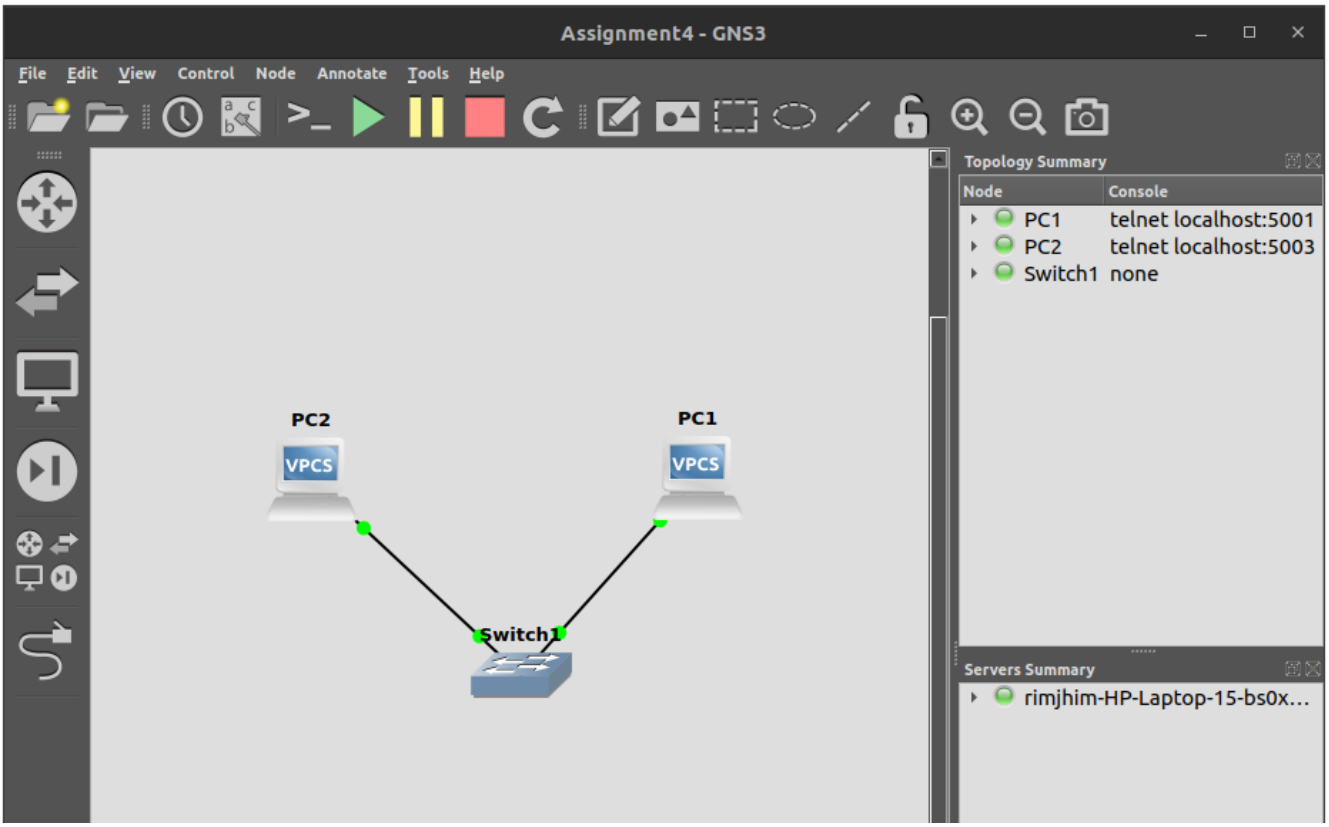
Q4. Create a network of 2 PCs as below.





Q5. Connect 2 PCs with a Switch below.





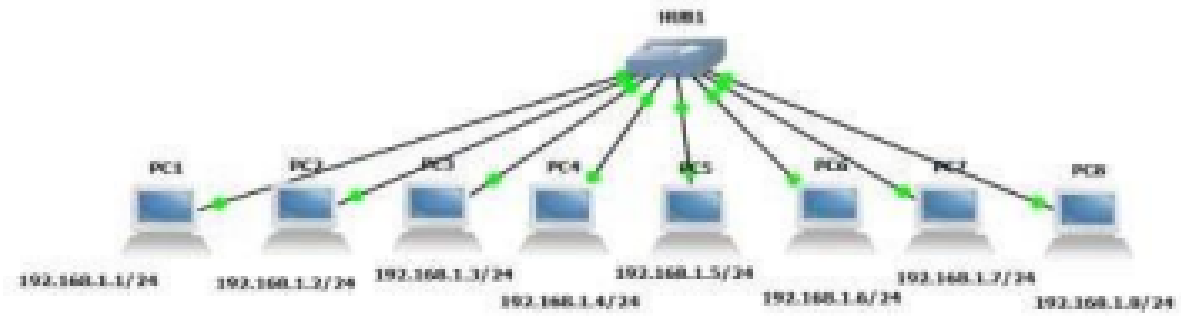
PC1

```
Press '?' to get help.

Executing the startup file


PC1>
PC1> ip 192.168.1.1/24  192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100

PC1> ip dns 192.168.1.100

PC1> show ip

NAME        : PC1[1]
IP/MASK     : 192.168.1.1/24
GATEWAY     : 192.168.1.100
DNS         : 192.168.1.100
MAC         : 00:50:79:66:68:00
LPORT       : 10004
RHOST:PORT  : 127.0.0.1:10005
MTU         : 1500

PC1>
```

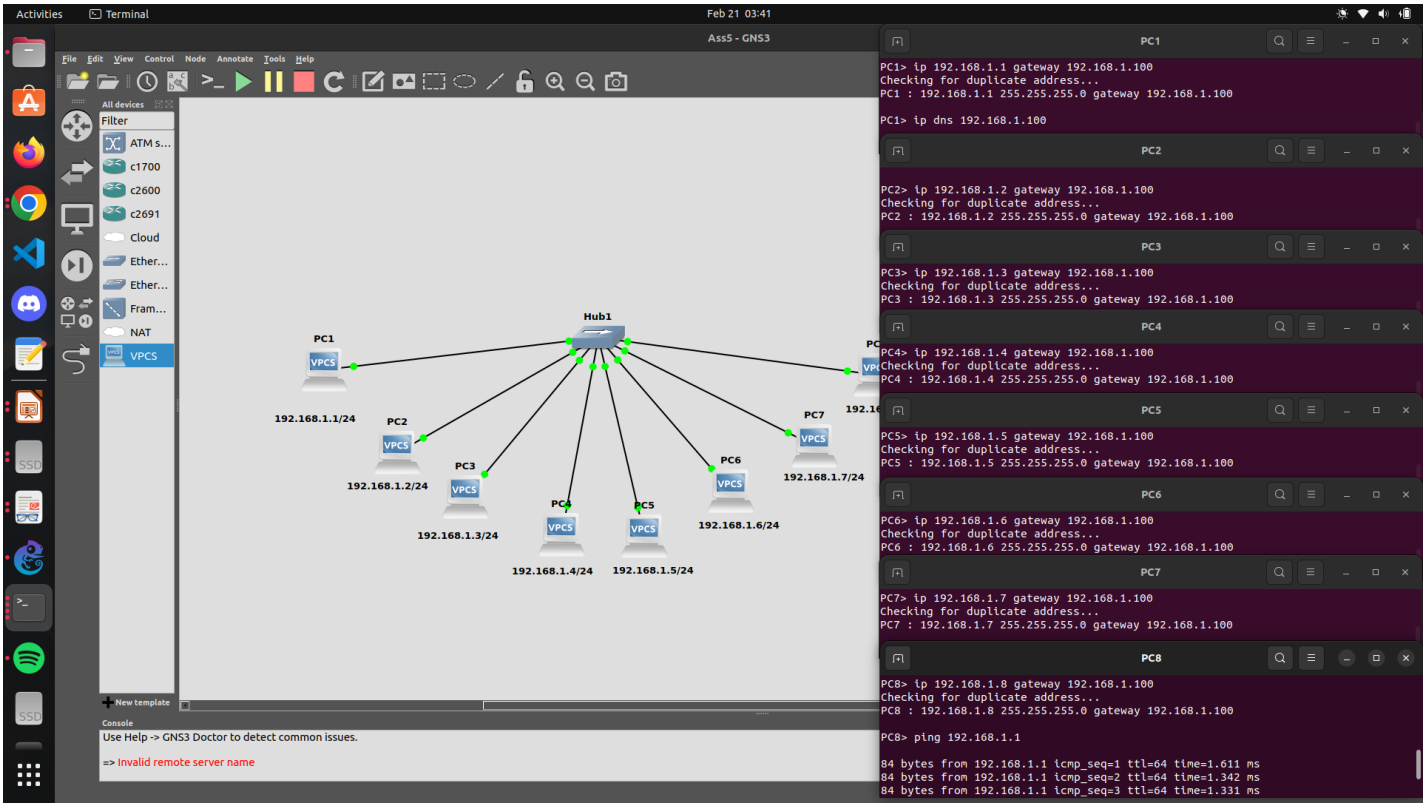
PC2

```
Executing the startup file


PC2> ip 192.168.1.2/24 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100

PC2> ip dns 192.168.1.100

PC2> show ip

NAME        : PC2[1]
IP/MASK     : 192.168.1.2/24
GATEWAY     : 192.168.1.100
DNS         : 192.168.1.100
MAC         : 00:50:79:66:68:01
LPORT       : 10006
RHOST:PORT  : 127.0.0.1:10007
MTU         : 1500

PC2> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.051 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.999 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.312 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=0.699 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.970 ms

PC2>
```

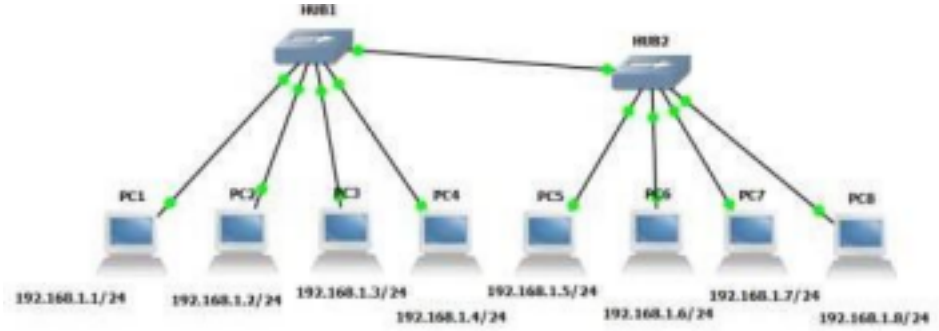
Q6. Create BUS topologies as below.

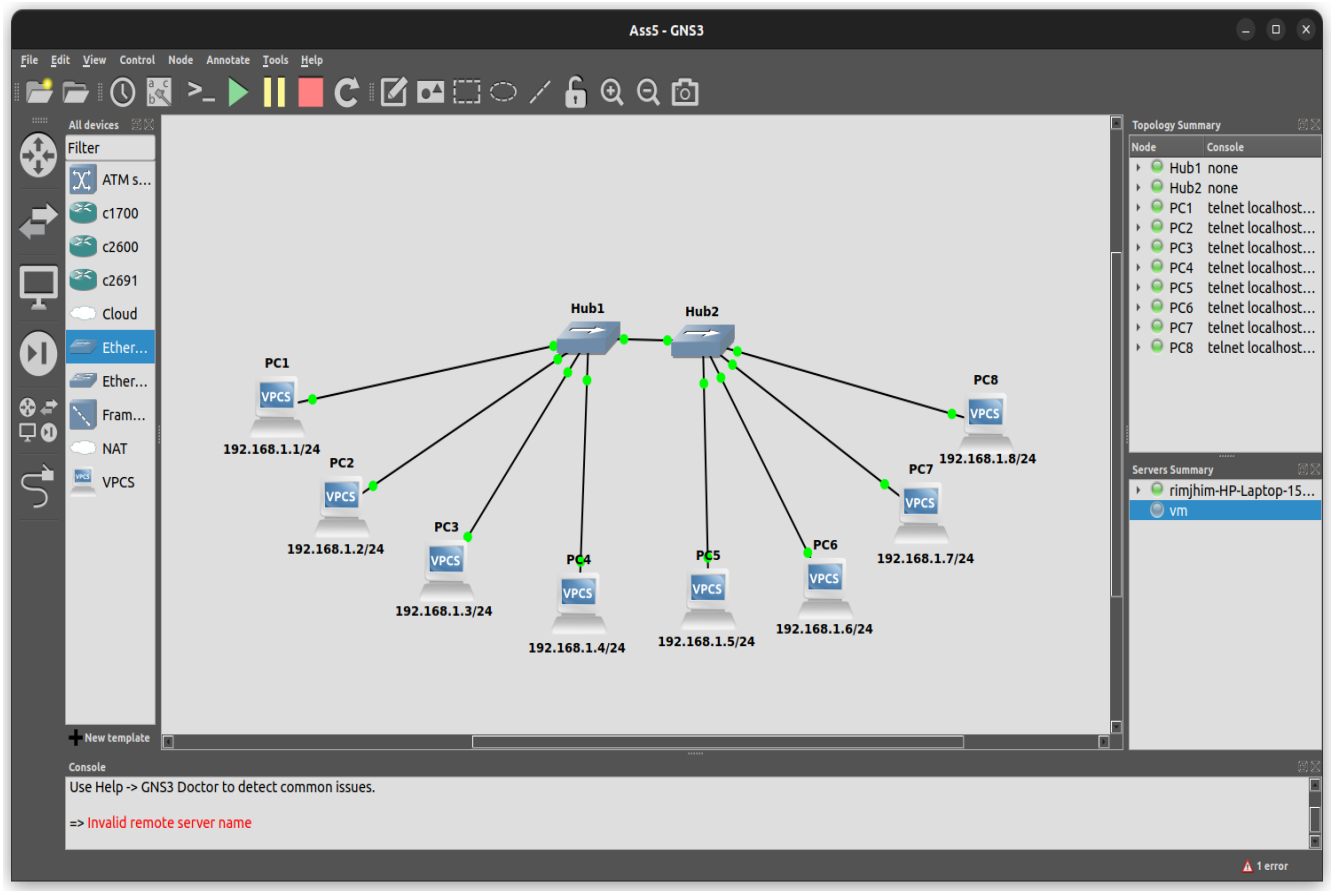


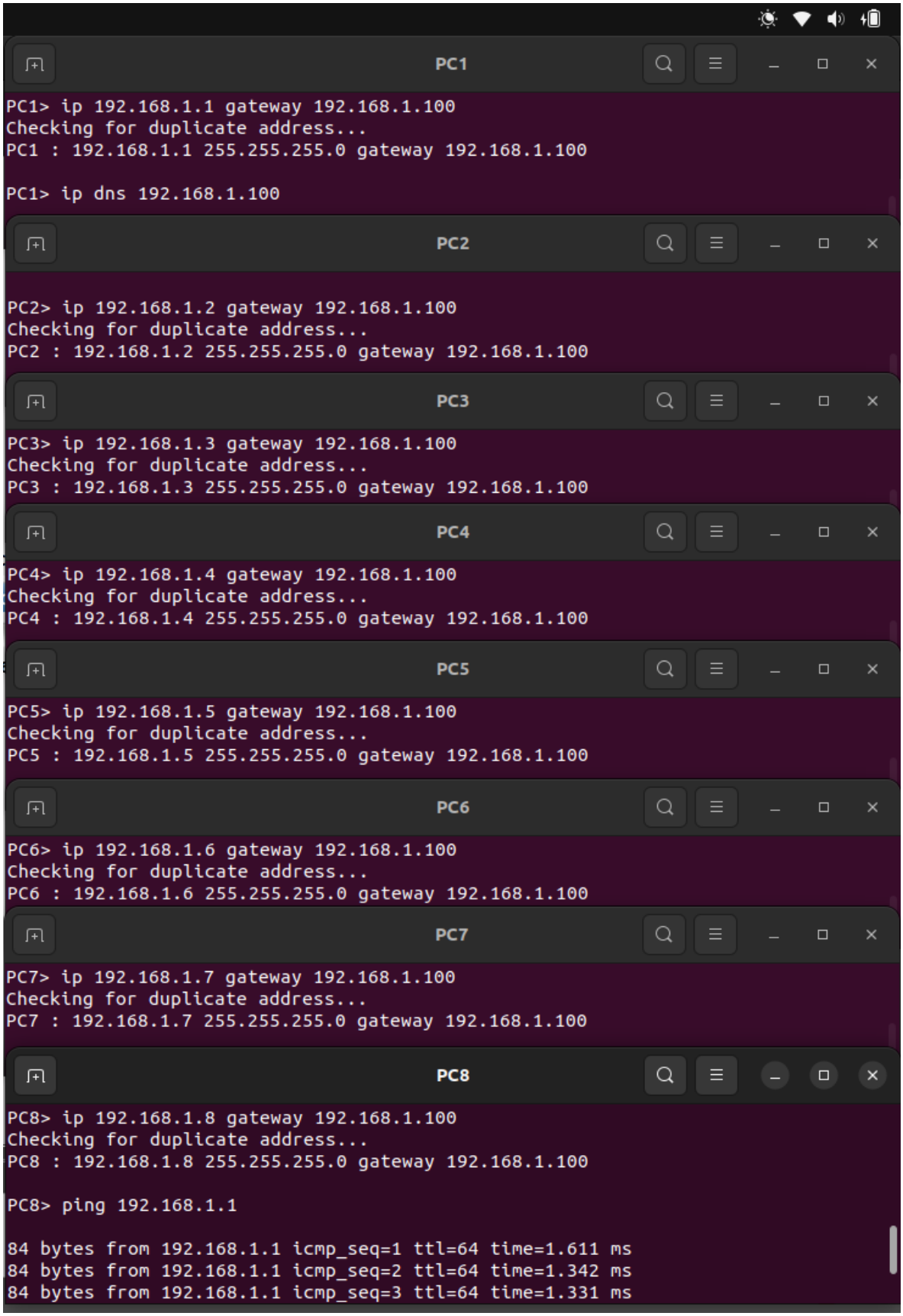
(a)



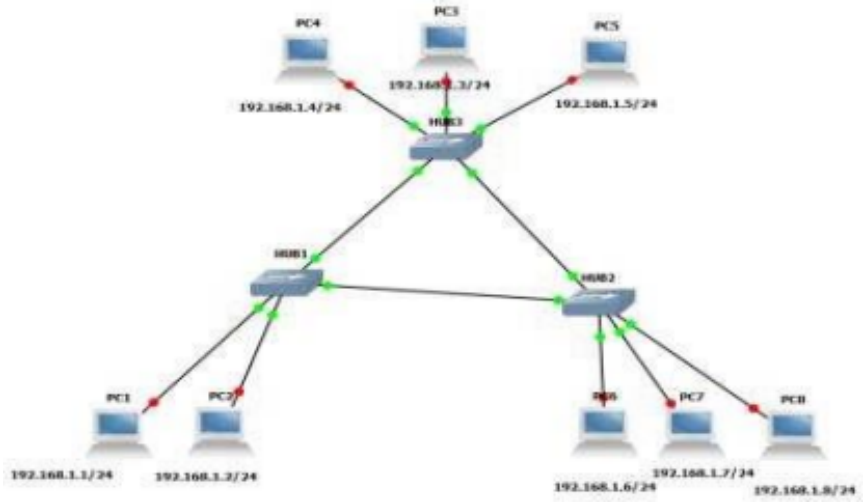
(b)

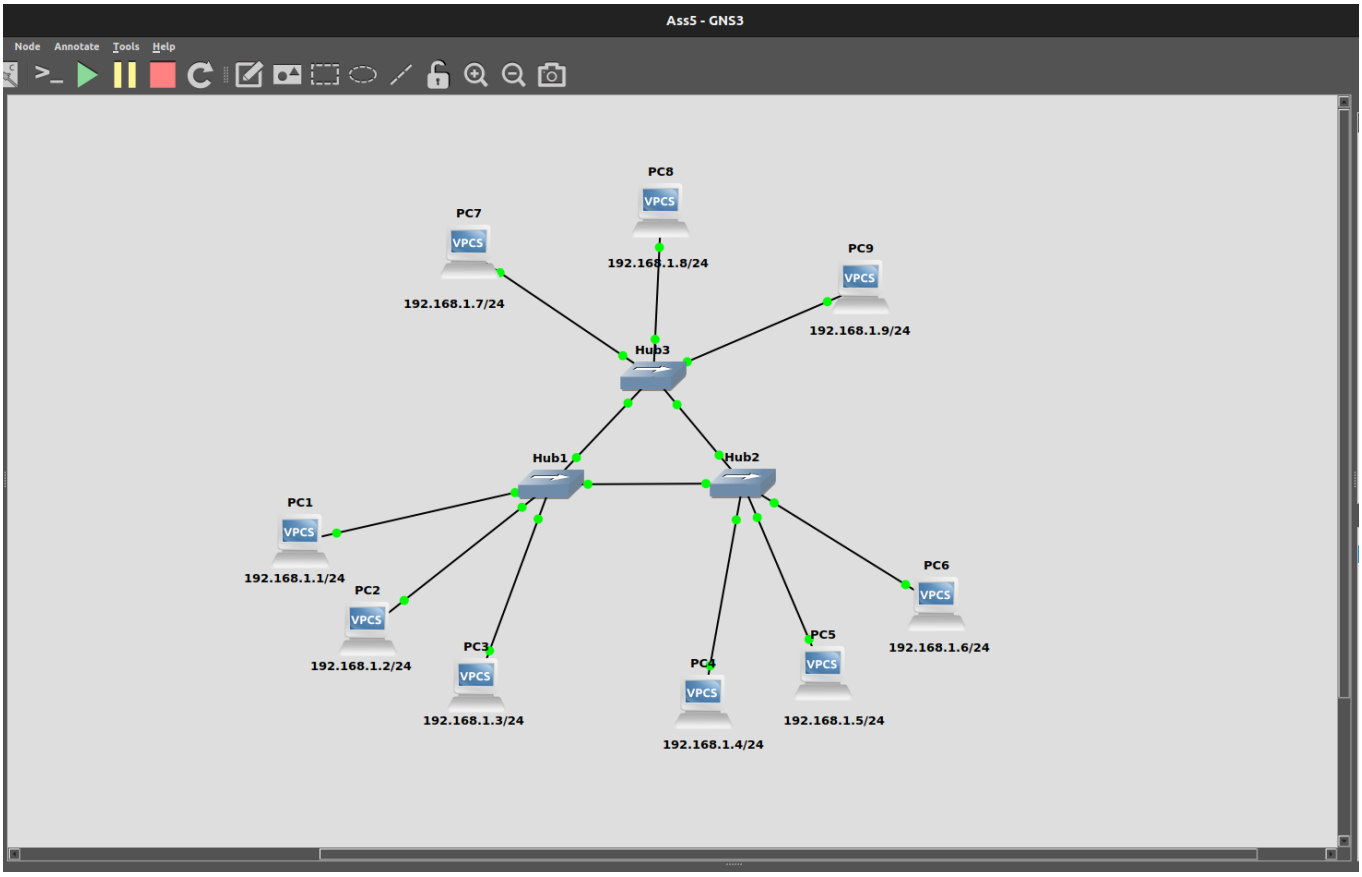

HUB1
HUB2
PC1
PC2
PC3
PC4
PC5
PC6
PC7
PC8
192.168.1.1/24
192.168.1.2/24
192.168.1.3/24
192.168.1.4/24
192.168.1.5/24
192.168.1.6/24
192.168.1.7/24
192.168.1.8/24

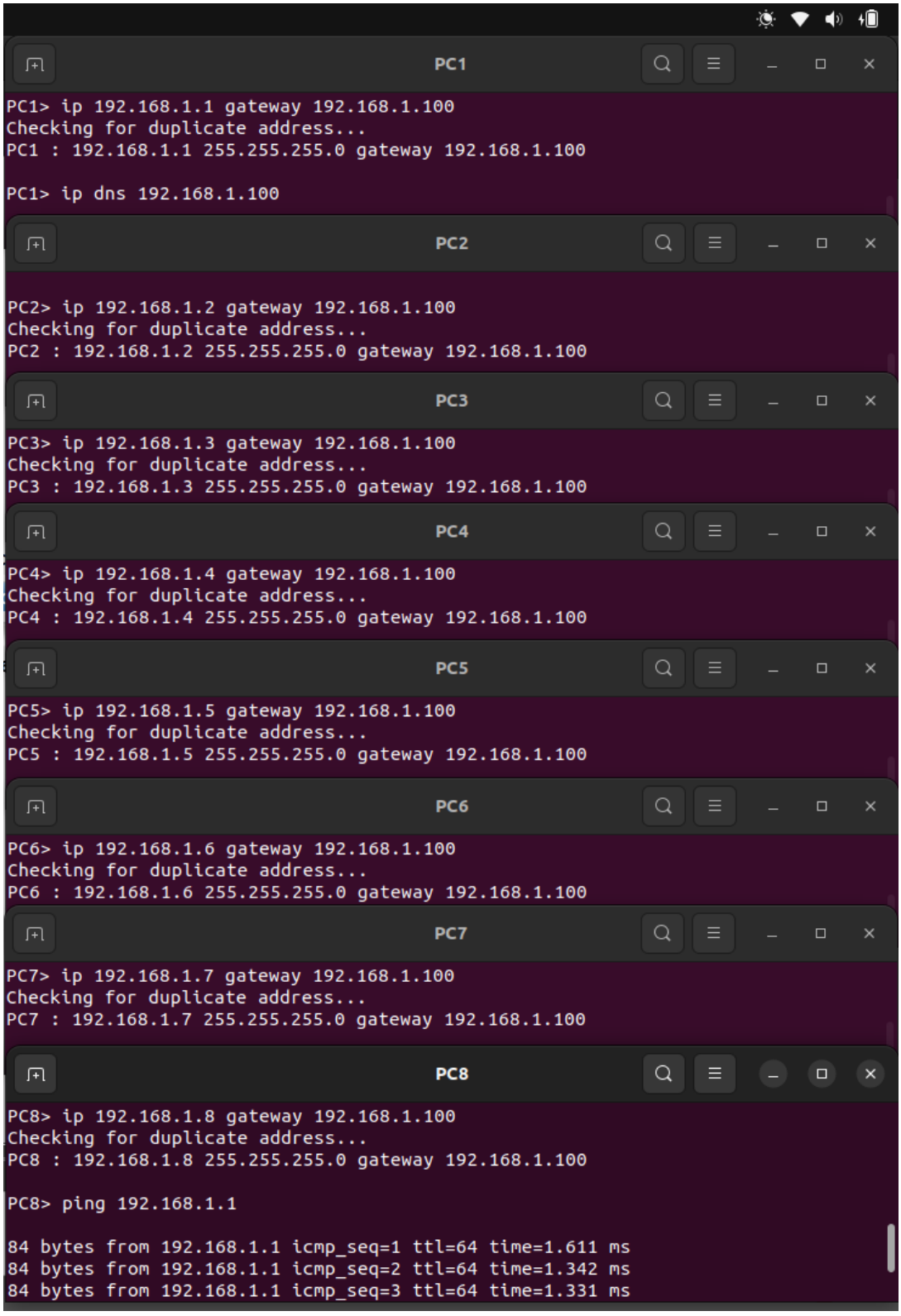

Ass5 - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Filter
ATM s...
c1700
c2600
c2691
Cloud
Ether...
Ether...
Fram...
NAT
VPCS
New template
Topology Summary
Node Console
Hub1 none
Hub2 none
PC1 telnet localhost...
PC2 telnet localhost...
PC3 telnet localhost...
PC4 telnet localhost...
PC5 telnet localhost...
PC6 telnet localhost...
PC7 telnet localhost...
PC8 telnet localhost...
Servers Summary
rimjhim-HP-Laptop-15...
vm
Hub1
Hub2
PC1
VPCS
192.168.1.1/24
PC2
VPCS
192.168.1.2/24
PC3
VPCS
192.168.1.3/24
PC4
VPCS
192.168.1.4/24
PC5
VPCS
192.168.1.5/24
PC6
VPCS
192.168.1.6/24
PC7
VPCS
192.168.1.7/24
PC8
VPCS
192.168.1.8/24
Console
Use Help -> GNS3 Doctor to detect common issues.
=> Invalid remote server name
1 error


PC1
PC1> ip 192.168.1.1 gateway 192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100
PC1> ip dns 192.168.1.100
PC2
PC2> ip 192.168.1.2 gateway 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100
PC3
PC3> ip 192.168.1.3 gateway 192.168.1.100
Checking for duplicate address...
PC3 : 192.168.1.3 255.255.255.0 gateway 192.168.1.100
PC4
PC4> ip 192.168.1.4 gateway 192.168.1.100
Checking for duplicate address...
PC4 : 192.168.1.4 255.255.255.0 gateway 192.168.1.100
PC5
PC5> ip 192.168.1.5 gateway 192.168.1.100
Checking for duplicate address...
PC5 : 192.168.1.5 255.255.255.0 gateway 192.168.1.100
PC6
PC6> ip 192.168.1.6 gateway 192.168.1.100
Checking for duplicate address...
PC6 : 192.168.1.6 255.255.255.0 gateway 192.168.1.100
PC7
PC7> ip 192.168.1.7 gateway 192.168.1.100
Checking for duplicate address...
PC7 : 192.168.1.7 255.255.255.0 gateway 192.168.1.100
PC8
PC8> ip 192.168.1.8 gateway 192.168.1.100
Checking for duplicate address...
PC8 : 192.168.1.8 255.255.255.0 gateway 192.168.1.100
PC8> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.611 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=1.342 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=1.331 ms

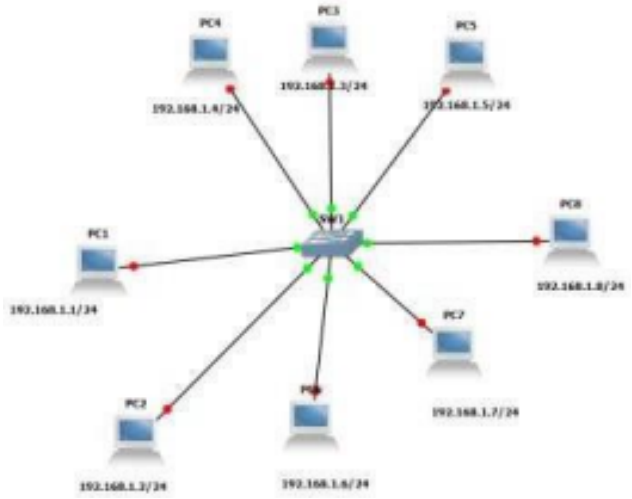
Q7. Create the following Ring Topology.

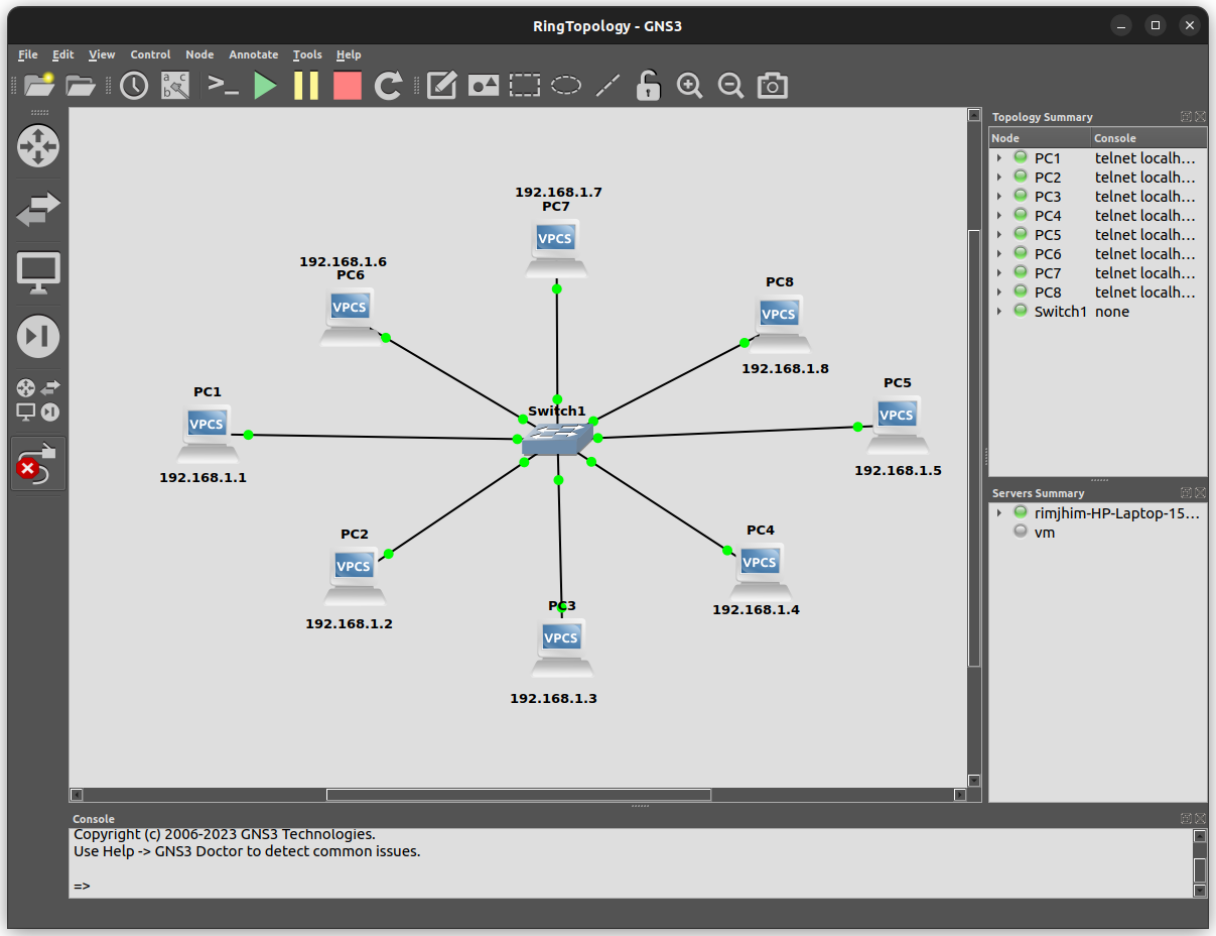


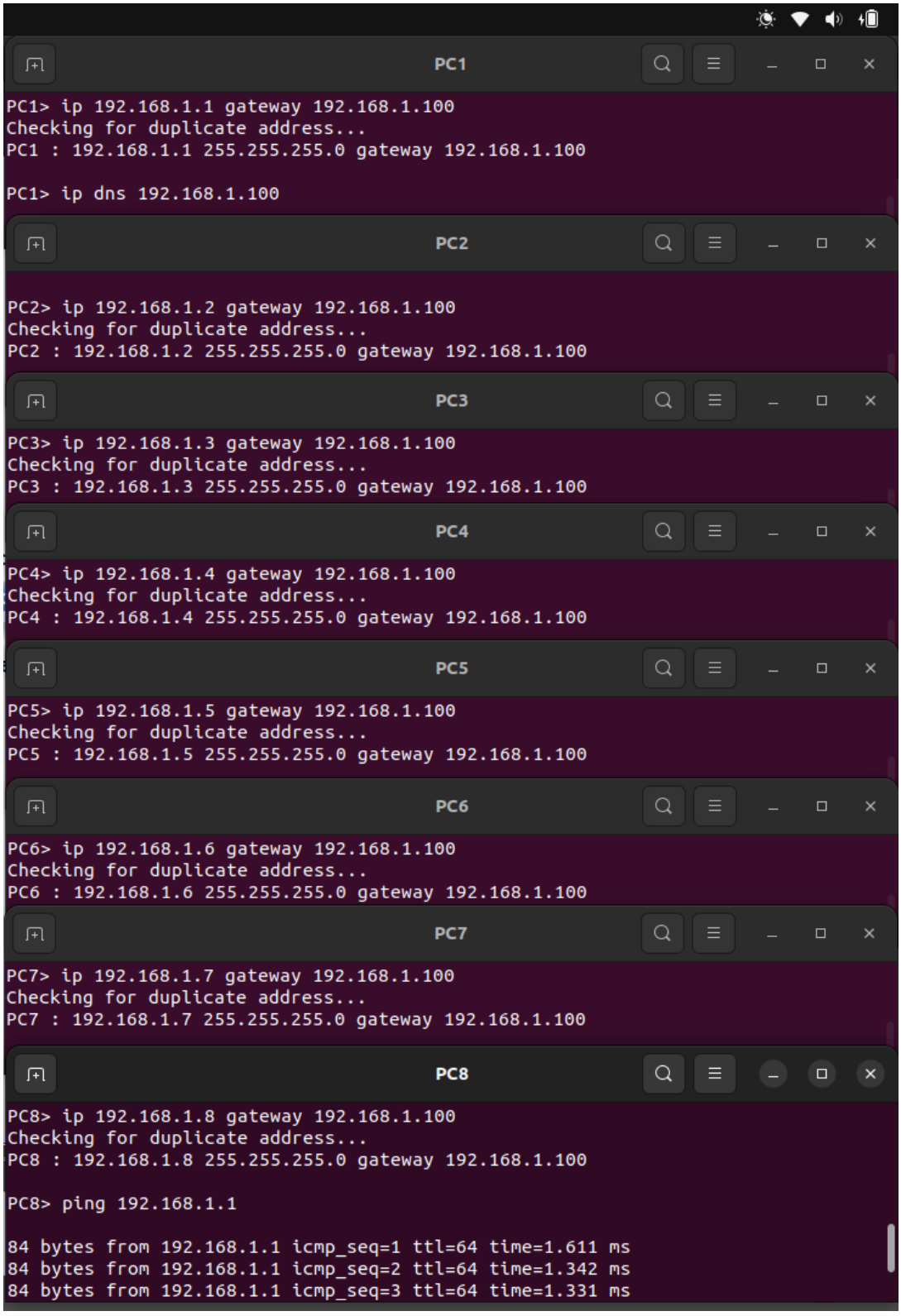



PC1
PC1> ip 192.168.1.1 gateway 192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100
PC1> ip dns 192.168.1.100
PC2
PC2> ip 192.168.1.2 gateway 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100
PC3
PC3> ip 192.168.1.3 gateway 192.168.1.100
Checking for duplicate address...
PC3 : 192.168.1.3 255.255.255.0 gateway 192.168.1.100
PC4
PC4> ip 192.168.1.4 gateway 192.168.1.100
Checking for duplicate address...
PC4 : 192.168.1.4 255.255.255.0 gateway 192.168.1.100
PC5
PC5> ip 192.168.1.5 gateway 192.168.1.100
Checking for duplicate address...
PC5 : 192.168.1.5 255.255.255.0 gateway 192.168.1.100
PC6
PC6> ip 192.168.1.6 gateway 192.168.1.100
Checking for duplicate address...
PC6 : 192.168.1.6 255.255.255.0 gateway 192.168.1.100
PC7
PC7> ip 192.168.1.7 gateway 192.168.1.100
Checking for duplicate address...
PC7 : 192.168.1.7 255.255.255.0 gateway 192.168.1.100
PC8
PC8> ip 192.168.1.8 gateway 192.168.1.100
Checking for duplicate address...
PC8 : 192.168.1.8 255.255.255.0 gateway 192.168.1.100
PC8> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.611 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=1.342 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=1.331 ms

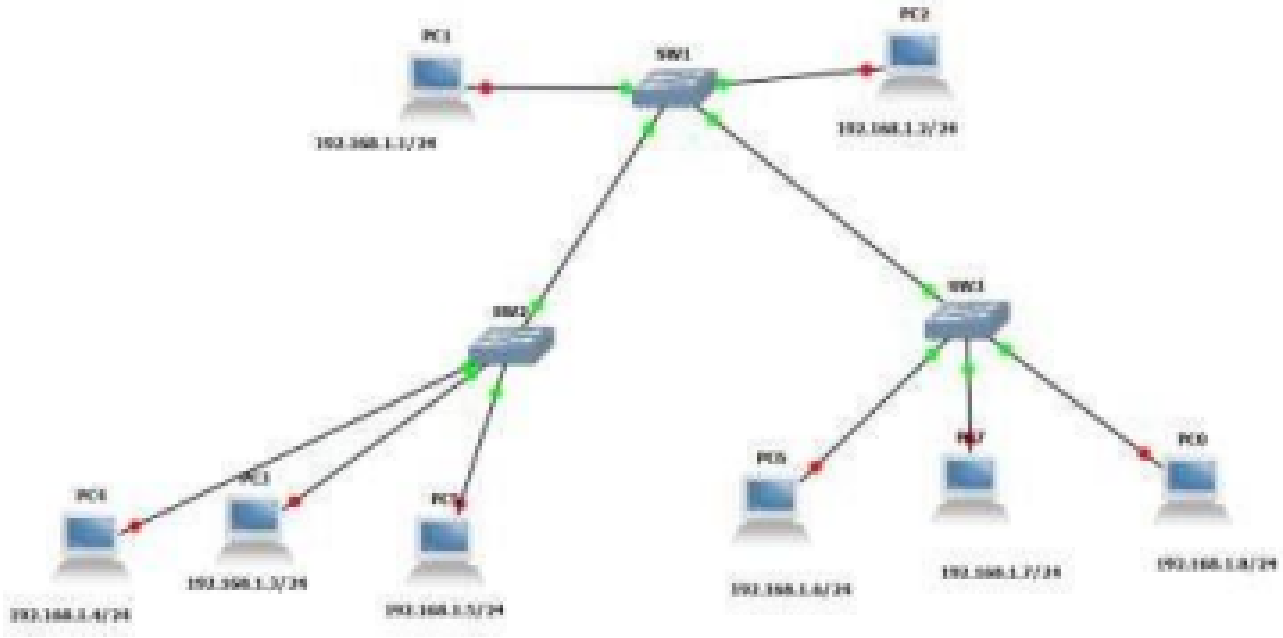
Q8. Create the following Ring Topology.

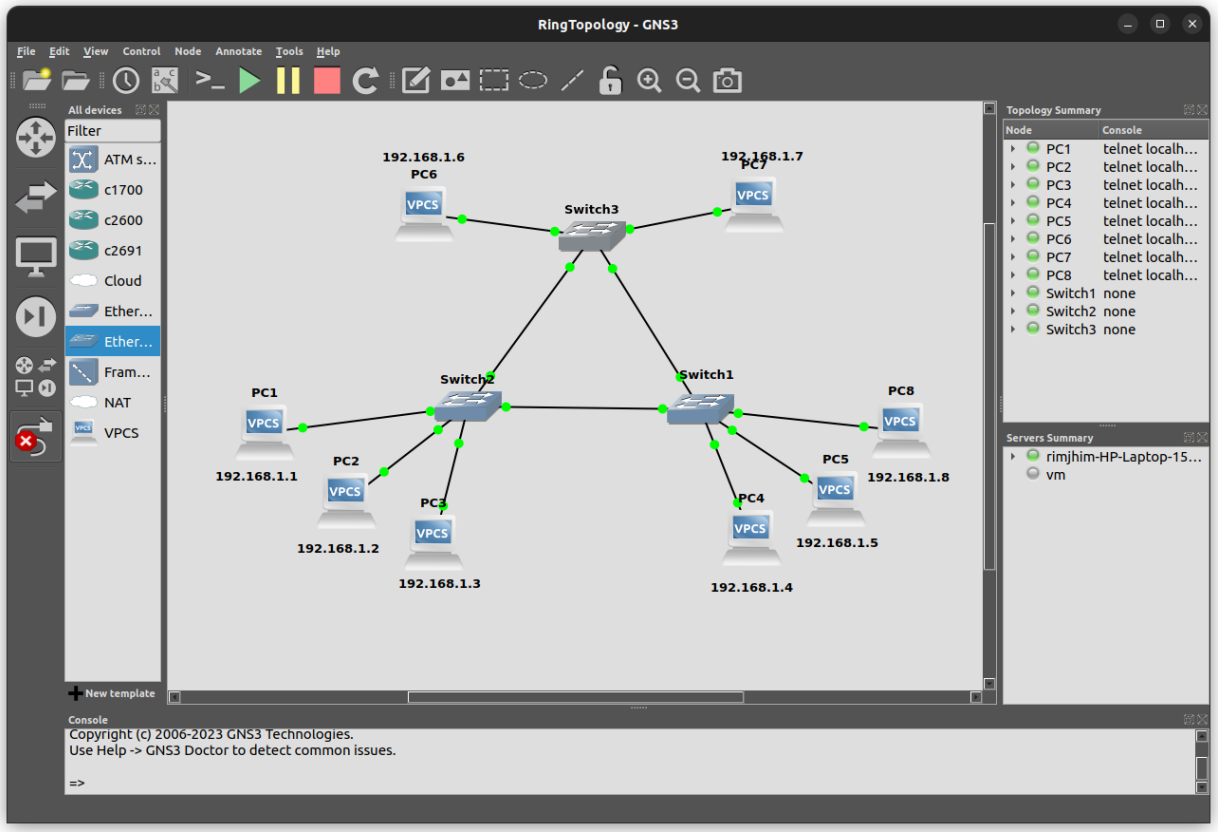


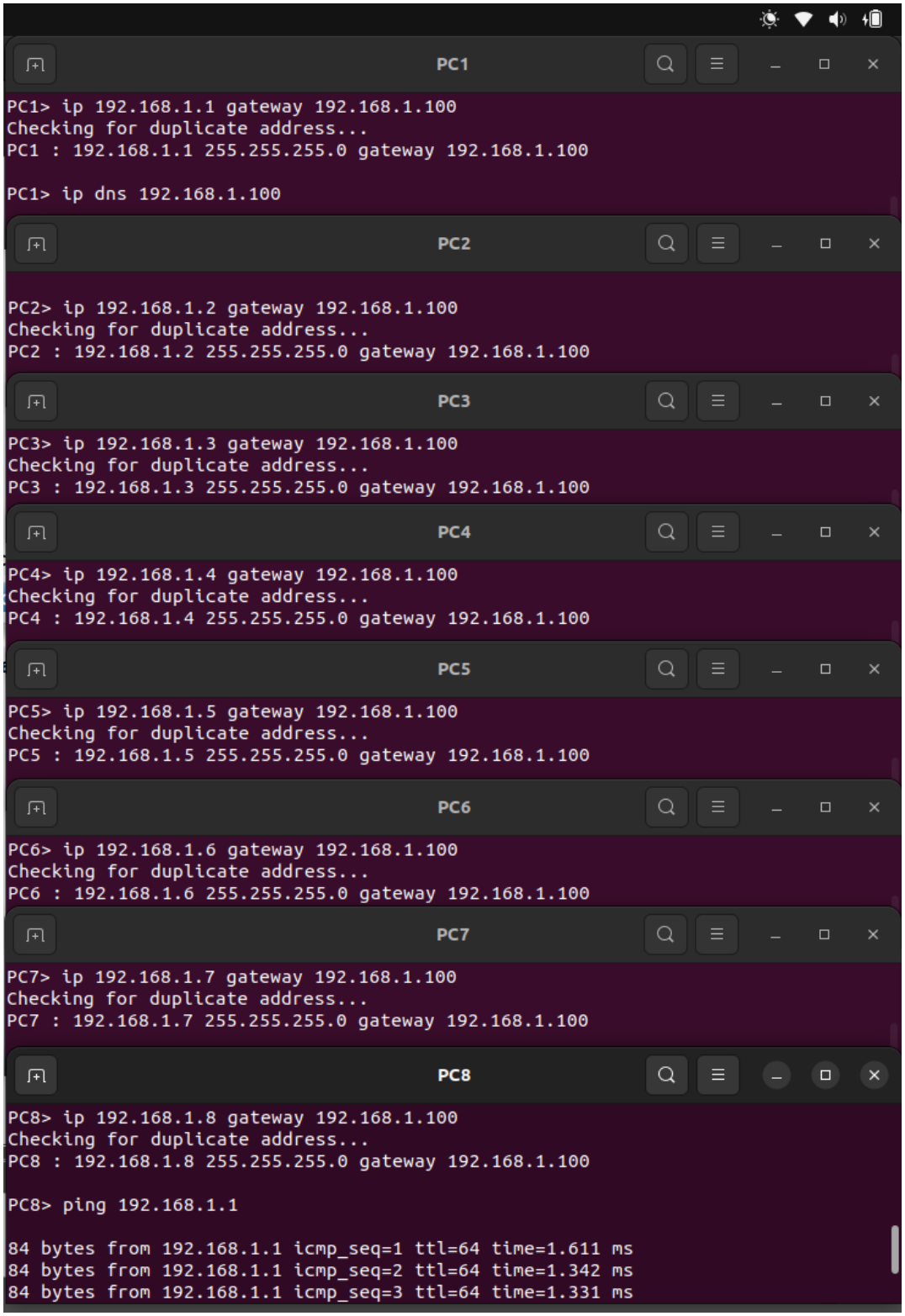



PC1
PC1> ip 192.168.1.1 gateway 192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100
PC1> ip dns 192.168.1.100
PC2
PC2> ip 192.168.1.2 gateway 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100
PC3
PC3> ip 192.168.1.3 gateway 192.168.1.100
Checking for duplicate address...
PC3 : 192.168.1.3 255.255.255.0 gateway 192.168.1.100
PC4
PC4> ip 192.168.1.4 gateway 192.168.1.100
Checking for duplicate address...
PC4 : 192.168.1.4 255.255.255.0 gateway 192.168.1.100
PC5
PC5> ip 192.168.1.5 gateway 192.168.1.100
Checking for duplicate address...
PC5 : 192.168.1.5 255.255.255.0 gateway 192.168.1.100
PC6
PC6> ip 192.168.1.6 gateway 192.168.1.100
Checking for duplicate address...
PC6 : 192.168.1.6 255.255.255.0 gateway 192.168.1.100
PC7
PC7> ip 192.168.1.7 gateway 192.168.1.100
Checking for duplicate address...
PC7 : 192.168.1.7 255.255.255.0 gateway 192.168.1.100
PC8
PC8> ip 192.168.1.8 gateway 192.168.1.100
Checking for duplicate address...
PC8 : 192.168.1.8 255.255.255.0 gateway 192.168.1.100
PC8> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.611 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=1.342 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=1.331 ms

Q9. Create the following Tree Topology.






PC1
PC1> ip 192.168.1.1 gateway 192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100
PC1> ip dns 192.168.1.100
PC2
PC2> ip 192.168.1.2 gateway 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100
PC3
PC3> ip 192.168.1.3 gateway 192.168.1.100
Checking for duplicate address...
PC3 : 192.168.1.3 255.255.255.0 gateway 192.168.1.100
PC4
PC4> ip 192.168.1.4 gateway 192.168.1.100
Checking for duplicate address...
PC4 : 192.168.1.4 255.255.255.0 gateway 192.168.1.100
PC5
PC5> ip 192.168.1.5 gateway 192.168.1.100
Checking for duplicate address...
PC5 : 192.168.1.5 255.255.255.0 gateway 192.168.1.100
PC6
PC6> ip 192.168.1.6 gateway 192.168.1.100
Checking for duplicate address...
PC6 : 192.168.1.6 255.255.255.0 gateway 192.168.1.100
PC7
PC7> ip 192.168.1.7 gateway 192.168.1.100
Checking for duplicate address...
PC7 : 192.168.1.7 255.255.255.0 gateway 192.168.1.100
PC8
PC8> ip 192.168.1.8 gateway 192.168.1.100
Checking for duplicate address...
PC8 : 192.168.1.8 255.255.255.0 gateway 192.168.1.100
PC8> ping 192.168.1.1
84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=1.611 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=1.342 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=1.331 ms