8.9.25
Exp NO:9

# Implementation of subnetting in Cisco Packet Tracer simulator

AIM:

To implement subnetting in Cisco Packet Tracer simulator.

Classless IP subnetting is a technique that allows for more efficient use of IP address by allowing for subnet masks that are not just the default masks for each IP class. this means that we can divide our IP address space into smaller subnets, which can be useful when we have a limited number of IP addresses but need to create multiple networks.

Steps for implementing subnetting

i) creating a network topology
ii) Adding the devices
iii) subnetting.

the IP addressing for the network show in the topology can be as follows:

→ Router R1
→ Gigabit ethernet 0/0
192.168.1.1

→ Gigabit ethernet 0/1 192.168.2.1

- switch S1:
- Fast ethernet 0/1 : 192.168.1.0/27
- PC1 : 192.168.1.11
- PC2: 192.168.1.12
- Fast ethernet 0/2: 192.168.2.0/27
- PC1 : 192.168.2.11
- PC2: 192.168.2.12
- Router R2
- Fast ethernet 0/0 : 192.168.3.1
- Fast ethernet 0/1 : 192.168.4.1

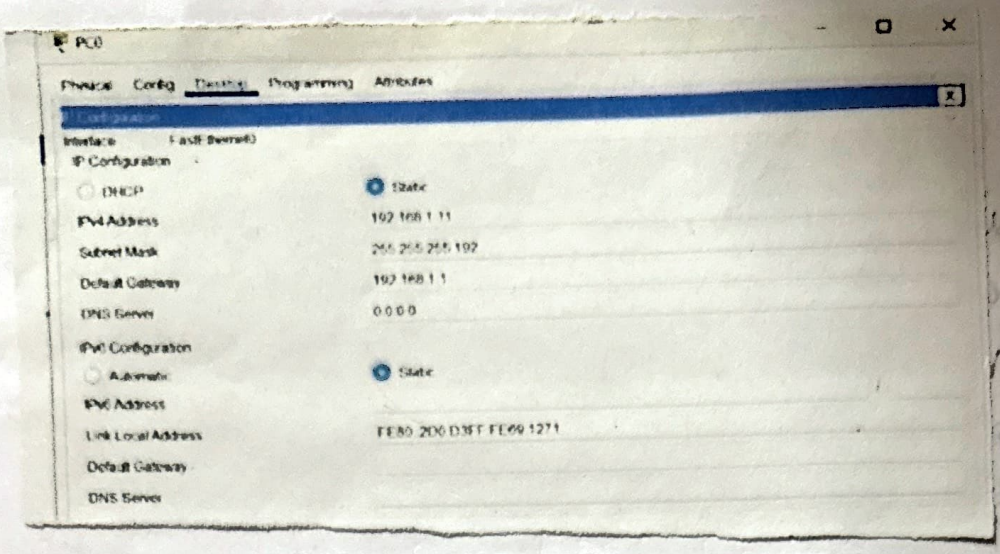
Configuring the devices:

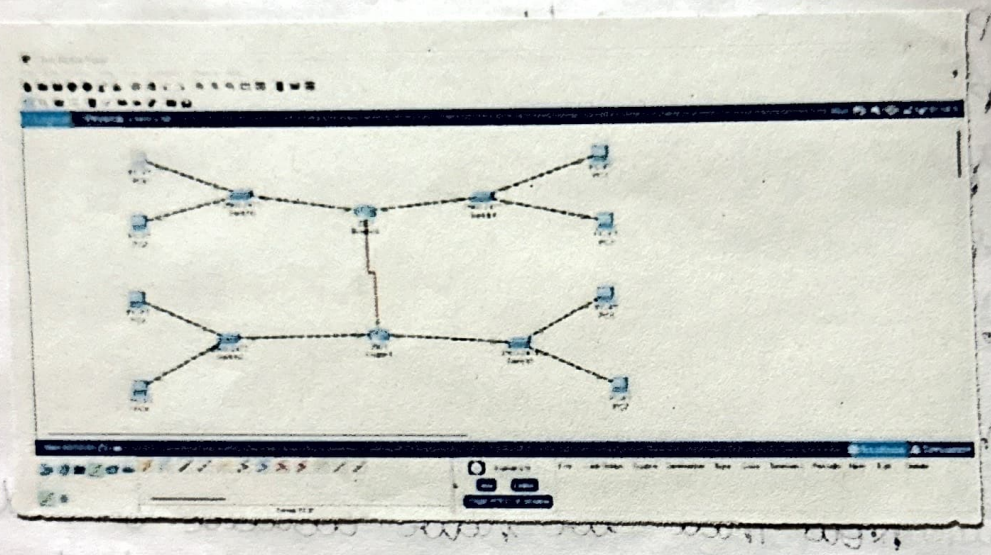
Now that we have added our devices and connected them, we can start configuring them we will start by configuring the router.

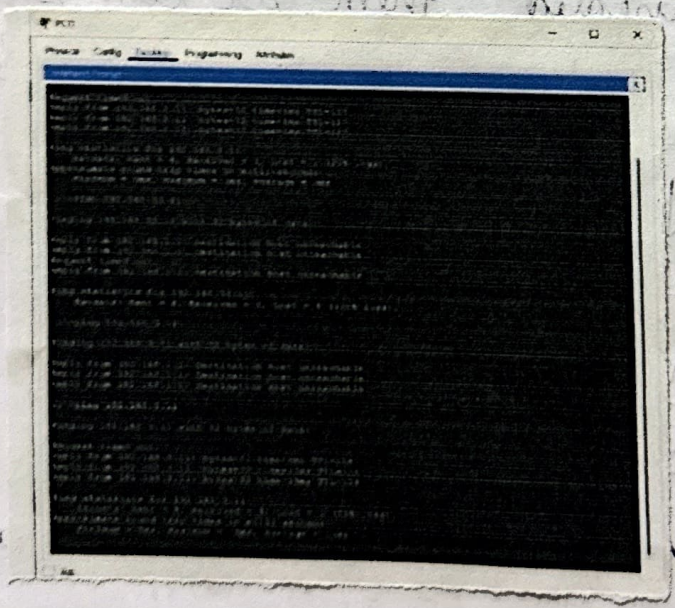
# enable
# configure terminal
# interface fastethernet 0/0
# ip address {ip address} {subnet mask}
# no shutdown
# exit

Testing the network:

Now that our network topology is conformed we can test the network


PC0
Physical
Config
Desktop
Programming
Attributes
Interface
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.11
Subnet Mask
255.255.255.192
Default Gateway
192.168.1.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::200:D3FF:FE69:1271
Default Gateway
DNS Server




PC0
Physical
Config
Desktop
Programming
Attributes

## Test the Network :

Now that our network topology is configured, we can test the network. Open a cmd prompt on each PC and try to ping the other PC. If ping is succesful, then the network is functioning properly.

## Student Observation

### Question 1 :

My understanding of subnetting

Answer :

It is the process of dividing a single large physical network into multiple smaller, logical networks called subnets for eg, a simple networks 192.168.1.0 might have a subnet mask of 255.255.255.0. allowing for 254 usable host devices

### Question 2 :

Advantages of subnetting

Answer :

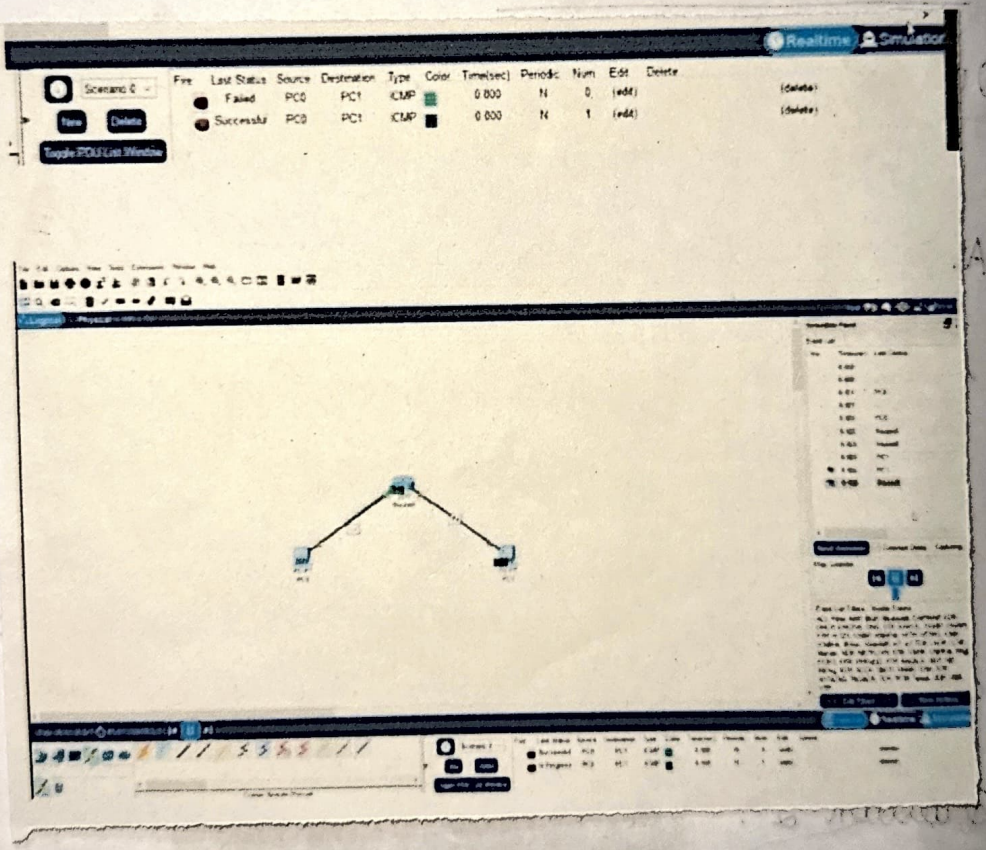
→ Improved performance and Reduce congestion
→ Enhanced security
→ simplified Administration

Question 3:

## subnetting in college

Answer:

yes, subnetting is used in our college as it holds 100s of PCs. Eg: Idea factory, tech lounge etc have their unique networks followed by unique subnets.




RESULT:

Hence Subnet was implemented successfully.