Ex: 9 Implementation of SUBNETTING in
16/01/25 CISCO PACKET TRACER Simulator

Aim:

Implementation of 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 your IP address space into smaller subnets which can be useful when we have limited number of IP addresses.

Creating a network topology:-

The first step in implementing classless IP subnetting is to create a network topology in Packet Tracer, select the "New" button in the top left corner, then select "Network" and "Generic".

Adding the devices:

Once we have created our network topology, we can add devices to it. Here, we will be adding routers, switches and PCs. To add a device, select the

device from ... and drag it onto the network topology.

Subnetting:

To subnet the network address of 192.168.1.0/24 to provide enough space for atleast 5 address for end devices the switch and the router we can use a 0 4/7 subnet mask. The IP addressing for the network shown 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
PC3: 192.168.2.12
PC4: 192.168.1.14
PC5: 192.168.1.15
Fast ethernet 0/0: 192.168.3.1
Switch S2:
Fast ethernet 0/1: 192.168.3.0/27

figuring the devices:

Now that we have added our devices and connected them, we can start configuring them.

We will start by configuring the router. Right click on the router and select "CLI".

```
# enable
# configure terminal
# interface FastEthernet 0/0
# ip address {IP address}
# no shutdown
# exit
```

To configure the Gigabit Ethernet interface on the router, you can follow the steps:

1. Right click on the router and select CLF.
2. Enter the following commands

Testing the networks:

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

Student Observation

a) Write down your understanding of subnetting.

Subnetting is the process of dividing a large IP network into smaller, more manageable subnetworks (Subnets).

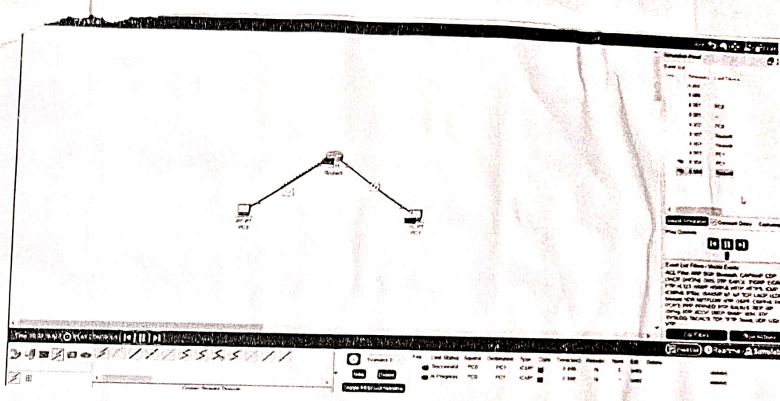
b) What are the advantages of subnetting?

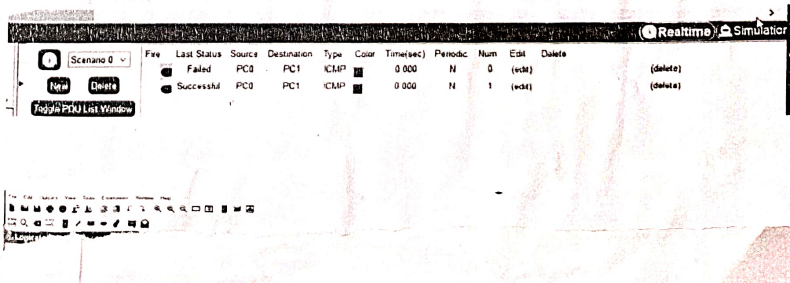
Reduce network congestion by limiting broadcast traffic within subnets.

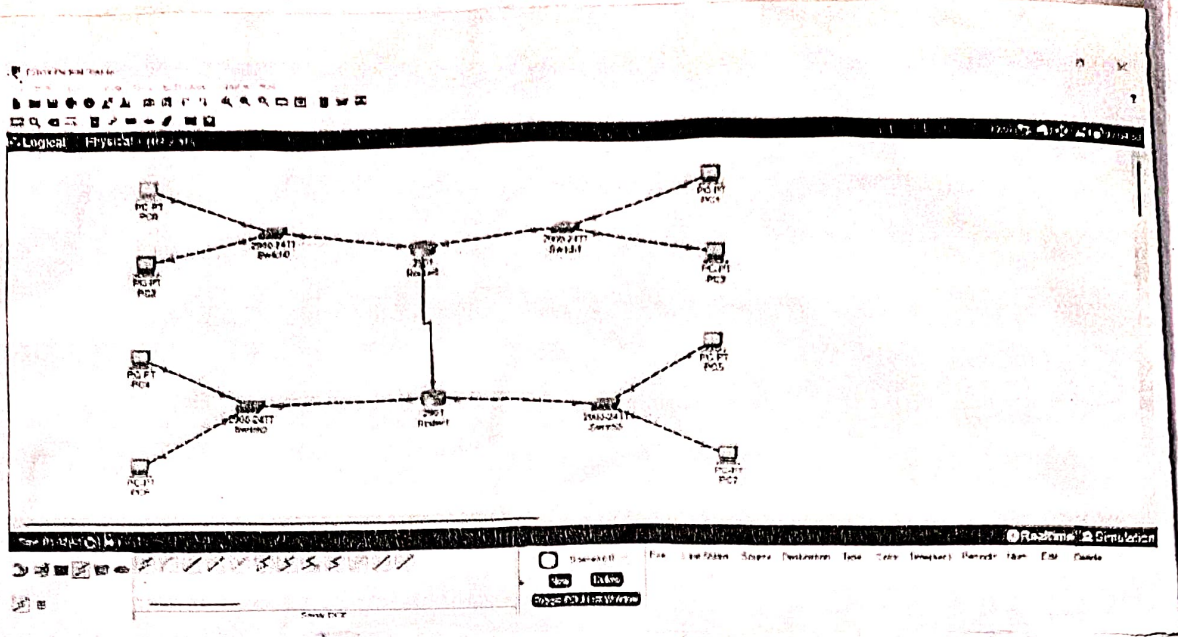
Improve security by isolating network segments.

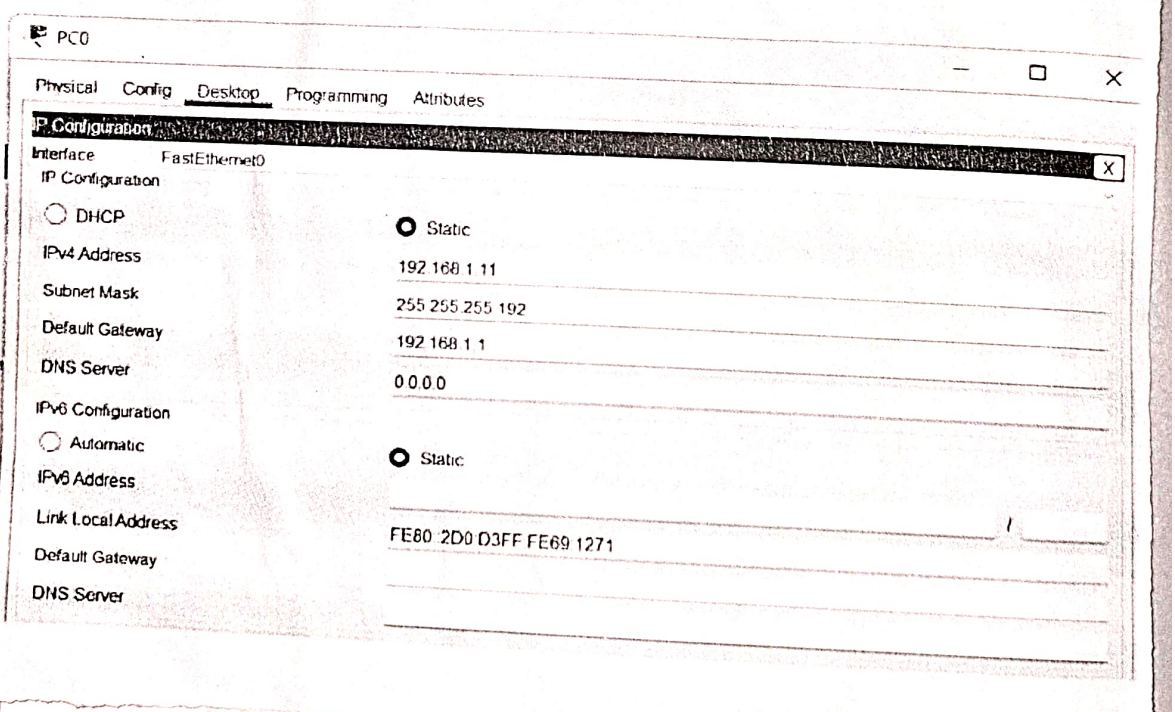
Easier management and trouble shooting of networks.

Efficient use of IP address by avoiding wastage.









Result;

Thus the above program is executed successfully.